THE STRUCTURAL DIMENSION OF THE CAPITALIST CRISIS OF 2008

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Abstract
In this paper we argue that the recent crisis of the capitalist system is a symptom of a deep structural problem leading to its secular stagnation. The core of our argument deals with the different productivity growth rates registered by the sectors producing tradables and non-tradables. The former has a higher productivity growth than the latter. Thus, our argument is based upon Adam Smith when he states that productivity growth depends on the division of labor, which, in turn, depends on the extent of the market. As the world market is the largest, a country seeking to grow fast must expand to such a market through a competitive exchange rate. Furthermore, our reasoning rests upon the upshot of the mentioned two sector model when combined with the law of one price, with the concept of the real exchange rate, the one of the covered interest parity, and the liquidity trap.

1. Introduction

We agree with the current interpretation of the world crisis pointing out to the mortgage market of the United States as the origin of it. According to this explanation, the interest rates in the US were excessively low. Low rates encouraged a massive borrowing to buy appartments, houses, and real estate in general. The artificial demand for real estate resulted in the rise of its prices. Given the steady rise in prices, banks decided to make loans in amounts greater than the value of the real estate properties that served as collateral for such loans, on the assumption that a subsequent rise in prices would solve the problem. In order to get additional funds and, therefore, to continue with the process of lending money indefinitely, banks decided to resort to the securitization of mortgages; that is, the issuance of enormous quantities of negotiable mortgage-backed securities. These securities were later sold in large quantities in the American capital market. And when this market became saturated, the sale went to capital markets of Europe and Japan. In the years 2006 and 2007, interest rates began to rise again and, hence, the demand for housing fell. So did their prices. As a result, the problem of a vast quantity of mortgage backed securities without a real backing arose in the capital markets of all the industrial countries.

The abuses committed in the financial markets were due to an excess of confidence in their self-regulation. The fall of the Soviet Empire in 1989 caused an extraordinary ideological resurgence in the *laissez faire, laissez passer* principles. The

confidence in the synergic power of markets free from state intervention was unlimited. Unfortunately, the synergic effect of the *laissez faire, laissez passer* applies only to the real economy under competitive conditions, and with many exceptions. A conclusive economic theory does not exist demonstrating that financial markets tend to equilibrium or reflect the actual underlying value of the real assets represented by securities. It is true that there is literature supporting the "capital market efficiency hypothesis", which advocates such extraordinary wisdom for capital markets. In accordance with this theory, all the events and actions taking place in a given enterprise will be immediately reflected in the prices of its shares in the stock exchange. This is equivalent to say that it is impossible to find a one-hundred dollar bill on the street because somebody else would have probably seen the bill before me and would have picked it up immediately. This assumed extraordinary wisdom of financial markets led many politicians and economists to believe that markets do not need to be regulated, as they self-regulate. Self regulation may occur as a result of the powerful tendency towards the diffusion of information; a tendency that is even more significant now in the information era. However, there still exists another concurrent and structural cause of the present macroeconomic world crisis; and this is the one that we will analize in this paper.

2. The diffusion of the crisis

After the Bear Stearns shares plummeted in August 2007 and especially with the collapse of the Lehman Brothers in September 2008, people and governments suddenly realized how serious the situation was. The whole economy thus arrived to an impasse in which no bank had confidence in any other as it was unknown to what extent the assets of the other financial entities were poisoned with toxic assets or mortgage-backed securities without any serious collateral. The lack of transparency in the world financial markets not only made loans among banks be risky, but also led banks to sit upon their cash and refuse to give new loans to enterprises for the purposes of allowing them to keep their liquidity. Accordingly, the Federal Reserve Banks were obliged to give loans directly to large American enterprises, bypassing the banking system itself despite the fact that this implies a violation of the principles of central banking. The Central Bank is supposed to be only the bank of banks, and never lend money directly to business. Fortunately, nowadays the Keynesian macroeconomic theory is in all libraries and authorities and central bankers can resort to it. They now understand that in the situation previously described it is necessary to lend money at low interest rates practically without any limit, and that governments spend almost freely. Of course, if money is spent on public works yielding high returns, all the better. As a result of the new ideas, governments and central banks actions around the world would prevent the present crisis to develop into a long depression like the one which took place in 1930. This one would result in a sharp and short recession firstly in all developed countries: the United States, Japan and the European ones, and secondly in the developing ones. A crucial factor for this prognosis is the so called *"wealth effect":*

after the fall in all stock exchanges, and mainly in the American one, people felt poorer and, thus, became more thrifty. In other words, people spent less. But as the expenditures incurred by one person are the income of another one, the reduction of expenditures implies the decrease in incomes, which forces people to spend even less money. The cumulative effect of this behavior is dangerous and this is why it is necessary for governments to counteract the situation by increasing their own expenditures, reducing taxes and increasing the amount of money available to the economy. Besides, this long but shallow semi-recession will allow us to highlight the structural dimension of the present world crisis.

3. A two-sector growth model

In order to understand the implications of the current financial crisis affecting the globe, it is necessary to present a two-sector model describing the mechanics of the economic development. This model applies to both developed and developing countries and critically differenciates productivity growth between the two large sectors of economy: the one producing internationally tradable goods and the other producing non-tradable goods and services. The sector producing internationally tradable goods comprises manufacturing, commercial agriculture, mining, and some public services such as electricity and international transport. Meanwhile, the non-tradable sector includes construction, the great majority of personal and social services, subsistence agriculture and all other activities that due to their own nature can not be traded internationally. By way of illustration, a hairdresser may render his services in the city or neighborhood in which he resides, but he cannot travel to New York during the day in order to work as a haidresser and then come back at night to Buenos Aires to sleep at home. The first category represents a 30 or 40% of the GDP of all countries, while the second category renders a 60 or 70%, approximately. This classification is significant due to the fact that internationally tradable goods are produced somehow in tecnologically progressive activities in which capital accumulation, innovations, and economies of scale all jointly favor a cumulative increase in production per man hour, which has historically proved to be clearly superior to the productivity growth of service activities, which permit only sporadic increases in productivity.[1]

4. Going back to Adam Smith

This distinction between the two sectors mentioned above is connected with an old idea of political economy which refers to the increasing returns to scale as a starting point of the economic development. This idea deals with the well-known principle of Adam Smith according to which the division of labor increases productivity; but, in turn, the division of labor is limited by the extent of the market. In an open economy with a depreciated local currency, the international market eliminates the restriction imposed by the small internal market faced by developing countries. It is worth illustrating this situation with the well-known example given by Adam Smith with his famous pin factory.[2] According to Smith, a

factory with at least ten workers was able to produce 48 thousand pins per day due to the division of labor, while an isolated worker could not have been able to produce even only one pin per day. And what is more important, the division of labor stimulates the invention of machines, capital goods and technological innovations.

5. The depreciated exchange rate and the extent of the market

It is clear, however, that this process of productivity increases, resulting from a better and greater division of labor, is frustrated if the local market for selling the products is small. Any person who has travelled to any country with a small internal market like Paraguay, Bolivia, Ecuador, Uruguay, Nicaragua, Guatemala or Honduras, will have observed the high customs protection existing in them. This is precisely the safe recipe for underdevelopment. Protectionism tends to be accompanied by an exchange appreciation due to the fact that by restricting imports, customs protection also reduces the demand for foreign exchange to pay for these imports. As a consequence of this, the fall in the demand for foreign exchange determines the fall in its price, that is, the exchange rate. Currency appreciation is, in turn, poison for exports, especially at the beginning of the growth process, when the internal market is limited and industrial exports are costly and practically nonexistent. Small countries need more support from the world market than any other country; and the key to access to this market in the initial steps of economic development is the depreciated local currency. The small countries which have reached a high degree of economic development have done so on the basis of a depreciated currency. In this regard, typical examples are Korea and Taiwan. There are many cases of European countries that have been able to reach a high degree of development on the basis of exchange devaluation at the beginnig of the process. The sector of tradable goods is the one which has the greatest productivity growth of all the economies in the world. Such a growth is possible as a result of this sector's connection with the international market and the possibility of a greater division of labor. As previously mentioned, the other sector, the one producing non-tradable goods, allows sporadic increases in productivity. These increases result from the nature of the non-tradable sector. The most important difference between the two sectors is that in the proggresive one labor is incidental, a means to obtain a product; while in the stagnant sector labor is an end in itself. Let us present as an example of a progressive activity the case of computers industry. The user is interested in the quality and price of the computer itself, but not in the labor quality nor in the number of hours taken to design and construct the computer. On the contrary, in the case of services, for instance, in a play to be presented in a theater, the performance of actors is essential.[3]

6. Structural assumptions to facilitate reasoning

If we start with the dichotomy "tradable and non-tradable sectors" and we add up four simplifying assumptions, it is possible to reach four important conclusions

that considerably illuminate long-term economic growth, both in already developed countries, such as the United States, England, Germany and France; and in the developing ones, such as China, Argentina, Chile, Thailand and Singapore. The first assumption suggests that the only input being really relevant in the production process is labor. The second assumption implies that salaries paid in both sectors, the progressive one and the stagnant one, tend to be equal at the end of the process of economic development. However, in the developing countries this assumption does not apply in the short and medium run due to the fact that in such places the salaries paid by the progressive sector producing internationally tradable goods are factually much higher than the salaries paid by the traditional sector. This situation results from the fact that the progressive sector is the one that competes internationally and, as a result of this, is able to pay remunerations appropriate to the monetary marginal productivity of labor. In other words, this hypothesis assumes that an efficient labor market does not exist at the initial stages of the development process. The equalization of salaries between the two sectors can only be achieved as the country graduates as developed. As the sector producing internationally tradable goods expands, the developing countries can gradually increase the salaries of the traditional sector of the economy, which includes, as we know, the internationally non-tradable services and subsistence agriculture. In the long run, as countries develop, salaries paid in the stagnant sector must be, at least, equal to the salaries paid in the progressive sector. Otherwise, workers from the stagnant sector would go to work in the progressive one, or entrepreneurs would seek to employ labor coming from the former given the fact that salaries paid in this sector are lower than the ones paid in the latter. Later on, we will see that the high salaries paid in the non-tradable sector of already developed countries are not backed by greater productivity. Those higher salaries are the result of Keynesian full employment macroeconomic policies, and on the prohibition of immigration existing in them. It is a fact that the United States, the European Union and all developed countries in general establish strong restrictions on immigration of workers from developing countries. Otherwise, if such immigration were allowed, salaries in rich countries, particularly those of the service sector and those of the activities of less technological complexity, would drop considerably.

7. The difference in productivity growth and its impact on salaries

As we have said before, the productivity growth in the tradable sector is overwhelming and, as a consequence, it has an evident connection with the growth in the salaries of this sector. Such salaries must be concomitantly high. To clarify our ideas, it is convenient to put this model in algebraic terms. Thus, we have two production functions:

(1) $Y_t = at\, e^{gn}\, L_t$

(2) $Y_N = a_N\ L_N$

On the one hand, Y_t represents the production in the progressive sector and a_t is the initial coefficient of productivity. Such productivity grows in accordance with an "e^{gn}" exponential function in which "g" is the annual growth rate, "n" is the number of years and "e" is the base of natural logarithms. On the other hand, the production function of the stagnant sector is completely simple and it is composed of the output, which is "Y_N" and, at the same time, depends on the coefficient of the stagnant productivity a_N and L_N, which is the labor employed in this sector. Immediately, it follows from our premises on the initial segmentation of the labor market in developing countries and their final integration as the country develops that salaries paid in the stagnant sector must grow at a higher rate than the rate at which the salaries paid in the progressive sector grow. Only in this way, both the salaries paid in the stagnant sector and in the progressive one could be equal at the end of the development process. It is clear then that salaries in the progressive sector must grow at the same rate as their productivity does and, paradoxically, salaries paid in the stangnant sector benefit with two unexpected gains: these salaries must grow at the same rate "g" as the productivity growth in the progressive sector, plus a rate "h" in order to make the *catching up*. In algebraic terms:

(3) $W_t = W\ e^{gn}$, in the progressive sector

(4) $W_N = 0{,}25\ W\ e^{(g+h)n}$, in the traditional sector

In these equations W_N is the salary paid in the stagnant sector, W_t is the salary paid in the progressive sector and W is the initial salary paid in the progressive tradable sector. This implies that initially the salaries paid by the stagnant sector are about one fourth of the ones paid by the progressive sector. It also implies that salaries paid in the non-tradable sector are related to the ones paid in the tradable sector by expression (5):

(5) $W_N = 0{,}25\ e^{hn}\ W_t$

And also that:

(6) $\frac{W_N}{W_t} = 0{,}25\ e^{hn}$

Equations (3) and (4) assume that if in the initial stages of the development, salaries paid in the tradable sector are approximately four times higher than

salaries paid in the non-tradable sector, then after some 70 years (if "n" equals 70) of growing, for instance, at a rate "h" of a 2% higher than the growth rate "g" corresponding to the tradable sector, salaries paid in the non-tradable sector will reach the level of salaries paid in the tradable sector, and even the former may well be higher than the latter. This is what is happening in the United States and Japan, for example. In developed countries, the United States for instance, the salary earned by a female employee in a store of high-quality clothes, such as "Sachs" or "Lord and Taylor", may be equal or superior to the salary of an employee working in an automobile factory in Detroit. And the salary earned by an official in an investment bank, for example, may be 10 times superior to the salary earned by the employee working in Detroit.

8. The real exchange rate as one strategic variable for the *take off*

In the developing countries, the demand for labor in the manufacturing industrial sector, as well as in commercial agriculture, may be high if the real exchange rate is depreciated in real terms. Such real exchange rate furnishes an outlet for the production of these sectors given the fact that, otherwise, it would be difficult to sell a large production in a small internal market. There are many developing countries that, in the post war era were able to grow on the basis of a depreciated real exchange rate. There exists plenty of evidence in this regard.[4] In one of the main studies on the subject, Anne Krueger says the following concerning a leading case, South Korea:

> *"While it seems to be very important that exporters be assured of the commitment of their government to an export-promotion strategy, that commitment can grow from the very success of the export-promotion efforts and the popular consensus that then emerges in its support. In a sense it may well be that the success of the export-promotion strategy, itself, strengthens the government while simultaneously generating support at all levels for continuing the strategy."*[5]

In the developing countires, the abundant supply of labor determines extremely low salaries. However, this can be partially eased through a sharp rise in demand for labor stemming from a long-term economic policy of a depreciated local currency. If a deep State reform to do away with the typical clientelist systems of poor countries were added to the condition previously mentioned, both conditions together, a depreciated exchange rate in real terms and a deep State reform based on merit, will lead to a *take off* [6] of the economy resulting in a gradual but steady increase in real salaries.

9. But the depreciated real exchange rate becomes unsustainable for rich countries

Developing countries can produce and sell abroad their manufacturing industrial production, as well as their agricultural production, when their real exchange rate

is depreciated. To put it in different words, they can sell only when international markets are opened for the country. However, as we will see later, when the country reaches the status of "developed", it would be impossible to maintain the depreciated real exchange rate in the long run; developed nations necessarily tend to appreciate their real exchange rate. Their currencies tend to revaluation. These countries could keep the pace of their exports development thanks to the extraordinary level of productivity of their manufacturing industry and the resulting reduction in their production costs. But it is impossible to sell such a large industrial production only in the world market. Therefore, the necessity of developed countries to sell a big portion of their production surplus in their internal market arises. This precisely requires an increase in worker salaries in the non-tradable sector notwithstanding their low marginal productivity. But how it would be possible to maintain high salaries for non productive service workers if it is not by restricting the supply of labor through immigration policies?

10. The Ricardian rent for labor in rich countries

In short, labor in developed countries, especially in the sector producing non-tradables, enjoys a substantial demand encouraged by the Keynesian macroeconomic policies, on the one hand, and a strong restiction of supply created by the prohibition of immigration, on the other hand. And all this is additionally reinforced by the vertical fall in the local population growth rate. The situation resembles the case of a piece of real property located in the downtown of a big city, which has much higher value than another one located in the suburbs simply because of the fact that the supply of real property in the downtown is scarce. This situation allows the owner of such property to charge a much higher rent than the one necessary to make the construction of the building profitable. In this way, a truly Ricardian rent is created. But, in fact, such a rent should not be necessary to induce the supply of labor, which only needs the salary level defined by Marx.[7]

11. The necessity of a currency appreciation at the final stages of the growth process

As we have said before, in the long run, the real exhange rate must fall as a country becomes a developed one. This fall ocurrs due to the fact that the enormous production of tradable goods with economies of scale and technological progress reduces production costs and allows a considerable reduction in the prices in the production of tradables, which induces a fall in the high real exchange rate. The fall in costs is partially counteracted by the increasing real salaries in the tradable sector and, additionally, by a greater rise in salaries in the non-tradable sector, as we have said before. This can be mathematically demonstrated: If P_t is the product price in the progressive sector and P_N is the product price in the stagnant sector, we necessarily arrive to our first conclusion: paradoxically, product prices in the stagnant sector must rise at an annual rate of "$g+h$" while product prices in the progressive sector must be constant because:

$$(7)\ P_N = \frac{(W_N L_N)}{Y_N} = \frac{\frac{W}{4}\ e^{(g+h)n}\ L_N}{a_N\ L_N} = \frac{W\, e^{(g+h)n}}{4\ a_N}$$

$$(8)\ P_t = \frac{W_t\ L_t}{Y_t} = \frac{W\, e^{gn}\ L_t}{a_t\ e^{gn}\ L_t} = \frac{W}{a_t}$$

From (7) and (8) we can also deduce that the ratio of prices of both sectors: the progressive over the stagnant, which is the real exchange rate, must decrease at the rate "*g+h*":

$$(9)\ \frac{P_t}{P_N} = \frac{aN}{0{,}25\ \ a_t\ \ e^{(g+h)n}}$$

This last expression representing the real exchange rate with an exponentially growing denominator demonstrates that the economic growth in the long run is necessarily linked to a fall in the real exchange rate, which confirms the first conclusion of this study. In other words, the real exchange rate as an element promoting and boosting demand must fall while the country reaches higher stages of economic growth. A typical case is Japan, a country that at the beginning of its development process in the postwar, back in 1948, started with an exchange rate of 366 yens per dollar and that nowadays can hardly keep the exchange rate of 100 yens per dollar. All countries, as they develop, are subject to this structural and inexorable law dealing with the appreciation of the exchange rate at the final stages of the development process.

12. Structural inflation during the growth process

We have previously demonstrated how salaries paid in the non-tradable sector of the economy must grow at a high rate in order to equal the salaries paid in the tradable sector, or even be higher than them. This is a factor leading to a certain structural inflation. In fact, it implies that the deflator of the whole economy must grow at a rate equal to the weighed average rise in the prices of both types of goods and services: tradables and non-tradables. As the progressive sector suffers no inflation given the sharp increase in its productivity, inflation will exclusively result from the influence of the stagnant sector. This situation gives rise to a limited structural inflation on the supply side.[8] This is the second conclusion of our model.

13. In the end, almost all of the labor force will belong to the non-tradable sector

Now, we apply our fourth hypothesis, the ratio of demand of tradables to non-tradables is equal to a constant "C". The rationale of this ratio may be illustrated with a simple example: if a rich citizen of a given country owns a luxurious

mansion, which is an internationally non-tradable good, he would like to have a car of similar luxury, for example: a Mercedes Benz or a BMW which are tradable goods. In other words, for high income levels, the demand for tradable goods and the demand for non-tradable goods grows in parallel. The income elasticity of the demand for tradables will be close to 1, as that of non-tradables. This assertion is cristallized in the equation number (10) of our model:

$$(10)\quad \frac{Y_t}{Y_N} = C = \frac{a_t\ e^{gn}\ L_t}{a_N\ L_N}$$

The simple observation of the previous quotient indicates that given the fact that the coefficient of productivity of the progressive sector grows at a constant annual rate "g", it is clear that the quantity of labor employed in the progressive sector must decrease in order to keep the quotient "C" constant. This is our third conclusion: the quantity of labor employed in the progressive sector must decrease, and the quantity of labor employed in the stagnant sector must increase. Paradoxically, then, from a social point of view, the non-tradable sectors have an important function: to employ the increasing quantity of workers emigrating from the most efficient sector. It is worth mentioning in this regard that the premise of the constant "C" is a symplifying hypothesis. In fact, at the beginning of the development process, the demand for industrial goods seems to grow more rapidly than the demand for non-tradables and only at the end the proportion between both demands evolves towards the constant "C." It is clear, however, that a demand for tradables growing at a higher rate at the beginning of the development process complicates the algebra in an unnecesary manner, but does not alter the conclusions of our work.

14. The final stagnation

The fourth hypothesis on the constant proportion by which the public demands goods and services from the progressive and the stangnant activities, allow us to reach the fourth conclusion: rich countries will stagnate. In fact if we take the total production of the two sectors into consideration, i. e. the gross national product in real terms (GNP), and furthermore we call the total labor force "L":

$$(11)\quad L = L_t + L_N$$

$$(12)\quad PNB = Y_N + Y_t = \frac{a_t\ e^{gn}\ Lt}{C} + a_t\ e^{gn}\ L_t$$

But, in turn, the labor force of the pregressive sector L_t, declines keeping with the formula mentioned below, which can be deducted from that of (10) and (11).

$$(13)\ L_t = \frac{L\ a_N\ C}{a_N\ C + a_t\ e^{gn}}$$

But by substituting (13) into (12), emerges, in turn, that the GNP in any point in time must be equal to:

$$(14)\ PNB = \frac{L\ a_t\ a_N\ (1+C)}{a_t + a_N \frac{C}{e^{gn}}}$$

It can be deduced from the last equation that as time goes by and "n" tends to infinity, the GNP tends to a constant equal to:

$$(15)\ PNB = L\ a_N\ (1+C)$$

In other words, the GNP would stagnate in the final stages of the development process given the fact that in the progressive sector there would be few laborers (but with an extraordinary productivity), and, on the contrary, the stagnant sector would almost keep almost the totality of the labor force with high salaries but a productivity equal to the inital one "a_N." Thus, the fourth conclusion consists in the following: the growth rate of the GNP per capita in our two-sector model converges to zero. It is clear then that this two-sector model has a long-term equilibrium, its own "steady state."[9] It is obvious that, in reality, the service sector has a positive growth rate in its productivity, although a much lower than the one of the tradable sector. Given the fact that ignoring such a rate does not affect the essence our reasoning, we decide to keep it aside for simplicity. In short, mathematics reveal us four paradoxes of the modern economic growth: the first consists in the fact that the real exchange rate must necessarily move against the progressive tradable sector; the second indicates that there must exist a certain degree of structural inflation on the supply side originated in a rise in the prices of non-tradables; the third indicates that the quantity of labor employed by the tradable sector must decrease to a level close to zero; and the last and fourth one implies that the growth rate of the GNP per capita must finally decrease towards zero too.

15. The real exchange rate: beginning as an expansive force and ending as a recessive one

From the concepts previously developed, it appears that the real exchange rate initially operates as a triggering factor for long term economic growth, as the other condition for the take off takes place. This second condition consists in the fact that the State must be organized on the basis of career employees promoted in accordance with their merit, knowledge, and work performance. In other words, the anti-clientelist State is essential. Once this condition is fulfilled, and after thirty

or forty years of a depreciated real exchange rate, economic growth and economic efficiency will mathematically lead to an appreciated exchange rate. To put it differently, during the first thirty or forty years of the growth process, the level of the exchange rate constitutes the most important expansive factor for economy. This ocurrs due to the fact that such a level is a key factor to open the external markets and enables the existence economies of scale, the contact with civilization and the possibility to imitate and copy competitors. Under this scheme, the development of the whole manufacturing industry is encouraged, including the improvement in production over and above the quality level reached by foreign competitors. As if this were not enough, the depreciated real exchange rate also favors import substitution of an array of industries providing industrial inputs that must be efficient. Otherwise, the local industry can always resort to a foreign supplier. However, at some point in time, the real exchange rate must fall inexorably due to not only the large supply of exports, and the resulting supply of foreign exchange, but also to the increasing costs arising from the constant rise in prices of services rendered by the non-tradable sectors to exporters. This is the case that we can observe in Japan nowadays, and even in South Korea and Taiwan, where the high costs of local production begin to limit the export drive. However, the economy is already organized to produce manufactures for export and it is not possible to stop such a production. The country's export mentality subsists. Therefore, the pressures exerted by the manufacturing sector upon the Central Bank and the Finance Ministry for the purpose of keeping a competitive exchange rate, becomes frenetic. In these cases, the authorities can only rely on one instrument to induce the currency depreciation and the competitive exchange rate: the reduction in interest rates.

16. The inverse relationship between the exchange rate and the interest rate

In a given country, a high interest rate is accompanied by an appreciated exchange rate, and to a low interest rate belongs, a depreciated exchange rate. A depreciated real exchange rate generates a possitive current account in the balance of payments and, thus, a negative capital account. On the contrary, a high local interest rate generates a positive capital account in the balance of payments. That is to say that capital comes in, the country gets into debt or must sell assets to foreigners in compensation for a negative current account. The aforementioned considerations simply reflect an inexorable law of the economy, which is called the "covered interest parity." The exchange rate and the interest rate must be considered as a whole that cannot be separated and in which there is an inverse relationship. This is an implication of the law of one price. This law applies to all internationally tradable goods and services, indicating that the prices of tradables tend to be equal across national frontiers precisely because they can be traded among nations. And money is the tradable good par excellence. As a consequence, the price for its use, that is to say the interest rate, must be equal across the national boundaries, except, mainly, for the risk of changes in the exchange rate.[10]

The covered interest parity applies not only to nominal terms, as we have seen up to now, but in real terms too. In order to arrive algebraically at the covered interest parity in real terms it is necessary to remember the formulas of the real interest rate, work out the nominal interest rate and substitute it in the formula of the covered interest parity.[11] If the exchange rate is misaligned and overvalued, and consequently there exist expectations of devaluation, in order to keep this equality, the expected and future real exchange rate (TCR2) must be higher than the spot real exchange rate (TCR1). Thus, the local real interest rate will be much higher than the international one "r*."

17. The reduction in interest rates, the liquidity trap, and the housing bubble

The previous paragraphs explain why industrial countries make efforts to keep a competitive real exchange rate by means of a reduction in the interest rates to levels close to zero. In turn, such a reduction is obtained simply by expanding the quantity of money. The Central Banks of the United States, Japan and Europe apply the theory of interest as a reward for forsaking liquidity,[12] which has been presented by Keynes in his *General Theory of Employment, Interest and Money*. As interest rates fall, people are readier to keep their funds inactive (either in their current accounts, in their deposit boxes or simply in their pockets), or, alternatively, to buy foreign exchange. This latter option depreciates the exchange rate, encourages exports, and tends to reactivate the economy keeping the dynamics of growth through exports. If the government undertakes a policy of fiscal surplus, currency depreciation will be even greater due to the fact that such policies usually entail the purchase of public bonds, debt amortization, a rise in the prices of such bonds and the subsequent fall in interest rates. Furthermore, if we consider the extraordinary productivity growth in tradables and the resulting reduction in the cost of production, it will be easy to detect a certain deflationary tendency in the economy. This trend is confirmed by the long-term structural reduction in the nominal exchange rate, in spite of the efforts of the monetary policy to reduce the interest rate and to depreciate the local currency. In this context, the long-term deflationary tendencies resulting from the productivity growth of tradables and the currency revaluation may end up prevailing. This situation gives rise to the preconditions necessary for the validity of the famous "liquidity trap", which has been anticipated by Keynes and specifically analized by John Hicks.[13] The tendency to fall into the liquidity trap is becoming usual for the advanced capitalist economies given their efforts to depreciate the currency so as to gain competitiveness through a fall in the interest rates and monetary expansions not related to fiscal deficits. These types of monetary expansion not related to fiscal deficits do not generate inflation because they make the demand for money grow as a result of the inverse relationship between the interest rate an the supply of money, which is implied in the Keynesian theory. In turn, the extremely low short-term interest rates encourage the formation of a long-term

capital market with low interest rates that feed the housing bubble. In other words, inflation ends up affecting the housing sector and the markets of financial assets but not economy in general. In this way, given the lack of stimulation from the manufacturing export sector, the advanced economies begin to be fostered by the construction sector. This sector, thus, becomes the growth engine. However, the housing bubble may end up exploding at the slightest hint of a rise in the interest rates for any reason. Moreover, the low and permanent interest rates encourage the imagination of bankers and mathematicians to develop derivatives such as the mortgage-backed securities, the credit default swaps and many other sophisticated financial instruments artificially stimulated by liquidity. Thus, as at the initial stages of economic development the manufacturing export sector operates as the leading sector, in developed economies the leading sectors would be the construction industry and the financial sector, both being stimulated by the artificially low interest rates. But such growth is inconsistent and problematic.

18. Conclusions

The different rates of productivity growth between tradables and non-tradables is a central idea implicit in Adam Smith's political economy, given the fact that, according to him, productivity growth depends on the division of labor, which depends, in turn, on the extent of the market. As the largest market is the world one, a country wanting to grow must have access to it, which is obtained through an adequate exchange rate. Moreover, our chain of reasoning rests on the old law of one price too, which was historically stated by Stanley Jevons indicating that the prices of all tradable goods tend to be equal as a result of the activities of traders that buy where prices are low, making them rise, and sell where prices are high, making them fall. In the international economy, this law applies to goods and services that are tradable across national boundaries but not to non internationally tradable goods and services. This dichotomy, in turn, makes it possible to develop the concept of "real exchange rate." In addition, as one of the main tradable goods is money itself, the law of the covered interest rate emerges as a main founding block of our chain of reasoning.

More specifically, this study rests upon the suggestive interconnection among seven different ideas. The first one assumes a two-sector model with two different rates of productivity growth in all economies of the world. On the one hand, there is the tradable sector opened to the world economy, which has a high productivity growth and whose selling prices and profitability are determined by international prices and the country's nominal exchange rate. On the other hand, there exist the domestic sector, or the one of non internationally tradables, which has a low productivity growth and whose sales prices are not related to the international ones being determined instead by the level domestic salaries. This model mathematically determines the final stagnation of the richest countries, whose growth rate must necessarily approach to zero in the end.

The second idea deals with the covered interest parity, which predicts an inverse relationship between the exchange rate and the internal interest rate. Precisely to avoid falling in the long run predicted stagnation, rich countries frequently use the law of interest parity reducing the local interest rate to zero in an effort to induce the depreciation of the exchange rate, which will enable them to expand and keep the profitability of the tradable sector, thus keeping up with the growth process.

The third idea is based on the Keynesian theory of liquidity preference as foundation for the interest rates, and on its corollary, which has been proposed by Keynes as well. Such a corollary is the inverse relationship existing between the interest rate and the demand for money: low interest rates encourage the demand for money, which, in turn, permits an increase in the supply of money without causing inflation.

The fourth idea relates to the liquidity trap, which has been suggested by Keynes and expanded by the Nobel Price John Hicks, who holds that the increase in the quantity of money through easy monetary policies may lead short-term interest rate to levels close to zero. But this, under deflationary expectations, does not necessarily boost the economy as it neither fosters investment nor depreciates the currency. Thus it is increasingly difficult for developed countries to depreciate their currencies through reductions in interest rates. This occurs as a result of the productivity levels already reached by their tradable sectors, which, as a consequence, give rise to a low cost of production, thus determining an enormous export potential.

The fifth idea simply reflects the factual situation resulting from the monetary "status quo" existing among the great economic powers: they cannot manipulate their exchange rates given the fact that in order to depreciate their currencies, the biggest economies (such as those of the United States, Europe, Japan and China) necessarily require the consent of the other powers to revaluate their currencies as well. But these other economic powers may not be able to follow such changes, turning the proposed currency depreciation difficult.

The sixth idea has been suggested by James Tobin in a previous quotation. The maintenance of low interest rates for a long term is not only inefficient as regards the allocation of human resources, but also devastating for the financial sector itself given the bubbles that this situation creates in the housing and financial sector. These bubbles may end up ruining the whole economy, as occurred in 2007 and 2008 in the developed countries, and in Japan from 1990.

The seventh idea reflects the "*statu quo*" of the present world institutional organization: the present world economic system rests upon a international

distribution of income based on the Keynesian macroeconomic policy of full employment in the rich countries on the one hand, and the restriction of immigration of workers coming from poor countries on the other hand. Moreover, this economic system is based on the trade for internationally tradable goods and services, except for those of the agricultural sector, and on the extreme freedom of movements for financial assets. However, such an institutional organization of the world economy may be partially changed in the future.

The premises implied from the seven ideas that have been previously posited allow us to reach some conclusions. The most important one consists in the following: that economic growth tends to be held back in developed countries. Another conclusion deals with the fact that if developed countries try to accelerate the growth rate by means of interest rates close to zero and the resulting artificial development of the financial and housing sectors, as it was done by the United States and Europe at the beginning of the millenium, the consequences will be the ones currently suffered as a result of the global crisis of 2008 and 2009. It is a vain alternative. Even the Japanese liquidity trap of the 90's, which persists nowadays, constitutes an anticipation of a proof of the disastrous destiny of this alternative. It is clear, then, why the lower long term growth rates in the United States, Europe and Japan in the last twenty years came to stay.

Once the previous safe conclusions have been drawn, we will turn to the field of conjectures. It is possible that industrial countries propose a change in the model as a result of their tendency to the long run secular stagnation. For example: a slight tendency to close the economies may be reasonably expected in spite of the recent emphatic declarations made by the G20 against protectionism; developed countries will return to a limited protectionism with the purpose of encouraging the development of their tradable sectors; especially of those strategic subsectors related with the national defense, electronics, software, communications and air transport. Otherwise, they would lose their hegemony. This approach may be conjectured from the slight protectionist stance taken by President Barak Obama of the United States. A moderate and disguised protectionism may stop the current strong tendency of the United States to become an economy of services. One hundred years ago, the American agriculture employed 30% of the labor force, and this 30% of workers produced enough goods to feed the remaining 70%. Today, agriculture provides 2% of the jobs, but this 2% is productive enough to feed the remaining 98%. In the manufacturing industry, the panorama is similar though less dramatic. Fifty years ago, the American manufacturing industry generated 35% of the jobs in the country. Nowadays, even though industry has a larger productivity, it generates only 10% of the jobs. The situation previously mentioned arises as a consequence of the extraordinary productivity growth per worker. As a result, we insist, an American limited return to industrialization, import substitution, and autarky can be conjectured. The same applies to the European

Union. The reasoning being in the national subconscious would be as follows: if we cannot grow, it is better that no one can grow. In this way, it would be possible to keep the *status quo* in the game of world power.

The reconsideration of free trade policies by the industrial countries may have, in turn, a great impact on the response strategy of the big countries that have recently played the card of manufacturing exports as a growth strategy, such is the case of China and Japan. The future and gradual turning of China towards its internal market is highly probably given the fact that this country has a surplus in the current account of its balance of payment of 400 billion dollars per year. This surplus predicts that sooner or later China will have to revaluate its currency and redirect, at least partially, its development towards the internal market. The monetary reserves of China reaches 2 trillion dollars and are mostly invested in treasury bills of the US government, which make Chinese people be unwillingly dependent on the U.S. For similar reasons, it may be conjectured that all big countries (not only China, but also Russia, India, Indo-China, Brasil and other countries with more than 150 million inhabitants) will be forced to redirect their growth strategy towards their internal markets and revaluate their currencies. This strategy is not extremely bad for them given the fact that the large size of their internal markets allows for economies of scale, even though this reallocation of resources implies a fall in their growth rates and a greater inefficiency. Incidentally, Chinese leaders are presently so worried about the coming world protectionism that in the speeches and lectures made in the West of their Minister of Foreign Affairs, he permanently repeats that he carries in his suitcase the "*The Theory of Moral Sentiments*" of Adam Smith.

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[1] Baumol, W. (1967) Macroeconomics and unbalanced growth. The anatomy of the urban crisis, in *Selected writings of William Baumol*, New York University Press (1976), 45. See also: Balasa, B. (1964) The Purchasing Power Parity Doctrine: a Reappraisal, *Journal of Political Economy*, 72, 584-96 and Samuelson, P. Theoretical Notes on Trade Problems, *Review of Economics and Statistics*, 23.

[2] Smith, A. (1776) *An Inquiry into the Nature And Causes of the Wealth of Nations*, available at http://www.adamsmith.org/smith/won-b1-c1.htm

[3] Baumol W., op. cit.

[4] Many authors admit nowadays that the real exchange rate is key to the economic development. See for example: Rodrik, D., *The Real Exchange Rate and Economic Growth*, available at www.brookings.edu./economics/bpea.aspx, and the vast bibliography quoted in such site. I have been holding this premise independently since 1980 in the Revista De Integración Latinoamericana, INTAL and in many books and articles, for example: Conesa, E. (1994) *Los Secretos del Desarrollo*, Planeta; Conesa, E. (1996) *Desempleo, Precios Relativos y Crecimiento Económico*, Depalma; and especially Conesa, E. (1998) *Tipo de cambio y salarios reales en el crecimiento: el caso argentino frente a la experiencia mundial*, Ciclos 16, year VIII, vol. VIII, no. 16, 2nd. semester 1998. The same argument was presented in Conesa E. (2000) *Qué pasa en la economía argentina*, Ediciones Macchi, 161-97 and in the several editions of my book: Conesa E. (2002) *Macroeconomía y Política Macroeconómica*, Ediciones Macchi. See also: Conesa E. (2008) *Macroeconomía y Política Macroeconómica*, Editorial La Ley, chapters 14, 15, 16 and 17.

[5] Krueger, A. (1978) *Liberatization, Attempts and Consequences,* Ballinger Publishing Co., Cambridge, Massachusets, EEUU.

[6] Rostow, W. (1956) The take off into self sustained growth, *The Economic Journal*. This author considers the industrialization process to be the main factor causing the *take off*. We consider that the efficient industrialization must have an export outlet. This is possible with a depreciated currency. We further consider that a very important second condition must exist: a State reform based on the merit and career employees. The elimination of the political clientelism in the State organization is essential.

[7] Marx, K. *Capital*, available at http://www.marxists.org/archive/marx/works/1867-c1/ch06.htm

[8] Professor Julio H.G. Olivera, who is an specialist in structural inflation, expressed to me that my model is also of the structural kind, but on the supply side. See Olivera J.H.G. (1964) On structural inflation and Latin American structuralism, OEP.

[9] This model has been subject to extensive empirical tests since 2000, and even before this date. See for example: Conesa E. (2000) *Qué pasa en la economía argentina*, Ediciones Macchi. See also: Conesa E. (2008) *Macroeconomía y Política Macroeconómica*, Editorial La Ley. These books contain many econometric tests of the model. For example, one of them for the period 1965-1990 with the following results:
$\Delta LPPP = 1.956 + 0.679 LP_T/P_N - 0.005 L\pi + 0.702 L\mu + 0.488 LI/GNP + 0.062 L(N+G+\partial) + 0401 LH - 0.519 LPPP65$ with an adjusted R2 of 0.715 and values "t" of Student of 2.1, 4.6, -1.5, 5.1, 4.8, 0.2, 4.7, y -6.3 respectively. $\Delta LPPP$ is the difference in the logarithm of the GNP per capita PPP between the years 1990 and 1965 for every country of the 74 which are included in the sample (every L represents logarithms); LP_T/P_N is the real exchange of each country; $L\pi$ is the inflation rate of them; $L\mu$ is the factor $\frac{W_N}{W_t} = 0{,}25\, e^{hn}$ previously explained for such countries; *LI/PNB* is the investment rate in connection with the GNP; $L(N+G+\partial)$ is the growth rate in the standardized labor force; LH is the human capital per capita and LPPP65 is the GNP per capita of each country for the year 1965. It may be noted the high significance of the real exhange and the factor μ, as well as the GNP per capita PPP of the inicial year, i. e. 1965. This confirms the empirical validity of our theoretical model.

[10] The equation of the covered interest parity can be written in algebraic terms as dependant of one plus the foreign interest rate multiplied by one plus the depreciation rate of currency: *1+i=(1+i*) (1+(E2-E1)/E1).*

[11] If the real interest rate "r" is: *1+r =(1+i) /(1+π)* where π is the inflation rate, or also *1+r =(1+i)*IPC1/IPC2* where IPC1 is the level of prices of the current period and IPC2 is the expected level of prices in the future. It is clear that IPC2/IPC1 equals one plus the expected inflation rate, 1+π. The latter formula is the one that is replaced in the covered interest parity. Furthermore, taking into consideration that the real exchange rate is *TCR1= E1(IPC1*/IPC1),* the result is: *(1+r)=TCR2/TCR1 (1+r*).* In the previous formulas TCR1 is the current real exchange rate and TCR2 is the expected future real exchange rate. The asterisk refers to the foreign level of prices (IPC*) and to the foreign real interest rate (r*).

[12] Keynes, John Maynard in his book *The General Theory of Employment, Interest and Money*, 1936, Harcourt, 1964, page 167, says: "The interest rate is not the price that balances the demand for resources to invest with the promptness to refrain from consuming in the current times. Is the price that balances the desire for wealth in the form of cash with the available amount of cash."

[13] Hicks, John R. *Mr. Keynes and the Classics, a Suggested Interpretation,* Econometrica, April 1937.