The Exchange Rates determination in the teachings of the Austrian School of Economics

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1 Introduction

In order to gain scientific significance, any economic theory shall be consistent with the body of laws that compose the general economic theory. A new contribution may represent an extension of an existing general law, may refute an established one by logical contradicting its conclusions or may represent a specific application of a set of theoretical assertions defined on a more general basis. In any case it is not conceivable to think of an economic claim that does not fit into the general theory. If the former contradicts the latter it is evident that either one of the two must be incorrect[1] or it is necessary to find a justification for their mutual survival.

The previous consideration already contains the seeds for setting off a methodological debate over a subject that has not even be introduced yet. Hence a clarification is required. The sphere of social sciences is affected by an epistemological disease, that is, by an irremediable disagreement among different schools of thought over the correct method to use in order to treat scientific

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[1] Murray Rothbard, *America's Great Depression*, 2000, The Ludwig von Mises Institute

knowledge. The quarrel springs from the heights of the philosophical thought, and floods in every field of the social sciences, Economics included. Therefore, we shall not be surprised if the simple claim that to refute a law it is necessary to find its logical flaws do not agree with the position of those econometrists and applied economists to whom it is sufficient the empirical observation to bulldoze out a theoretical law. Nowadays, Economics has become a science composed by a variety of conflicting theoretical gardens, each one concentrated both in developing further its body of knowledge and, at the same time, in fighting the competing schools. The problem of the methodological approach is the most culpable, even if not the only one, of this disintegration. Despite the common proliferation of economics textbooks for students, the result is the absence of a *corpus* of laws that can be regarded by the whole academia as the general economic theory[2].

The problems that arise from the theoretical analysis of the exchange rate determination belong to field of the theory of international trade. This field of knowledge can be parted into the pure theory of international trade and the monetary theory of international trade, with the former treating the "real" factors that promote an international exchange and the latter discussing the phenomena that take place when the monetary factor is introduced. For the reason we have explained, the leaves that compose this straightforward taxonomy belongs all to the same root, the general economic theory, but the absence of a unique version of such theory confines the conclusion that one may obtain in terms of international economics to the audience that accept the theoretical ground of departure. Consequently, it should be clarified that this paper is erected over the general economic theory of the Austrian School of Economics and, when it is possible, will underline the similarities or the differences with the mainstream or other schools of economic thought.

In terms of International Trade Theory, the Austrian School produced its main contributions in an unsystematic way. Indeed, it does not exist a systematic treatment of the subject that is accepted by the modern school[3]. For this reason it makes sense to compile a collection of the isolated contributions of the Austrians on the subject of the exchange rate determination, which represents the scope of the present work.

The doctrines that seek to preserve the purchasing power stability, prices stability and exchange rate stability by means that are not in line with sound money policies have been extensively discussed and criticized by Austrians. Albeit they represent a very interesting subject, they are not in the scope of this work, and will not be mentioned unless they reveal to be useful for our investigation.

2 Purchasing Power of Money and monetary equilibrium

2.1 Micro foundation of international trade analysis

Austrian analysis has a microeconomic foundation. Appling the principle of methodological individualism[4], the Austrians derive the laws of economics focusing on economic behavior of individuals or firms and not on the movements of aggregates of individuals, or collectives. It is not a task of this work to review the sociological and epistemological reasons in favor of this

[2] What today is proposed by the mainstream in the textbooks of economics is not a generally accepted set of theoretical tools that compose a coherent body of knowledge, such as it happens for the physical sciences. To the contrary, it is an aggregation of the most accepted theories, often in conflict between each other, which are presented to the student in order to give him the instruments to orientate his economics education.

[3] The headlights in this field are the works of Mises, Hayek, and Haberler, whose most important contributions are mentioned in the bibliography. An interesting article by Prof. Joseph Salerno (1994) titled "International Monetary Theory", together with the precious suggestions by Prof. Jesus Huerta de Soto, Prof. Guido Hülsmann and Prof. Roger Garrison, served as the basis for the selection of the literature that has been reviewed for this paper (see the bibliography).

[4] Haberler, 1950, p.7

methodological approach[5]. Suffice to say that all the members of the school stick to it with no exceptions and this leads to very interesting implications in the field of macroeconomics and monetary theory. For example, in the present work, this methodology manifest itself in Mises analysis of the purchasing power of money, in his definition of the demand for money, and in Hayek's investigation of the workings of an international monetary system in the case of an homogeneous international money.

2.2 The objective exchange value of money

The concept of the objective exchange value[6], popularly called 'purchasing power', allows to understand the essential difference between money and the others economic goods. The subjective valuation of the individual is the basis for the determination of the economic value of money as of any other economic good. Every economic good has both a use-value and an exchange-value. In the case of money, its subjective use-value and subjective exchange-value coincide, since money is useful only as medium of exchange. Moreover, while the utility of an economic good is determined both by its objective use-value and the value scale of the individual[7], the utility of money (that is, its subjective value as mean of exchange) depends only on its objective exchange-value.

The 'objective exchange' value of money is defined as the possibility to obtain a certain quantity of other economic goods in exchange[8]; the price of money is this same quantity (for example, we could speak of the commodity-price of money). This is not the place to examine further the implications of this concept (such us, the apparent circular reasoning implied in the previous definition or the formation of the purchasing power of money), since they have been illustrated with completeness by Mises in the exposition of his monetary theory[9].

2.3 Monetary equilibrium

The monetary equilibrium that the market is continuing driving toward can be described as one in which the purchasing power of money is everywhere absolutely equal[10]. Mises examined geographical differences in the purchasing power of money[11] by pointing out that the same physical

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[5] To resume in a very brief and incomplete way, methodological individualism had been ascribed as a basic principle by the founder of the school, Carl Menger. Giving a systematic epistemological foundation to the school, Ludwig von Mises was probably the one that best described the principle and the dangerous errors generated by the scientist that neglects it. From the epistemological point of view it is easy to demonstrate that any type of collective (a family, an association, a chamber of commerce, a political party, the state, etc.) does not exist without the presence of the individual and its manifestations are the outcome of the complex interaction of individual actions (Mises, 1963, The Principle of Methodological Individualism, p.41). From the economical point of view, Mises articulated the traps of the macroeconomics approach, which focuses upon an arbitrarily selected segment of the economy (for example, upon one nation). This macroeconomic aggregate is constituted by groups of individuals acting in concert, but today's macroeconomics proceeds as if all these individuals actions were in fact the outcome of the mutual operation of one macroeconomic magnitude upon another such magnitude (Mises, 2002b, The approach to Macroeconomics). For a justification of how can be conceived an Austrian Macroeconomics without falling in these ingenuities, the most advanced contribution comes Professor Roger Garrison's *Time & Money*.

[6] Mises introduced this concept in one of the most fascinating and important chapters ever written for Austrian Economics (1953, Ch. I, Part II, p.97). This chapter represents the foundation of his theory of the value of money.

[7] Mises calls the former 'external fact' and the latter 'internal facts'. Ibid. Here we see how Mises did not develop yet a comprehensive subjective stance in his economic analysis, since later on (in the Human Action) we find that even the external factors are determined by subjective valuation only. More specifically, an economic good is a mean for the economic agent as long as he subjectively think so; in other words, its use-value is not determined by objective factors but by the subjective believe that a good is useful in order to attain the selected goal.

[8] We can also affirm that the use-value of money is the anticipated use-value of the goods we intend to buy with it.

[9] See the entire chapter II, part II (The Determinants of the Objective Exchange-Value, or Purchasing Power, of Money) in Mises, 1953.

[10] Salerno, 1984, p.251.

[11] Mises, 1953, Ch. III, Part II, p. 170-179.

good does not represent the same economic good in different locations. In fact, two identical goods do not belong to the same class if they are not ready for consumption in the same place, because transport and distribution costs affect the their final price[12].

This argument demonstrates why it is unconceivable to state that interspatial discrepancies in the purchasing power of money are demonstrated by the observation of price differences of the same goods. But we can take a step further. The transport cost of money is virtually zero[13], therefore if we assume as nil the cost of moving money, and if we remember that the individual's value scale does not intervene in the determination of the subjective exchange-value of money, we obtain that the purchasing power of money should be the same all over the world. In the words of Mises: "the purchasing power of money shows a tendency to come to the same level throughout the world, […] the alleged differences in it are almost entirely explicable by differences in the quality of the commodities offered and demanded, so that there is only a small and almost negligible remainder left over, that is due to differences in the quality of the offered and demanded money"[14]. Salerno adds that this renders money's location a matter of indifference to economic agents, therefore money represents a perfectly fungible commodity, subject to the operation of the Law of One Price.

2.4 The general price level and national price indexes

The idea of measuring the purchasing power of money arises from the plan of controlling and eventually stabilizing its value, which today is considered the main target of the monetary policy. Mises criticized the feasibility of such measurement on the basis of two elements[15]. First, the concept of the price level is misleading because it does not belong to the real economic activity. Second, the usage of index numbers techniques for measuring such price level is unscientific, therefore should not be used in the construction of an economic theory.

The concept of the price level is an imaginary construction that assumes completely stationary exchange ratios between commodities other than money. With relative prices frozen, it is easiest to imagine a uniform rise of fall of the price of all commodities, that is, of the purchasing power of money. Furthermore, this abstraction allows to distinguish whether changes in exchange relationships between money and the other commodities arise from the "money side" or the "commodity side"[16]. Nevertheless, it is easy to recognize that this fictional representation does not coincides with the circumstances of the real market process.

The idea of measuring the purchasing power by observing the price evolution of an arbitrarily selected basket of commodities stems, so far as the theory of the index numbers goes, from the consideration that the value of money can be seen as the commodity-price of money. Relative prices changes, that is, commodity-side price changes, cancel each other out in a

[12] Mises lost for a moment his subjectivist stance, when he claimed that: "the money-price of any commodity in every place […] must be the same as the price at any other place, augmented or diminished by money-cost of transport". Clearly, subjective valuations change depending on the location of the purchases. This is true considering the same can of Coke consumed in a five stars hotel versus its purchase in a supermarket; the same applies to the price of a Big Mac in two different countries. Hence, the transport cost is only one of the factors that justify the different quotation of a given product in different geographical areas. However, we cannot forget that it also enables to identify an upper limit to the final price, since if the latter rises above the import point, it will be purchased abroad, where it is cheaper, instead of home (Haberler, 1950, p.32). See below: "Internationally traded goods according to Haberler", p.8.

[13] Or in any case very low, it depends on the efficiency of the banking system in a given area in the operations related with the inter-bank clearing systems. This consideration applies to a monetary system based on a commodity money where the monetary exchanges are actually executed using money certificates and/or clearing mechanisms (either merchant or bank clearing). Clearly, if we consider the imaginary construction of an economy in which only a commodity money is considered legal tender and is physically exchanged, then transport cost would not be zero, it would correspond to the transport cost of the commodity money.

[14] Mises, 1953, p.173.

[15] Mises, 1953, p.187 and Mises, 2002a, p. 87.

[16] Also called by Mises 'cash-induced' and 'good induced' changes in the value of money.

sufficiently large and carefully selected collection of consumer goods[17]. Thus, the resulting price movements of this collection represent money-side changes, that is, purchasing power changes. However, several arbitrary decisions must be taken in order to build up an index number:

a) The index must be erected using an arithmetical means of the prices of the commodities that compose the basket. The debate over which mean should be arbitrarily selected is an old one; for our purpose it is sufficient to underline that the debate cannot be settled conclusively.
b) We cannot think to assign the same relative importance to every good in the basket. Hence it would make sense to adopt a "weighted average". But, obviously, the subjective value scale of the individual is constantly changing and so does, consequently, the relative importance that he assigns to every good. Hence, if we want to avoid the ingenuity to believe that the condition of frozen individuals' value scale applies to reality, we must conclude that the array of weight coefficients required to build the "weighted average" is both unobservable and dynamically changing. Its computation necessarily requires arbitrary assumptions.

According to Mises, in some fields the approximate calculation of price indexes is acceptable. For example, in the investigation of historical economic events or when a financial institution needs to estimate the purchasing power component of the market interest rate. For short time periods the results returned may be regarded as satisfactory, as long as we remember that they do not represent an exact picture of reality, because the germ of the arbitrary assumptions they contain.

2.5 The Quantity Theory of money

To explain the effects of a change in the money supply, the Austrian theory generally resorts to the Quantity Theory of Money[18]. Haberler reminds us that this theory can be distinguished in two varieties:

- ✍ Strict version: prices rise uniformly and in the same proportion as the increase in the quantity of money.
- ✍ Relaxed version: an increase in the quantity of money "tends" to rise the prices.

The first version coincides with John Locke's view and was used by Irvin Fisher to build his famous equation of the exchange. It is well know that the latter is rejected by the Austrians, who term it the "mechanicistic version of the Quantity Theory"[19]. The second version was the essence of the monetary theory of the Classical School and of the Monetary School. Its basic principle was refined by Richard Cantillon, who explained what exactly happens to prices if it is false that they rise uniformly and proportionally with volume of the monetary expansion. The new money is not distributed homogeneously out of a helicopter directly in the wallets of every economic agent. Instead, it enters in given interstices of the economy. At the beginning it will be at the disposal of few people, which demand for goods will consequently increase. Hence, the new money will spread initially around the circle of the first agents that receive it and spend it, causing a rise in the price of the goods they buy. The sellers of these goods, then, will turn their new cash balance excesses to the purchase of other goods, which price, again, will rise. The process develops so forth, as a radial wave flow toward the periphery, until the quantity of money spreads out along the economy accordingly with individual's demand for money and for goods. The most important point is that during this process, relative prices will change, hence there's no reason to conclude that the general price level will increase uniformly and in the same proportion as the increase in the total money

[17] It would be trivial to comment further the absolute arbitrarity of this assumption.

[18] A small branch of Austrian economists to not accept the "quantity theory". In substitution they propose a "quality theory" that, however, up to now, have not been developed in a systematic and organic way yet. The fundaments of the Austrian flavored prejudices against the quantity theory can be found in Anderson, *The Value of Money*.

[19] A brilliant critical review of Fisher's equation can be found in Huerta de Soto (1997) p.412. See also Anderson, Ibid.

supply[20]. Furthermore, at the end of the adjustment process, in the society an income redistribution will have occurred.

3 Purchasing Power Parity

In our times, the Purchasing Power Theory (PPP) represents the building block for all the economic theories that deal with the determination of the exchange rate. The nominal exchange rate is defined as the ratio between the number of units of one currency which is necessary in order to by one unit of another currency. On the other hand, the real exchange rate, one of the instruments mainly used in today's monetary policies, is determined by the purchasing power theory. In this paragraph, we will briefly analyze this theory in order to underline the differences on this subject between the Neoclassical School and the Austrian School.

The models developed by mainstream Economics employ also another type of parity: the Interest Rate Parity[21]. The economists that develop their theories using purely empirical methods, observed that the PPP does not pass successfully the empirical test[22]. They concluded that the theory is acceptable in the long run but it results inadequate in the short run. Due to the recent development of the international financial markets, they observed that the exchange rate is influenced not only by the general price level (as the PPP holds) but also by relative interest rates. Hence, a new set of parity conditions was developed around the idea that the rate of exchange can also be determined by the relation between nominal sovereign interest rates. Again, these parity conditions did not pass the test of the empirical verification and revealed to be more or less consistent with the economic statistics only in the long run[23].

Today, when a new currency is introduced, the PPP is one of the mainly used rules in order to establish its equilibrium value. As far as the object of the present work, we will see that the Austrians base their analysis on their version of the PPP but reject to rely on the Interest Rate Parity.

3.1 Cassel's Purchasing Power Parity Theory

The Purchasing Power Theory is ascribed by mainstream textbooks to Gustav Cassel. Austrians generally maintain that the first formulation was conceived by Mises[24]. Haberler, however, explains that even though Cassel introduced the term, the theory is older even than Ricardo and that its first clear formulation can be traced back at the beginning of the XIX century[25]. Whatever is the genealogy of the theory, between the Mises' and the Cassel's version there are marked differences.

The theory asserts that the relative value of different currencies (that is, the exchange rate) corresponds to the relation between the real purchasing power of each currency. The Cassel's formulation takes a seat in the stalls of those who maintain that the purchasing power of money can be measured by price level indexes, therefore the ratio between two currencies results equal to the ratio of the general price level in the two countries. This interpretation of the PPP relies on the Law

[20] This mechanism is know as "Cantillon effect", and so is called by Austrians, above all hayekians. Using this principle (even though he never mentioned Cantillon), Mises showed that money is never neutral (neither in the short nor in the long run). On this matter see Huerta de Soto (1997) p.421 and p.452. The introduction of the Euro in Europe represents an empirical application of the Austrian principle of non-neutrality of money.

[21] See for example Alonso Neira (2004), p.80

[22] See Colombo, Lossani (2003), p.147-177.

[23] Ibidem.

[24] Salerno (1984, p.253) Explains that Mises stated the principle in 1912 (Mises, 1950), four years before Cassel published the first of his many statements.

[25] In the works of John Wheatley (1802) and William Blake (1810). See Haberler, 1950, p.32, n.5. It is interesting to note that a mainstream oriented text as Colombo, Lossani (2003) points out that the theory can be traced back to the Spanish Scholastics in the XVI century.

of One Price for all economic goods[26], a posture that, as mentioned earlier, is strongly opposed by the Austrian School. The fact that the Austrian theory rejects to follow the path of price indexes in order to build up economic laws, suggests why Mises' version of the PPP is different.

3.2 Mises' Purchasing Power Parity Theory

Mises clarified the nature of an economy where two kinds of money coexist[27]. For the determination of their exchange rate, there is no theoretical difference between the case of two different kinds of money commonly used side by side within the same economic area (a parallel standard) and the case in which the money of exclusive use at home is different from the one used abroad. For the existence of international trade relations results in the consequence that the money of each of the single areas concerned is money also for all other areas connected by trade[28]. More specifically, "exchange rates must eventually be established at a height at which it makes no difference whether one uses a piece of money directly to buy a commodity, or whether one first exchanges this money for units of a foreign currency and then spends that foreign currency for the desired commodity"[29].

Mises' version of the theory is exclusively monetary. It asserts that the static (or long-run equilibrium) exchange rate is always exactly equal to the inverse of the ratio between the purchasing powers of the two currencies. To maintain purchasing power parity it is not necessary that physically identical goods available at different locations maintain equal prices in the same currency, but only that the ratio of the prices of the same good in two different currencies equals their exchange rate[30]. Obviously, this parity will be safeguarded by the arbitrage mechanism.

The purely monetary nature of Mises theory of exchange rate determination implies that real factors (including relative prices movements between imports and exports) do not intervene in its formation. If the relative price of a commodity rises, it will do it against every currency; in other words, every currency will result depreciated in terms of that specific commodity price. Hence, even thought relative price movements will bring about a redistribution of income (which eventually leads to a change in the demand for money) they won't be a general cause of departure from the equilibrium exchange rate[31].

3.3 Internationally traded goods according to Haberler

Interspatial price differences for the same physical good tend to be leveled, since they represent arbitrage opportunities. However, this is not to mean that the price of every single commodity must be the same in all places. We have already mentioned the transport cost factor and the difference in geographical subjective valuations as the two elements that justify interspatial price discrepancies. Now, in Haberler's view, we can take a step further in order determine the constrains to the pricing process of an internationally traded good.

Every commodity has an export and an import point and the distance between the two is the transport cost[32]. If the price rises above the import point, imports will increase; if it falls below the export point, the commodity will be exported. Within these two limits, the price can vary. Whenever the transport is impossible (for example, real estates) or disproportionately expensive, a good chases to be considered an 'international' good. Moreover, the nearer the cost of production is

[26] Colombo, Lossani (2003), p.115.
[27] Mises, 1953, p.179
[28] However, it is true that there are important differences between domestic and foreign money, as far as the social consequences of a change in the objective exchange value of money. See Mises, 1953, p.206.
[29] Mises, 1953, p.250.
[30] Salerno, 1984, p.254.
[31] Salerno, 1984, 255-6.
[32] Haberler, 1950, p.32.

to the export or the import point, the more likely a good has the potential to become or chase to be an international good, as a result of small changes in the cost of production[33] or in the cost of transport[34].

Before we go further, we have to point out two problems in the reasoning presented so far. First, here Haberler clearly demonstrates his marriage to the Marshallian theory of price determination (the predominant in the neoclassical arena), which is in conflict with the Austrian Theory. For both schools, prices are determined by the demand-supply relation, but while both agree that the demand is determined by individual preferences, Marshall maintained that the supply is determined by the cost of production, while the Austrians argue that is the other way around, that is, that the cost of production is determined by the final price[35]. Second, Haberler bases his analysis on the fact that only the transport cost justifies interspatial price discrepancies, while we have seen that to Austrian School these price gaps are due also to a subjective component.

The mechanism presented by Haberler allows to identify a relation between the price of international goods at home and abroad. The price in the exporting country coincides to or is lower of the export point and in the importing country it will be equal to or greater of the import point. Hence, so far as the theory goes, there is a price difference for the same good in two different countries, which is justified by the gap represented by the transport cost. Moreover, if the good have to remain traded internationally, both prices have to move together.

Moving from the micro the macro level, the step is apparently short. The transport cost would justify a gap in the aggregate price level between different countries. Hence, the exchange rate determination using this version of the PPP rests on the price level ratio between two countries, with the price levels intended as the aggregate price index of internationally tradable goods[36].

However, here Haberler encounters a difficulty: the theory does not fall as long as all goods (which participate in the aggregate of the price level) are internationally traded. But there exist also non-international domestic goods, which price level may not move accordingly to the international price level. He resolves to come out from this bottleneck by asserting that, indeed, it exist a fairly close connection between the two. Domestic prices would move in the same direction of international prices (even though the proportion of international to domestic goods is small) because the latter "include most of the important raw material, which influence considerably the price of their products"[37].

From our point of view, the assumption he makes is a very specific one and does not find place in any brand of general economic theory. For, in circumstances where the raw material's assumption does not hold, the theory would not be applicable. If we reject that there is a relation of such kind between the price level of international vs. domestic non-international goods, Haberler's version of PPP would hold in the narrower (if not unconceivable) realm of price levels for international goods. Considering that national price indexes include purely domestic goods, its applicability (even for those who accept their usage in the construction of economic laws) results very limited.

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[33] Either for a monetary reason (such us movements in the general price level) or for a real reason (such as a new invention).

[34] For example for the introduction or the elimination of tariffs.

[35] Austrian theory is strictly consumer-centric. In the long run, production costs (factor prices) are determined by consumption prices, which follow customers valuation. See Murray Rothbard, *Man, Economy and State* 1963, Ch. 5, par. 8. Mises affirms that "retail prices of consumption goods always participate in the movements of the prices of production goods, even if they lag behind them" and, adding a methodological flavor to the issue, that "it is impossible to prove the cost-of-production theory of the older School by invoking the innumerable assertions of business-men that 'explain' variations in prices by variations in costs of production" (Mises, 1953, p.156 and p. 169).

[36] Furthermore, Haberler affirms that "one should not say that the rise in prices is the primary phenomenon, and that the depreciation of the exchange is merely an effect of this. The two changes bear a functional relation to one another and are both effects of the same cause", that is, the increase in the quantity of money. Haberler, 1950, p.60

[37] Haberler, 1950, p.35. Here, again, we have a confirmation that he follows Marshall in price determination.

But there is a further argument that pulls down Haberler's interpretation. According to Mises, there is no reason to distinguish between internationally tradable goods and domestically produced and consumed "non-tradable" goods. All goods that are exchanged in the market participate to the formation of the purchasing power of the national currency since all goods are potential objects of trade even though many may be "immovable". For example, American real estates, when rendered sufficiently cheap by dollar depreciation, are object foreign speculation[38].

4 Balance of payments adjustments

4.1 The case of an homogeneous international money

4.1.1 The basic mechanism

Hayek describes the function and the mechanism of international movements of money examining the case of a shift in the demand for consumer goods[39]. He considers the simple case of an international homogeneous money (or purely metallic money) and supposes that an individual that previously consumed a product of country A decides to switch to the consumption of a different good of country B. The outcome will be the following:

- The decreased exports in A and the increased exports in B generate a flow of payments from A to B; that is, an adverse balance of trade for country A.
- Someone will have to account a monetary income fall in country A and the opposite will happen in B.
- The income change will spread over the two economies putting in motion forces in opposite direction which will compensate the equilibrium in the balance of payments and will stop the flow of payments. In country A the income fall will lead either to a reduction of imports from country B or to a fall in the price of some goods which will facilitate an increase of exports toward B. The opposite forces appear in country B.
- At the end of the counteracting process, the money flux from A to B will stop and the total of the transferred funds will coincide with the reduction of the quantity of money in A and the increase of it in B.
- The process will terminate not when the balance of payments between the two countries will meet a new equilibrium but when the individuals affected by the process will do it as well. This means that even if the money flux between the countries ends, the effects of the process of adjustment may have not been terminated at the individual level. Furthermore, the magnitude of the reduction in income and individual prices (and not its aggregate level) which may arise in consequence of the money transfer from A to B may reveal to be grater in B than in A.

Using this simple scenario, Hayek shows that what drives the chain of effects that springs from the originating cause of the monetary disequilibrium are the individual's decisions (in terms of cash balances, income and prices) and not the movements in national money supply, nominal GDP or price level. Moreover, these movements in individual's income and prices will not differ from the ones that happen in the case of two domestic industries or of two regions of the same country.

Much more important are the implications of this balance of payments adjustment in terms of the changes in the money supply. In the case of interregional or international money transfers such as the one described above, it does not make much sense to speak of inflation or deflation. Clearly, if we define these two phenomenons as either the change in the money supply or the price level within an arbitrarily selected territory (that is, a portion of the international setting under consideration), then the employment of these two terms makes sense. But here we are dealing with

[38] Salerno, 1984, p.253-4.

[39] Hayek (1937), 2nd Conference (p.102, sp. Ed.). The mechanisms described here are rooted on the Quantity Theory of Money and can be found also in Mises, 1953, p.249 and Mises, 2002a, p.33.

an international redistribution of money, not simply with the change in the money supply of two closed economies. More specifically, there are no reasons to think that:

a) The monetary expansion/contraction within a given geographical area will generate those relative price movements which bring about malinvestment and out in motion business cycle
b) Savings and investments will result equal within, again, an arbitrarily selected territory that represents a portion of the international economy under investigation.

4.1.2 The balance of payments and the demand for money

Mises analyzes the implication of the demand for money[40] for the balance of payments, under the assumptions of an unhampered market, free trade and absence of fiduciary media. We have already seen that "all economic goods, including money, tend to be distributed in such a way that a position of equilibrium between individuals is reached". In such a position, the total money supply (just like the total stock of other commodities) is distributed among individuals according to the intensity of their demand for it in the market. Moving from the micro to the macro level, the same applies without amendments[41]. "If the state of the balance of payments is such that movements in money would have to occur between countries, independently from the money part from the part of their inhabitants, then operations would be induced which reestablish equilibrium. Those who receive more money than they need will spend the surplus again as soon as possible, whether in production of consumption goods. On the other hand, those whose stock of money falls below the amount they need will be obliged to increase their stock of money, either by restricting purchases or by disposing of commodities in their possession"[42]. In other words, as long as the demand for money does not change, a credit or debit balance of payment can only be transitory. Thus, the cause of a permanent departure from the equilibrium toward which the market is moving, must be found not in a temporary unbalance of international movements of money, but rather in a change in the demand for money.

4.2 The case of a national money: fractional reserve banking

Hayek extends the case previously exposed by considering the existence in both countries of a fractional reserve system. The clients of a bank in country A are used to consider as money their deposits at or the notes emitted by an institution that participates to the national banking system. But when international trade is involved, the transaction has to be settled using international (or metallic) money. Therefore, in order to make an international payment, the individual has to change the domestic money for international money (that is, to redeem the fiduciary media in his possession).

In a fractional reserve system[43], the banks hold in reserves a small portion of the amount of money they emit in form of deposits or notes. These reserves allow to meet with the redemption requests they receive as result of the balance arising from intra-banking clearing and foreign operations. Usually, the financial institutions that take part to the national banking system keep their reserves at a central bank's deposit, which is therefore in the position of supervise and eventually control the aggregate reserves of the participating national banks[44]. The proportion of reserves to the volume of fiduciary medias emitted is a critical one, so that the credit structure of the country

[40] See Appendix A.
[41] Mises, 1953, p.184.
[42] Ibid.
[43] Huerta de Soto (1997) can be considered the most complete and innovative monograph on this subject.
[44] Mises examines the workings of this collective reserve fund (that he calls 'redemption fund'). Its estimation allows to calculate the maximum limit of fiduciary media emission in order to conduct securely foreign trade without the necessity of a redemption fund. However, if those who trade with foreigners find costly to convert money-substitutes (such circumstance would militate against the complete equivalence money-substitutes and money), these would circulate at a discount. In this case a redemption fund would be necessary. Mises, 1953, p.325-331.

results affected by the volume of reserves, and if the latter changes, the national credit system will expand or contract accordingly.

We are now in the position to go back to the previous case (a consumer demand shift that generates a international movement of money), enriched by the presence in each country of a distinct fractional reserve system superintended by a central bank[45]. The general opinion is that the effects produced will be the identical. However, to Hayek such a conclusion bears the view of the mechanicistic interpretation of the Quantity Theory of Money, which oversimplifies the mechanism and therefore neglects several significant repercussions.

We have seen that a demand shift for goods involved in international exchange, will render unfavorable the balance of payments for country A, because of a transfer of money toward country B. But in this case, unless the adjustment process will be very rapid, the central bank will not allow it to evolve spontaneously until a new equilibrium is reached because this could jeopardize the reserves accumulated for the redemption of fiduciary medias. This is so because if the level of the reserves begins to fall, the risk of insolvency rises; therefore, in order to maintain the proportion of liquidity to fiduciary medias emitted (whether in the form of deposits of notes), a contraction of the national credit structure will be pursued. In the same way, in country B a credit expansion will be facilitated.

In both cases, the result of the adjustment process will be a movement of a quantity of money from one country to the other. The main difference is the set of economic agents have to bear the burden of the correction. In the previous case, the adjustment process implicated only those that were engaged in the international trade affected by the demand shift. Now, instead, the credit restriction affects indiscriminately everyone that is dependent on bank credit, that is, those that in their business activity rely on bank credit for investments. In addition, consider these further implications of the fractional reserve system:

- The forces that contribute to reestablish the equilibrium (that is, that will reduce imports and increase exports) will act in the form of a reduction in domestic prices in country A.
- The intervention in the adjustment mechanism will shorten the time length of the process and will decrease the final quantity of money transferred[46].
- In the previous case there were no reasons for a rise in the interest rates in country A. In a fractional reserve system the rise of the interest rate will be inevitable, independently from underlying real conditions such the return on investments or the social saving rate. In the other words, the interest rate will rise above its natural or equilibrium rate[47]. It should be underlined that this interest rates movement: (a) is not caused by the original demand shift, but by the national banking structure, which is forced to react in this way when such class of alteration occurs; (b) represents the very measure that allows to accelerate the process that reveres the unfavorable balance of payments.
- The attained equilibrium of the balance payments will result transitory because, as has been mentioned, the people forced to contract their purchases are not the same which would be affected in the case of absence of a fractional reserve system. In other words, such equilibrium has been reached by a monetary induced alteration of the investment structure and not by changes in underlying real factors.
- It could be asserted that the credit contraction in country A and the expansion in B produces exactly the same effects of a transfer of capital from A to B[48], therefore no damages are produced to the credit structure. But not every transference of money is as a transference of capital. For, it is not guaranteed that those who receive the monetary transfer will increase their

[45] Hayek (1937), 2nd Conference (p.107, sp. Ed.).

[46] This is so, because the monetary outflow required in order to reestablish the balance of payment equilibrium is suffocated by the national credit expansion/contraction. So the process will not develop completely, as in the previous case, but only partially.

[47] Generalizing, assuming a disequilibrium initial condition, the interest rate will tend to increase.

[48] See Hayek's section on "international capital movements" (p.14) for a definition of capital movements.

investments. The matter would be different if the original cause is not a change in the demand for commodities from those produced by country A to the one produced by B, but rather is a redirection of the funds invested in the production of capital goods in country A to the ones produced in country B. This would represent an authentic capital movement and would have a "direct" effect the interest rates.

It is useful to reiterate that the problems underlined are not due to political measures or rules decided by the central bank, but rather by the very essence of a collective system of fractional reserves.

On this subject, Haberler does not recognizes the problems identified by Hayek[49]. He explains that credit expansion/contraction modifies the quantity of money in circulation, without changes in the amount legal tender. This leads to movements in the "nominal purchasing power" without transfer of gold. Hence, gold-movements no longer play a prominent part, although their mechanism do not cease to operate. Consider a world-wide clearing system and the existence of an international central bank. National central bank's gold reserves are deposited at the international bank, or are superseded by credit held there by central banks. A passive balance of trades would mean a movement of gold from one account to the other, without material transfer of gold. In any case, the mechanism of price-level, balance of trade, etc, would remain fully operative. This is what actually already happens, with central banks keeping money at foreign banks. A passive balance of payments causes a shrinkage of these accounts, causing banks to restrict credit. For small disturbances, equilibrium is in this way restored without either gold-movements or fall in the exchange rate.

4.3 The case of inconvertible paper currencies

Inconvertible paper currencies are not pegged to the value of an internationally acknowledged money such as, for example, in the gold standard[50]. Rather, their relative value fluctuates in the open market as the price of ordinary commodities does, responding to the law of Purchasing Power Parity already examined. Besides, a passive balance of payments does not result in an outflow of money, but rather in a currency depreciation[51].

4.3.1 The flaws of the balance of payments theory

In his monetary writings, Mises faces more than ones the issue of the theory of the balance of payments. This theory seeks to explain the formation of the exchange rates by the actual state of the balance of payments, rather by a currency's purchasing power[52]. If the balance of payments debit increases (either for an increase in payments due to foreigners or for a decrease in payments coming into the country), the foreign exchange must rise.

The theory makes a distinction between the decline in the currency value on the international markets and the reduction of its domestic purchasing power. In fact, as far as the theory goes, there is a weak connection between the two, if no connection at all. Mises explains that between the change in foreign exchange and the change in the monetary unit's domestic purchasing power, there is usually a time lag (shorter or longer), therefore a superficial observation could easily lead to the conclusion that the two data are independent of one another. The time lag is due to the fact that price increases (induced by a rise in the quantity of money) do not appear overnight. They evolve according to the mechanism described by the already mentioned Cantillon effect. On the other hand, foreign exchange quotations, are speculative rates of exchange, therefore the

[49] Haberler, 1950, p.51-52

[50] For a simple description of the gold standard and the mechanism of the gold points, see Haberler, 1950, p.23.

[51] TODO

[52] Mises, 2002a, p.57.

depreciation of the currency becomes apparent relatively soon in the foreign exchange market, long before the prices of other goods and services are affected. Hence, the theory easily overlooks the fact that "(a) the day-to-day ratio between supply and demand for foreign exchange determined by the balance of payments can evoke "only transitory variations" from the static rate determined by the purchasing power of the various currencies, (b) these variations must disappear promptly, and (c) these variations will vanish more quickly and more completely the less restrains are imposed on trade and the freer speculation is"[53].

According to the doctrine of the balance of payments, the maintenance of a sound currency is only possible with a "credit" balance of payments. The instruments for the refutation of this thesis are the Quantity theory and the Gresham's Law[54]. The former tells us that money cannot fly out permanently from a country in which a purely metallic currency is employed. "The outflow of a part of the gold supply brings about a contraction in the quantity of money available in the domestic market. This reduces commodity prices, promotes exports and restricts imports, until the quantity of money in the domestic economy is replenished from abroad". An undesired efflux of money can never be anything but a result of state intervention endowing money of different values with the same legal tender. When a country substitutes the metallic money with credit money or fiat money, because the over issued paper money is legally recognized as equal as the metallic money, the mechanisms of Gresham's Law[55] enters in action[56]. In this case, it is often asserted that the balance of payments determines the exchange rate. To Mises this is completely wrong. We have seen already that the static exchange rate is determined by the purchasing power parity and that the short-term deviations are due to healthy speculative movements that actually drive the forward change toward this rate[57]. Furthermore, one must not overlook the fact that foreign trade exists because prices interspatial discrepancies. If observing daily fluctuations we realize that the "momentary state of the balance of payments is decisive for supply and demand on the foreign exchange market", we should take a step further and wonder what determines the state of the balance of payments. "This must lead to the conclusion that the balance of payments is determined by the structure of prices and by the sales and purchases inspired by differences in prices"[58].

Another interesting contribution by Mises underlines that if among two counties the only international trade is realized by barter, then the balance between the two country must be even[59]. This does not changes from direct to indirect exchange: the surplus of the balance of payments which is not settled by the consignment of goods and services but via money transfer was believed to be, for a long time, a consequence of international trade. This is erroneous. International money movements are not the effect, but the cause of a favorable or unfavorable balance of trade[60].

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[53] Mises, 2002a, p.58.

[54] Mises, 2002a, p.33 and Mises, 1953, p.249.

[55] This law states: "money overvalued artificially by government will drive out of circulation artificially undervalued money". See Murray N. Rothbard, *What Has Government Done to Our Money?*, p.17. The law is often superficially enounced as: "bad money drives out good from circulation".

[56] Money does not flow out because the balance of payments is unfavorable, but rather because the state intervention have called forth the mechanism of the Gresham's Law. The disappearance of gold money follows from the fact that the state equates, in terms of legal tender, a lesser valued money with a higher valued money. Introducing quantities of inconvertible banknotes and government notes it forces monetary depreciation on these notes, while gold money retain its international value and vanishes, henceforth, from the market (disappearing abroad or going into hoarding). Mises, 2002a, p.61-62

[57] Mises, 2002a, p.35

[58] Idem.

[59] Mises, 1953, p. 180-187.

[60] The balance of payments of a country is nothing but the sum of the balance of payments of all its individual enterprises. Debit and Credit sides must always in balance, because in economic trading goods are exchanged, not given away. This equilibrium is not brought about by undertaking all export and imports first, without considering the means of payment, and then only later adjusting the balance in money. Rather, money occupies the same position in undertaking transitions as do the other commodities being exchanged. Mises, 2002a, p.60.

Precious metals are distributed among individuals (hence among nations) according to their demand for money. Hence, no individual must fear to have less money than it needs[61].

4.3.2 Hayek: international capital movements and interest rates

Hayek defines international capital movements as "the purchase or sale of rights, credits against the residents of a country to the ones of another, properties located in a country owned by people resident in another country"[62]. The reason of this definition is that it is the only one that allows to distinguish capital from non-capital movements.

The purchases and sales of foreign currency between citizens of different countries must be considered capital movements. They are settled in the form of movements in bank accounts in one country in favor of banks or individuals in another country. This is so since it is much cheaper to credit or debit the difference generated by these operations through bank account instead of sending physical money. These balances are often maintained in the form of interest bearing checking deposits.

We are now in the condition to examine the characteristics of international capital movements in the following three cases: (i) fixed exchange rates; (ii) fixed exchange rates within the context a fractional reserve system; (iii) flexible exchange rates.

(i) In the context of fixed exchange rates against an homogeneous international money, such as in the case of a pure gold standard, capital movements would follow the expected return on investments, which includes the risk premium. Apart from these investments, there could be short-term loans that occasionally would cover temporal differences between imports and exports. Clearly, if all transactions were to be liquidated in cash, this would represent a great restriction to trade: the possibility of realizing credit transactions widens the volume of trade. Independently from the form of these transactions (commercial credit between merchants or bank credit), they represent import of short-term capital. To Hayek, we should reject the idea that short-term loans are caused by a debit balance of trade. It would be more correct to affirm that the excess of loans in one direction allows for an excess of exports in that same direction. Furthermore, it would be wrong to think that these movements are determined by relative interest rates in the money markets[63]. For what drives available credit is the existence of price discrepancies. Clearly, if exports are financed, when their demand increases, the demand for loans rises too, and so do the interest rate. But this interest rates increase is not due to an increase in import of capital, but of an increase of loans to foreigners. Only the balances remaining at the end of the credit process are liquidated by net transferences of money which, having an interbanking nature, are determined by relative interest rates.

(ii) If a fixed exchange rate system is considered jointly with the workings of fractional reserve banking, we have to add the presence of nationals monetary authorities (central banks),

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[61] In a society where commodity transaction are monetary transitions, every enterprise or individual carries a cash holding for carrying out its transactions in order to pursue its own interest. Hence it is impossible for the free play of the market forces to cause drain of all money out of a city, a region or a country. In a pure gold standard, the government need not to concern about the balance of payments, it could safely leave to the market the responsibility of maintaining a sufficient quantity of gold within the country. Mises, 2002a, p.60.

[62] The definition excludes: the exchange of commodities which are delivered at the time they are paid and any net movement of gold or other international money (included unilateral money transfers) as long as they do imply the transmission of the property of money without creating rights of the residents of one country against the ones of the other. Hayek (1937), 2nd Conference (p.125, sp. ed.). This conference is the basis of this paragraph (idem, p.125-137).

[63] Mises affirms that money does not flow to the place where the rate of interest is highest, neither its true that rich nations attract money. Like every other economic good, money distribution depends on its marginal utility. To grasp this conclusion, we can suppose the imaginary construction of an unregulated market, with freedom of trade and absence of fiduciary media. In this case, all economic goods, including money, tend to get distributed in such a way that an equilibrium position is reached among individuals. Money ends up distributed accordingly to the demand expressed by individual throughout their participation in the market. The same happens moving from the micro to the macro point of view, as the sum of individuals' contributions is considered. See Mises, 1953, p.180-187.

which act upon the discount rate in order to affect short term capital movements, with the objective of safeguarding the domestic redemption fund. In this case, international capital movements result more violent and frequent. Again, it should be underlined that the problem is not caused by the existence of the central bank, but rather by the existence of currencies with different degrees of liquidity and acceptance. The existence of layers of reserves which have different degrees of liquidity makes it possible that the changes in the monetary interest rates and the short term movements of the produced funds will depend more on the liquidity position of the distinct financial institutions than on the real demand for capital for investments. Hence, short-term movements of funds are often due to changes in the demand for cash reserves rather than to modifications in the demand for investments.

(iii) Under a flexible exchange rates regime, bank accounts dedicated to the settlement of the balances arising from the purchase and sale of foreign currency assume a higher importance. Even if bank accounts in foreign currency are only one part of the volume of short-term foreign investment, they represent the major one[64]. Any change in international indebtedness manifest itself in this form. It should be pointed out that it is really difficult to frame exactly what should be defined as short-term capital movement. If we put aside long-term loans, almost all forms of international investments must be considered short-term investments, including all investments in securities.

Now, if a bank contracts obligations in different currencies, it will be necessarily to hold a reserve for each one of the them. Since gains or losses in this currency balances arise when the exchange rate fluctuates, the anticipation these variations will provoke speculative operations. Clearly, the simple suspect that a currency will depreciate represents a solid reason for moving the funds denominated in this currency to accounts in a currency that promises stability or an appreciation. Hence, expectations over exchange rates' fluctuations are a powerful source of international capital movements, which responds to very different reasons from those that work in a well-established international monetary standard.

When the exchange rate freely fluctuates within an established band that the monetary authority promises to preserve[65], capital movements will reduce the amplitude of the fluctuations, since any movement towards one of the two limits will generate the expectation of a reversal. In other words, short-term capital movements tend to moderate the pressures arising from temporary changes in the balance of payments. Conversely, when exchange rates are completely free, speculative movements tend to exacerbate (that is, to amplify) the amplitude of the fluctuations.

A different matter is whether the monetary authority is able to control such movements. The idea in support of flexible exchange rates, is that the central bank is released from the obligation of increasing domestic interest rates in order to counteract an outflow of money that can jeopardize the country's liquidity. A depreciation of the currency substitutes the mechanisms involved in the maintenance of a pegged currency. However, the effort to maintain low interest rates can only result in the indefinite perpetration of the circumstances that originated the initial capital run out and in a continuous and progressive depreciation of the exchange rate. The outflow of capital will tend to cause an increase of the country's natural (or equilibrium) interest rate. Sooner or later, this will force the central bank, if they want to avoid the eventuality of an hyper-inflation, to finally increase the interest rate[66].

4.3.3 Mises: international interest rates

[64] Indeed, compared to the big funds held in these foreign currency bank accounts, long-term investments play a very small role. Hayek, 1937, (p.127 sp.ed.)

[65] Such as in the case of the gold point or of modern target zones.

[66] Hayek examines as well the implications of the employment of capital controls. However, this argument is out of the scope of this paper. Hayek, 1937, (p.135, sp. Ed.)

On this subject it is interesting to review briefly Mises analysis[67]. In the credit market of the countries that participate to international trade, the net interest rate is determined by the natural international rate and not by the domestic one. Attempts to reduce the domestic interest rates by influencing the international movements of capital are particularly pronounced in the money market, that is, the market for short term capital investments. If the monetary authority opposes the rise of interest rates (which is believed to be negative for the collective) because of an efflux of gold due to the participation of the country to international trade, its attempt is erroneous. It does not take into account that the gold movement represents an automatic adjustment of the domestic interest rate to the world one, being the country in an international settings. If the banks lower the interest rate below the international natural value, capitalist will desire to invest abroad, and this rises the demand for foreign exchange. The fall in the exchange rate will not put in motion forces that will reestablish the relation between bank money and gold (that is, the world currency) that previously existed. Such autonomous interest policy will lead necessarily to a progressive depreciation.

In his analysis, Mises does not differ from Hayek position in relation with the effects of a low interests discount policy. In the case of the absence of a fractional reserve system, we have seen that the domestic interest rate does not depend on international money movements. The presence of such banking system promotes the abandon of the natural rate level (which otherwise would develop in harmony with the international rates). That is the reason why Hayek's analysis is focused on the evolution of the domestic natural interest rate, while Mises' one concentrates on the international one. However, we have seen that Mises clearly rejects the idea that money flows to the place where the rate of interest is highest, while Hayek leaves a door open, even if not explicitly, for short term movements of capital. In a fixed exchange rates regime (where we can assume that expectations of appreciation/depreciation are nil), we cannot negate that the interest rate that foreign bank accounts bear may represent a reason for keeping money in a currency instead of another. With flexible exchange rates, the speculative component must be added to the array of the incentives. This subject undoubtedly deserves further investigation, specifically to determine whether or not and eventually under which circumstances make sense to introduce in the Internet Rate Parity in the Austrian Theory.

4.3.4 Haberler: the discount policy

We have briefly visited the implications on the exchange rate of the existence of reserve-regulations (which lay down a definite relation between paper-money and cash-reserves), intended as an automatic brake to prevent excessive paper-money issue. In addition, the central bank can directly or indirectly influence the exchange rate via the discount policy[68]. The changes in the bank rate affect the exchange rate, because two effects:

- ✍ Directly: by causing an inflow or outflow of short-term investments. This is the most powerful effect since the central bank supplies an appreciable portion of the money-market (it may be regarded as the marginal lender). Moreover it exercises a strong psychological influence. However, the effect of this class of measure is transitory.
- ✍ Indirectly: a rise in bank rate leads to a fall in prices, since it causes a reduction of note circulation

A rise in the interest rate implies a fall in the price of all securities bearing a fixed rate of interest, since other lines of investment at same financial center became more attractive. But the consequent fall in prices induces foreigners to buy, therefore the balance of payments is affected in the same way as a fall in commodity prices. This connection (interest rate – price of fixed income

[67] Mises, 1953, p.373-377.
[68] Haberler, 1950, p.48-51.

securities) allows the central bank to enforce the discount policy, that is, to obtain the same kind of effect, through "open market" operations (buying and selling government securities).

This does not mean that there should be the same interest rate in all countries. Haberler maintains that the tendency to the equality of interest rates must be understood in the same sense as that of the commodity prices. For the role of the transport cost is here played by the risk factor[69] and it may require a considerable difference in interest rate to induce concrete capital movements. All that can be asserted is that a rise in interest rates "tends", *ceteris paribus*, to attract foreign capital and to dissuade domestic capital to flow out.

5 Conclusions

The present work was conceived with the aim of collecting the contribution of the most important Austrian economists on the subject of the exchange rate.

In the first part of this paper we reviewed briefly the Austrian theoretical instruments that allow to analyze the notion of purchasing power. We analyzed the fundamental differences with the mainstream orthodoxy and build up the micro foundation for the examination of the forces that determine the exchange rates.

In the second part we conducted an assessment of the concept of the Purchasing Power Theory underlining the gap that exist between the version widely accepted in the mainstream (Cassel) versus the formulation provided by Mises back in 1912. Furthermore, we examined Haberler's interpretation of the theory and enumerated its problems and the inconsistencies of the author in regard of the Austrian Theory. Finally, we mentioned that the PPP principle can be traced back to the Spanish Scholastics of the XVI century. This represents an interesting opportunity for further investigation in the filed of the history of economic thought

In the third part, following Hayek's analysis, we examined the international movements of money and their relations with the dynamics of the balance of payments and the rate of exchange. We followed the Nobel price in his illustration of three different cases: the case of an international homogeneous money, the case of a fractional banking system, and the case of international money movements under the different exchange rates regimes. We have seen that the Austrians rely on the PPP for the determination of the exchange rate and reject to use interest rate differentials in order to justify international money movements or in the determination of the exchange rate. This represents the most important point on this part of the work. Today's mainstream economics makes extensive use of the notion of Interest Rates Parity. A further step toward the an Austrian Theory of the exchange rate determination shall investigate the feasibility of the introduction of an Austrian formulation of this notion according the general economic theory rooted on the teachings of the Austrian School.

6 Appendix A: Mises: the demand for money

Mises builds up the analysis of the demand for money[70] starting from the individual perspective[71]. He begins criticizing those interpretations which claim that the demand for money is determined by objective factors instead of subjective ones. Then he proposes an alternative definition of the demand for money in order to approach the problem in the correct way.

[69] Here we don't agree with Haberler, since the risk factor is present in international commerce as well. We previously criticized his rigidity in the contemplation of the transport cost as the only determinant of interlocal price discrepancies. As before, the essence of Haberler position here could be saved, from an Austrian point of view, introducing a dose of subjectivity in the preferences of the economic agent.

[70] That is, the quantity of money that a person believes adequate in order to cover his personal and business needs.

[71] Mises, 1953, p.133.

The demand for money of a given community is not derived from the quantity of goods which the community has to pay for in a given period and from the velocity of circulation. To Mises, it is wrong to start the determination of the demand for money from these aggregate magnitudes, because a community is not an economic agent; only its individual members demand money to conduct economic exchanges. The demand for money of an economic community is, as trivial it may seem, the sum of the demand for money of its members. At the individual level it does not make sense to apply the formula "total volume of transactions divided by the velocity of circulation". In order to travel on the right track, we must start from the elements that influence individuals' cash balance decisions.

The definition proposed by Mises for the demand for money depends on the monetary environment under consideration:

a) Absence of fiduciary medias

The personal cash balance may be composed by a mix money and money-substitutes[72]. We can distinguish therefore two types of demand for money:

- Demand for money in a broader sense: the entire demand of an individual for money and money substitutes (determined by the will of the individual)
- Demand for money in the narrower sense: his demand for money proper (fairly independent from the individual preference, if we disregard the existence of money substitutes which bear interest, such as bank deposits)

So long as money-substitutes do not exist, the social demand (aggregate demand) and the social stock of money are merely the respective sum of the individual demands and stocks. But when money-substitutes are considered, the social demand for money in the narrower sense is no longer the sum of the individual demands for money in the narrower sense; the same applies to the social demand for money in the broader sense. This is so because a part of money-substitutes in circulation are covered by money held in redemption funds at the places where they are cashable.

b) Presence of fiduciary medias

Money-substitutes may be covered entirely or partially by the equivalent sum of money. In the first case we speak of *Money-Certificates*, in second we encounter *Fiduciary Medias*. The former change the definition of the demand for money in the broader sense. For when we calculate the demand for money and money-substitutes, to account as money proper the same amount that serves to cover money-substitutes at the bank is to double count the same quantity. Hence, definitions change in the following way:

- Demand for money in a broader sense: sum of individual demands for money proper plus fiduciary media (including the demand for coverage)
- Demand for money in the narrower sense: sum of demands for money proper plus money certificates (excluding demand for coverage)

Finally, Mises summarizes the demand for money for international trade[73]. This is made up by two components:

- Those balances that arise in the international exchange of goods and services. These have to be settled by transfers in opposite directions, therefore it is theoretically possible to have them completely eliminated by the clearing process.

The sums required as a consequence of a change in the demand for money in different countries.

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[72] Secure claims to money, payable on demand, generally tendered and accepted in place of money (Mises, 1953, p.132)
[73] Mises, 1953, p.327.

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