

Theory of Interest

In retrospect from the Theory of Economic Time

(TET)

*“The theory of interest passed from the mystical-divine sphere
to the para-scientific and to the scientific field”*

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INTEREST UP TO KARL MENGER

I believe it is adequate to approach interest theory through a historical view of the way the subject has been treated. This procedure allows us, not only to offer a didactical presentation, but also to see that the mysticism, mystery, and lack of understanding that always surrounded the subject of interest with an aura of “singularity”, were not dispelled –in my modest view- until the beginning of the twenty-first century with the Theory of Economic Time (TET), that allows us to process the subject in the framework of axioms, definitions, and laws of economics in general, with no need for ad-hoc theories to sustain a flawed theoretical development.

As an introduction to the subject and presenting the conclusions of this text, seeking to facilitate its comprehension and avoiding the need to reach the end and then return to summarize and understand its content –a very appropriate methodology suggested by Karl Popper-, I believe in the end we will be able to see that the historical development of interest theory went from a divine, mystical, ethical-moral beginning (Greeks), to the intent of removing it from the divine and mystical sphere, without abandoning the ethical and moral aspect. The intent of analyzing it within the scientific sphere, and not the divine, has been related to the very beginnings of economics as a science, i.e., with the first appearance of what was known as the classics (Adam Smith, Ricardo, etc.), and continued by those known today as the Austrian School, the Keynesians, and modern Quantity-monetarists.

The present work will consist of the demonstration of the fact that, just as the Greeks showed their incomprehension of interest considering it in the divine sphere, which cannot be grasped by human knowledge, the intent of establishing the subject within the sphere of science also showed incomprehension, proof of which is the need to present “singular” developments, foreign to the postulates or fundamental primitive terms of economic science. In other words, the former were unable to adequately explain interest as they left it in the divine sphere (a human reaction to the unknown?), and the latter pretended to introduce it in the scientific sphere with theoretical developments that TET will reveal as “unnecessary and inconsistent theoretical singularities”. That is, the incomprehension of the subject of interest was manifest first in its referral to the divine sphere, and then in its referral to science without acknowledging the foundations of science, which reflects in recurring currency financial crisis, framed according to the different schools mentioned, which TET considers as having a common basis and not presenting discrepancies as relevant as is normally construed.

No less certain is the fact that the degree of “singularity” that surrounded the subject of interest till the end of the twentieth century was similar to what we find in the historical development of currency theory –we only need to remember Hayek’s immense intellectual integrity when manifesting that we could not be satisfied with the state of currency theory, saying he *believed* he was on the right path- ; but this is another chapter, on which TET has already made important contributions, and there will be more as new developments appear that will be the basis for a book (and web-page), of which the ideas expressed here are a part.

Let us begin then with our proposed development, that is, to produce economic theory without forgetting the rich legacy of our predecessors.

Greeks: they considered economic subjects within the framework of ethics and morals, searching for what was just, which was related in turn to *natural law*, belonging to the divine

sphere, and this meant that human reason could not understand it .⁽¹⁾ Among the subjects that pertain to economics, interest possibly is the one with greater relevance in this framework, together with the price of all goods in general. In this context interest (“usury”) was seen as unjust or immoral. This was based –together with the consideration of the existence of a *fair* price in general- on the idea that time belonged to the sphere of the divine that human reason could not access, and therefore interest should not be charged.

These and other similar observations already recognized interest as something pertaining to time, and in our view contained a high degree of honesty in admitting there was no knowledge of the subject, leaving to the gods that which they could not control.

Christian middle ages: we consider it will suffice to refer to a paragraph in the excellent work *History of Economic Thought Vol I, Economic Thought Before Adam Smith* ⁽²⁾ by Murray N. Rothbard, to present the state of interest theory, not only at the time but in the historical context, until the arrival of PTTP. Rothbard says (Ludwig von Mises Institute, AUBURN, ALABAMA, Edward Elgar Publishing Ltd., 1995 edition, p. 50):

William of Auxerre... One of his innovative arguments in the anti-usury parade was that a man who charges interest on a loan is trying to 'sell time', which is properly the common property of all creatures. Since time is supposed to be common and free, William of Auxerre and later theologians could therefore use this argument to condemn as 'usury' not merely a loan but also charging a higher price for credit than for cash sales. In adding the 'free time' argument, William unwittingly touched on the later Austrian solution to the problem of pure interest on a riskless loan: the sale not of 'time', to be sure, but of 'time preference', where the creditor is selling the debtor money, a present good (a good useful now), in exchange for an IOU for the future which is a 'future good' (a good only available at some point in the future). But since everyone prefers a present good to an equivalent future good (the universal fact of time-preference), the lender will charge, and the borrower will be willing to pay, interest on a loan. Interest is, then, the price of time-preference. The failure of the scholastics to understand or arrive at the concept of time preference was to do more than anything else to discredit scholastic economics, because of its implacable hostility to and condemnation of the universal practice of 'usury'.

I believe this paragraph summarizes economic thought on interest up to the end of the twentieth century.

What Rothbard failed to understand is that neither temporal preference nor the idea of pure interest on a riskless loan, are a solution to the subject of interest. This situation was not understood until the beginning of the twenty first century with the arrival of TET, which allows us to leave behind the erratic road followed by economic thought in the twentieth century.

The Scholastics: the substantial change introduced by them was that *natural law* could be known by human reason, even if it is a divine creation. Within this transcendental change, charging interest would still be debated, but with the argument that everything referring to time was dictated by God *for all men*, which is the reason why no one can charge interest. Charging interest is therefore rejected with a different argument than Aristotle. The idea that interest is

something pertaining to time is maintained. We need not refer to the different “exceptions” that would allow interest to be charged –honorable ends, in the case of merchandise, business interruption, emergencies, etc.

Up to this point the state of things is defined by these essential points:

- a) Interest had to do with time.
- b) Money interest was “usury” insofar as there was a pretense to charge for a “sterile service”, considering money is not a merchandise, and was *only* used in exchanges, not in production.

The Salamanca School: within the scholastics, this school justifies a special paragraph considering it states that: a) time by itself justifies charging interest; b) considering money as a merchandise refutes the concept that money interest implies remunerating something sterile, and c) being a merchandise, the laws of supply and demand could be applied to money.

Here the idea that interest has to do with time is not only maintained, it is considered the essential concept. We could say it is a concrete expression of what was later called the theory of the *real interest rate*, which leads in TET to the question: is a *non* real interest rate conceivable.

The Classics: they established their theories within the framework of what I call the Fundamental Economic Accounting Equation (FEAE), that expressed in a simple mathematical expression the origin of the “*stock*” of wealth $Y = L + K + N$ (production = labor + capital + nature), equation of stock that is expressed as a “*flow*” when we use the concepts that remunerate the three factors that originate it. And so we have rent equation $y = w + g + r$ (rent or income = wages + profit + rent), which we could also say is equivalent to the expression of the composition of “*price*”, but here we are expressing things within the classical vicious circle (costs define prices but prices define costs), or within the theory of subjective value (SVT), where prices are defined by the market and the part of the different factors is identified with input theory. This economic accounting equation is transcendental, and many theoretical deviations resulted from its essential concepts being forgotten, i.e., pretending to generate theory outside its context.

We must remember the classics rejected the “mercantilist context” –in which wealth was synonymous with money, instead of wealth generating money. Thus, we see their main interest was to show the origins of wealth (of nations in Adam Smith) and its distribution (Ricardo, Marx, etc.) and this was the beginning of the systematization of economic thought within what in time would be a science (controversial category).

Interest theory was an important complication for the classics, considering the millenary question of its origins (benefits, surplus value, etc.), and they tried to answer it from within or without FEAE, a scenario that would extend to the beginning of the twenty first century with TET, which definitely produces an interest theory within said equation.

We can summarize the central aspects of the classical theory of interest, where we find this alternation of analyzing within or without FEAE. As we can see:

- 1) Interest was related to time.
- 2) Interest is the price of credit.

- 3) Credit for the classics did not differ from the concept in TET: interpersonal exchange of present economic goods for future economic goods, possibly because Paper Currency (PC) did not exist.
- 4) Interest is determined in the credit markets, outside FEAE.
- 5) A theory of money is developed, not a currency theory (because there was no PC).
- 6) As a result, the classics theorize on the *real rate of interest* of credit markets.
- 7) Interest was not defined as an economic good or a price, which means they did not comply with the economic good-price axiom.
- 8) From the preceding we deduce interest was also not considered as a retribution of any production factor, which implies that the subject of interest had not been separated from the ethical and moral questions of the Greeks, and that Marx's surplus value had a propitious breeding ground: What is remunerated with interest? What is the source of interest? Why should interest be remunerated if it has to do with time that was created by God for all human beings? Why should time be remunerated if only God can understand it and not human beings? This state of things is reflected in the question Ricardo poses: What is the reason that allows the owners of capital goods to obtain a permanent rent, alternatively called profit, interest, surplus value or gains? A question that: a) will become an eternal question on the origin of interest and later thought will only introduce terminological changes, b) it begins to relate interest to the concept of profit or benefit, and c) it starts to relate interest also with the concept of capital.
- 9) The classic theory of interest was part of OVT. Though the classics were interested in defining prices, not value, we can assume it was the underlying theory. On the other hand SVT had not appeared at the time of the classics.
- 10) In the classics the concept of "natural or real interest" was implicit, in line with the concept of "classic adjustment", where market prices and costs converge, in a trend towards the extinction of profit –an inconsistent determinism that condemns the human race, typical of classical obscurantism.
- 11) Ricardo did not postulate abstinence to generate savings (S), since for the rich it was what exceeded their needs.
- 12) Interest theory could not escape the vicious circle of classical reasoning on cost ↔ price causality, since it postulated it alternatively as the price of credit (determined outside FEAE) and as capital remuneration-profit-gains (within FEAE, though its calculation was residual of the previous retribution of land and work).
- 13) Finally, the existence of the eternal question on the origin of interest implied still having a foot within FEAE. An ambivalent situation that would remain so until the appearance of TET.

Of all the points stressed here, the one that is most relevant derives from the Ricardian question, which, though a consequence of trying to justify the distribution of wealth within the Greek ethical-moral framework, implies a more general question: *how can a factor that is not a factor be remunerated?* A situation that is directly inverse to the problem also generated by Ricardo when he pretended a zero remuneration for a production factor (in reference to land, that would be valued according to the productivity of the most marginal and unproductive plots, which would have zero rent), in other words: *how could a factor not be remunerated?* The classical vicious circle appeared from another angle that only TET would see.

Summarizing, Ricardo formulated a question that would present interest theory in the same ethical and moral terrain as the Greeks, but with a pretension of scientific thought, reflected in FEAE.

Menger, founder of the Austrian school, along with stipulating SVT (simultaneously, though with differences compared to Jevons and Walras) –theory that would eliminate the classical vicious circle of cost ↔ price causality, established the foundations for the concepts that would be the basis of currency, interest, and capital theory of the Austrian School (AS) of economics. These were:

- 1) Interest is the price of credit
- 2) Economic goods differ in that they can be of an inferior order (consumer goods or those that satisfy basic needs) and of a superior order (capital goods or means of production of inferior order goods).
- 3) The relevance of his theory is that it postulates that the prices of capital goods (superior order) derive from the prices of consumer goods (inferior order) that they help produce. A concept that will be included in the unified price theory in TET.
- 4) Menger also develops a money theory, not based on currency theory (considering how TET separates these two concepts). What is relevant in Menger's money theory is *his emphasis that it has its origins in the market*, not in his historical narration of the process by which the market selected the economic good that will be used as money. Forgetting this fact would originate unfortunate suggestions that pretended to produce theory based on this particular historical narration. TET will extend the essence of Menger's money theory –its origin in the market- to currency, which can also be credit. Thus TET establishes that the modern state and its banking system do not generate currency, its origin is always the market.

Menger's ideas lead to the fact that capitalist production requires time, an aspect that was not observed in Walras' theoretical development that includes a system of equations oriented towards economic-mathematical balances, without considering time.

THE BÖHM-BAWERK THEORY OF INTEREST

As a consequence of the fact that Böhm-Bawerk's (BB) thought would have a very strong influence (unfortunate and greater than it deserved) to the point of becoming the framework of reference for all thought in the twentieth century –Wicksell included- it is necessary to understand his ideas on the theory of interest, which will lead us “unnecessarily” to explore other areas, anticipating “complications” that would not disappear until the advent of the Theory of Economic Time (TET) at the beginning of the twenty first century.

We have his work *The Positive Theory of Capital* ⁽³⁾ which will allow us to understand his thinking. This book ratifies that the author pretended to answer the questions-inconsistencies left behind by the classics on the theory of interest (pretending to confusedly deduce it from Ricardian “profit” and Marxist “surplus value”), within the Mengerian framework. The result of which we will analyze in light of TET.

This work is composed of four subjects: *Book I* seeks to explain the *Concept and nature of capital*, *Book II* seeks to explain *Capital as an instrument of production* (the title itself anticipates more than one concept of capital, which condemns his analysis to a dichotomy with no solution), *Book III* seeks to explain *Value and price*, and *Book IV* seeks to explain *Interest* (adding a new dichotomy).

We will present his text in italics, inserting our *retrospective* point of view, based on TET, as we comparatively analyze the central subjects of interest theory.

Introduction to Böhm-Bawerk

The author presents in the introduction his basic ideas, allowing us to summarize the link he establishes between *capital* and *interest*, a link that will become essential in his dichotomy of the “*theory of interest*” and the “*interest rate*”, which unfortunately twentieth century theoreticians would expand. In His *Author's Introduction* Böhm-Bawerk says:

...and that Interest in particular is nothing else than the compensation which capital receives for its productive services when the product is divided out among society... the most naïve formulation is found in the so-called “productivity theories. For theses theories... interest is the natural fruit of the productive force which is innate and peculiar to capital. Propounded by various interest theories in various forms this idea has found its most concise and, at the same time, its most naïve expression, in the well-known “Productivity theories”—those theories which explain interest directly as the natural fruit of a productive power peculiar to and resident in capital (we see Böhm-Bawerk “promises” to abandon the concept of interest as a retribution of a production factor, in a clear expression of an attempt to solve the problem outside FEAE).

I refer to the fact that the word capital in production theory (version of “median production capital”) has one sense and in distribution theory has another (version of “rent-capital” that “yields” interest, which he will present immediately, typical context of FEAE that he wishes to elude). There is an evident implicit dissociation between goods (implicit in production) and property (implicit in rents, since rents belong to their owners). A dissociation that is the cause of the unfortunate theories

that will try to explain the economy through the “rent circuit” that generates “incomes that are not goods, but currency incomes”, which means there is a real economic world and a virtual one.

True, all capital which serves as a tool of production (for our purpose here we will call this concept “productive capital”) is also capable of bearing interest (we will call this concept “rent-capital”), but the converse is not the case (that all rent-capital should derive from productive capital). A dwelling-house, a hired horse, a circulating library bear interest to their respective owners without having anything to do with the production of new wealth. (the slippery world that dissociates rent from goods, the basis of twentieth century theories, that refer to currency, interest, currency substitutes, money, credit, related to two different worlds, one real and the other currency, “Non real”). If, in the sphere of distribution (capital-rent), the conception of capital thus embraces objects which are not capital in the sphere of production (capital-productive), this alone is sufficient to show that the bearing of interest cannot by itself be an indication of the productive power of capital (capital-productive).

We have not to deal with one motive power transmitting itself to two different spheres; not even with two groups of phenomena which have grown up so intimately connected that the explanation of the one is got fully and entirely through the explanation of the other; but with two distinct classes of phenomena. Thus we have two distinct subjects, which give us material for two distinct scientific problems; and finally, we have to seek for the solution of these problems by two distinct and separate roads (a reasoning that implies asymptotic production and distribution). It so happens, however, that these really distinct problems are accidentally linked together by one name; they are problems of Capital.

Within the sphere of the “flow” of FEAE (rent) he shows that: a) he conceives production (productive capital) and distribution (rent capital) as extemporaneous, b) that he does not include TET’s “economic good-owner” axiom. Both aspects would lead to later and unnecessary developments such as: 1) the need to separate the concept of capital from the concept of capital good, instead of adopting the accounting expression of FEAE that presents wealth in the “debit” (asset) column –within which we find all goods, including capital goods- and its distribution-property in the “credit” (liabilities, plus patrimony) column, and 2) the need to include the management function to explain interest theory –Mises’ “entrepreneurship” and Kirzner’s “alertness”.

It may be that, besides identity of name, we shall find many inner relations between the two series of phenomena and the two problems; (ratifies previous commentary)—our investigation shall decide that later. But such relations are yet to be discovered; they must not be assumed (commendable effort to put things on a scientific footing); and unless we would give up all idea of being unprejudiced in our quest and in our conclusions, we must begin the inquiry free from any preconceived opinion of a necessary identity, or even of an exact parallelism, between the productive efficiency of capital and its power of bearing interest (dichotomic terrain that is a bad starting point if you wish to put things in a scientific context).

Our division of the subject will correspond to this real independence of the two problems. (Smith's production approach and Ricardo's rent-distribution approach) In one part of the present work we shall take up the theory of Capital as a Tool of Production (productive capital), and in another the theory of Interest. The beginning of the theoretical dichotomy of the subject of interest, separating the study of the "origins of interest" –postulate that would lead to the Pure Theory of Temporal Preference (PTTP) and its determination (interest rate).

THE THEORETICAL DICHOTOMY OF CAPITAL IN BÖHM-BAWERK

Two concepts of the term capital (productive vs. rent)

The chapter *The controversy over the concept of capital* shows us the confusion on what should be understood by capital, which he did not overcome, on the contrary he contributed to it, with the unfortunate theoretical developments of the twentieth century. He says (I.V. 12):

...then we commit ourselves to the strange doctrine that a thing which undoubtedly bears interest is not capital Here we have capital that generates interest, though it does so from the point of view that he accepts the concept of capital applicable to everything that generates rent, it is no less true that he uses the word interest instead of rent. Or did he consider them to be the same? This seems to be the case considering the following expression. ...disappears the moment that any one acquisitive instrument is denied recognition as capital—especially interest-bearing money, the first parent of the conception (though we do not consider him a mercantilist, money is to him the highest expression of a good that generates interest-rent without being productive capital) As a fact their destination to the service of the future is a peculiarly important characteristic of the goods we call capital, indeed, a characteristic which gives us the key to the most important problems connected with the subject (productive or rent?). Only it is not exactly the distinguishing characteristic, but one that capital shares with several other classes of goods which we have good reasons for not reckoning as capital; and for that reason—but only for that reason—it is not fitted to act as the constitutive and distinctive feature on which to base our definition. This response to Knies shows us he is already thinking of a theory of capital that could explain the theory of interest –unnecessary in TET- while on the other hand he will try to present a theory of interest that can explain the theory of capital, confusions derived from the fact that at times he refers to one capital, and at times to another.

Böhm-Bawerk says (I.IV.7)

Capital in general we shall call (an attempt at reconciling both approaches) a group of Products which serve as means to the Acquisition of Goods. (A definition of rent-capital in terms of productive-capital?) Under this general conception we shall put that of Social Capital as a narrower conception (productive capital). Social Capital we shall call a group of products, which serve

as means to the socio-economical Acquisition of Goods or, briefly, a group of Intermediate Products (capital-rent). Synonymous with the wider of the two conceptions, the term Acquisitive Capital may be very suitably used, or, less suitably but more in accordance with usage the term Private Capital. Social Capital again, the narrower of the two conceptions, may be well and concisely called Productive Capital. Clearly his rent derives from private capital and his production from social capital, i.e., distribution (rent-capital) and production (productive-capital) belong to different spheres and he pretends to define them with the same word, capital, plus something he adds in each case.

"Products which serve to acquisitive ends" (productive capital) possess a pre-eminent importance for the theory of income (here the inverse, definition of production capital in terms of rent capital? Or is the theory of rent dissociated from rent capital) as being the source of interest (again implicitly he assimilates rent to interest, and at the same time he says that rent theory is the theory rent-capital), while the "intermediate products" possess at least as great an importance for the theory of production (...?)

A synthesis of the concepts implicit in this attempt to clarify the two points of view of the term capital leaves us with the following: he considers that the term capital can be seen under the point of view of *generator* of economic goods, anticipating Mises' *capital goods*, and as a *generator* of rents, anticipating Mises' *capital*. All this implies abandoning TET's economic good-owner –concomitant FEAE- with all the consequences this implies: referring to rents that are not related to goods, and the converse, thinking of production and distribution in asynchrony; the concept of capital is necessary (in the productive capital version) to prove the existence of interest...

It is important to stress that the ideas presented by Böhm-Bawerk were in permanent debate in his time, appearing at the same time as the *Wealth of Nations*, and he was not the only one that held these ideas. We can consider that he presented them in systematic form, and inserted them in the theory of interest, independently from what we might think of his conclusions. What is clear, in light of TET, is that Émile James' idea that Böhm-Bawerk *had defined interest as the price of time*, is unfortunate.⁽⁴⁾

The relation between the two concepts of capital

In chapter IV he continues with the title: *Average period of production and private capital*, concepts he "discovered" in Smith, and lead him to say (I.VI.1)

A few remarks still remain to be made on the relation in which the two divisions of our conception, Social (or Productive) Capital, and Private (or Acquisitive) Capital.... Private Capital (capital-rent), as we now call it, is the parent conception. It is not so much a branch, or a subdivision of the general conception of capital, as the conception itself. A preview of the unfortunate concept that considers rent as the origin of everything, instead of considering the concepts of *stock* (wealth) and *flow* (rent), both within FEAE (picture and film)...

The conception of National Capital, or, more correctly, Social Capital, has detached itself from the other, in the historical development of theory, as a

narrower conception. Substantially it is a quite independent conception. In every essential respect (in definition, in scientific employment, and in scope) it stands on entirely independent principles. It is bound up with the conception of Private Capital only by the external and subordinate circumstance, that the aggregate of its "intermediate products" happens to coincide in extent with the aggregate of those products which are the source of income to society as a whole,—those products which constitute capital in the older sense. (Considering the axiom economic good-owner, and its derivate, FEAE, as secondary and extrinsic circumstances, thus expressing his intention to explain the subject outside that sphere). But through a historical accident it is this subordinate feature that has had most to do with the naming of the new conception; and thus it also bears, and will perhaps continue to bear, the name capital. And this circumstance, so long as the whole relation was not clearly understood, led to the lamentable tangle so often spoken of, that not only the conceptions themselves, thus similarly named, but the fundamentally distinct problems connected with them, were confused and interchanged. A synthesis of his confusion, that he tries to solve relating the two dichotomies we have stressed.

Further on (when he refers to Wagner and Rodbertus) he presents an antithesis between economic and legal categories that we will not discuss, but they employ rejecting the economic good-owner axiom, now from the legal point of view:

One thing, however, I cannot allow. It does not exhaust the meaning of this latter distinction, and, consequently, it is not exactly fitted to take its place. The categories of Social Capital (productive capital) and Private Capital (rent capital) on the one hand, and of Natural Capital (what capital goods does this refer to, productive or rent?) and Property in Capital on the other (what capital, the one defined in the productive approach or the rent alternative?), do not coincide, either in compass or in content, so as to allow us simply to explain or replace the former by the latter. They are rather independent categories, each of them resting on a different basis of distinction. Social Capital and Private Capital are not distinguished from each other simply as a natural store of goods and property in these goods; they represent two distinct natural stores of goods.(if he refers to concrete goods, this means there are concrete goods different from the means of production, which is true; and if he refers to the existence of property over all concrete goods, he does not need all this to refer to the economic good-owner axiom, in this specific case to the component of wealth = stock of economic goods =accounting asset = patrimony).

The function of productive capital

It is very relevant to consider what BB expresses in chapter IV of book II, *The productive function of capital*, since here we clearly observe what legitimately worried him was none other than the classical vicious circle –that operated within FEAE in absence of the Subjective Value Theory-, referred in this case to capital and interest. Though our conclusions begin at that start of the chapter, we only need to refer to the following paragraphs (II.III.7):

Lastly, we can now answer, easily and categorically, the much-disputed question, whether any independent productive power is inherent in capital; or, to put the question in its usual form, whether capital is a third and independent "factor in production" alongside of labour and nature? The answer must be a most distinct negative.

Evidently he is right as to productive-capital deriving from these two “pre-existent” factors, but what is there in the economic sphere that is not “dependent”, from the point of view of the economic good-owner, need-economic good axioms, etc., that are the essence of economics...? The concrete evidence that his intention is to explain the existence of interest through capital – though he ends up proposing a “theory of the origin of interest” outside the concept of capital- is reflected here, which constitutes a synthesis of what the *problem* and the *solution* in Böhm-Bawerk’s mind was.

Then he continues as follows (II.II.11/12):

*But even as it was, it was scarcely possible for any acute theorist to make this confusion if another circumstance had not conspired to assist it. That was the accepted parallelism between factors of production and branches of income (he identifies FEAE as the “origin of the problem” instead of simply pointing out that an expression of “stock-wealth” can derive from “flow-rent” and vice versa, the same as the mathematical relation between derivatives and integrals), and the awkwardness economists feared to encounter in the explanation and justification of interest if they had to refuse recognition to capital as an independent factor of production. All natural income, it was taught, is based on participation in the production of goods. The various branches of income are nothing else than the forms in which the different contributories to production are paid. (he correctly ratifies that the classics tried to theorize within the framework of FEAE, within which they did not dissociate rent from goods, that is, rent that does not refer to goods). Rent of land is the payment for the factor of nature, wage the payment for the factor of labour, and interest—well, interest appeared to have no substantial foundation if it also could not be interpreted as a payment for a third independent factor of production. It did not seem to be explained theoretically, nor—what indeed might be more serious to the theorists in question—to be justified practically. ... (a bad diagnosis that anticipates a bad proposal, since the classical problem was not the denial of the existence of FEAE, but precisely that they could not find a solution within it and that is what misled them). ... *Not only so, but by a singular irony of fate this had to be expressly proved—as it had been by Adam Smith before them—by those very theorists who maintained its independent productivity. In their theory of price, in having to show how all prices resolve themselves finally into rent, wage, and interest, they were forced to demonstrate in the most minute way that concrete capital is not an element; that, for instance, copper and steel, which serve as capital in the manufacture of watches, originate in the co-operation of the natural mineral deposits, of the work of miners, and of older capitals, which themselves have originated in similar ways, and so on. In the face of this, to maintain the independent productivity of what they had just**

demonstrated to be a dependent and intermediate product, they were driven to adopt very singular expedients. The favourite ones were obscurity and brevity. Instead of making an earnest effort to bridge the yawning contradiction, they either did not suggest the doubt at all, or, if a doubt had already been raised, they dismissed it with some laconic phrase or other. (we agree, since they did not know TET nor SVT, but they remained confusedly within FEAE).

The whole text is substantial, mainly what we underscored, that allows us to conclude that Böhm-Bawerk ratifies the diagnosis on the state of interest theory, which also allows us to clearly establish the foundations of his proposals, i.e., to see “the theoretical charge previous to observation” (Popper) he operated with:

- *He ratifies his discomfort with theoretically operating within FEAE as the classics did. Which is not understandable since SVT had solved the vicious circularity cost ↔ price of the same. But we can understand it if we acknowledge “his previous theoretical charge”.
- *He disqualifies the theory of interest as a retribution of capital since this is not a factor of production independent (from nature and labour), in a clear attempt to tell us that if we tried to explain the “phenomenon” of interest within FEAE, it would be inconsistent. The task of eliminating inconsistencies corresponds to TET.
- *Because he cannot consider interest as a retribution of a subordinate production factor, he believes in the need to develop an interest theory outside FEAE, something he will attempt with his inconsistent PTTP, to explain the “origin of interest”. But he will return to FEAE, with his also inconsistent “theory of the interest rate”.

We therefore encounter a Böhm-Bawerk that creates an unnecessary dichotomy (his two “theories” of capital) and tries to overcome it with another, also unnecessary, dichotomy (his two “theories” of interest).

He immediately attempts a solution outside FEAE and does so highlighting the previous attempts by other economists, as we can see (II.III.13):

Some writers, of course, treat the matter more seriously. They do not evade the difficulty, but try to get a real solution of it. They cannot overlook the fact that capital first comes into existence through combination of simpler factors. Quite correctly, therefore, they do not attempt to claim for capital itself the character of an element; but they still require an independent support for interest. Among the authors referred to is Senior, that introduces “abstinence” to explain the origin of interest. We know Böhm-Bawerk will oppose –with his PTTP- recognizing abstinence any role in the origin of interest, but he will consider it in relation to the origin of capital.

Finally, Böhm-Bawerk closes this chapter reiterating: *...capital is... productive... But... is not “independently” productive...* Unfortunate expression considering: a) there is no independent factor in production –the sole existence of nature and fallible man that must work, implies mutual dependence, factors on which, Böhm-Bawerk correctly says, productive capital depends-, and b) it is not a necessary condition to develop a theory of interest, as TET will prove.

Even so, that was the conclusion that led him to search for another theory of interest, and he believed he had found it in PTTP.

The origins of productive-capital

In chapter V of book II, under the title *The theory of formation of capital* (II.IV.6), Böhm-Bawerk tells us:

This amounts to saying, in other words, that, before capital can actually be formed, the productive powers necessary to its making must be saved by encroaching on the moment's enjoyment. (what we have underlined supposes the idea of a loss due to the option for an inter-temporal Exchange)...

An unfortunate expression in so much as it departs from the correct Austrian principal that all exchange implies an action to better the current status, and present for future exchange does not contradict that principal. This led him to try to clarify later:

To anticipate and avoid a mistake very apt to be made, it must be said distinctly that this encroaching on the moment's enjoyment need by no means involve downright privation

Later he states something that, though it coincides with TET and its Total-FEAE, because he does not develop it adequately, would originate the unfortunate $S = I$ equation, with the consequences TET would stress (II.VI.7):

...are directed straight to this and no other goal—the production of capital and not of consumption goods

A statement that implies savings will have to be invested to acquire the status of productive-capital, which is corroborated by the Total-FEAE of TET, in so far as it admits that there can be savings-wealth that is not invested, as what is destined to accumulation, exchange, commerce, liquid assets, security, speculation, etc. Some of these concepts were included in theories of the twentieth century: 1) in an incomplete fashion, insofar as they did not include everything and those that were included –example: transaction and speculation- were analyzed outside the accounting model, which leads to a high probability of imperfection, and 2) they were analyzed theoretically outside Total-FEAE.

THE THEORETICAL DICHOTOMY OF INTEREST IN BÖHM-BAWERK

The dichotomic theory of value, and interest

Then Böhm-Bawerk needs to remove SVT to force this approach to the subject of interest, a situation than can only correspond to a theory that does not understand the role interest in the

axiom *economic good-price*, i.e., not knowing if interest is an economic good, a price, both, or none of these. Deductively we can conclude.

- *If there is the need to explain why SVT applies to interest, this implies it is not an economic good.
- *If it is necessary to explain why SVT applies to interest, being an economic good, this implies it is a “special” economic good, then a few paragraphs would suffice to “explain to the neophyte” or no explanation would suffice, because this takes us back to the previous case, in which its “so special” condition places it outside the sphere of economic goods.

Let us see one of his paragraphs where he introduces an unfortunate ad hoc addition –basis of Mises’ also unfortunate currency theory- which led him to differentiate in economic goods their *subjective use value* from the *subjective exchange value*, to be able to infer that, in the case of money – “*special economic good*”- its subjective use value and subjective exchange value coincide, because both of them derive from its *objective exchange value* (which we have extensively referred to in *The Theory of Economic Relativity* under *The Value of money*).

In the chapter *The two conceptions of value*, he presents this unnecessary dichotomy of value. The beginning of the chapter is the introduction that leads him to this conclusion (II.I.3/4/5/6/7):

Value in the Subjective sense is the importance which a good, or a complex of goods, possesses with regard to the wellbeing of a subject (with similar words, he agrees with SVT, a value theory that needs no addition, but Böhm-Bawerk “reintroduces” the debate...) By Objective value, on the other hand, is meant the Power or Capacity of a good to procure some one objective result. In this sense there are as many kinds of value as there are external results with which man may be connected... (typical contradiction of OVT, extrinsic to man and at the same time for the good of man)... In any expressions of this kind all reference to the wellbeing or ill-being of a subject is excluded from the conception of value. (it is a perfect definition of what OVT was, with the addition that the V of value would have to be removed. In other words, if we need to remove the “value” man gives things, we are left with a perfect Objective Theory).

...One of them (differences) is that objective value (but he uses the word value, so we are in the concrete sphere referring to OVT) and the subjective value of goods do not necessarily coincide (it is the same as saying that not all things are economic goods, the essence of SVT) ...There are as many kinds of value as there are external results with which man may be connected... (contradiction, precisely subjective valuations derive from the goals and results that man that values pursues, the essence of SVT that puts man at the center of its economic endeavors).The varieties of Objective value just mentioned by way of illustration do not, however, belong to economical but to purely technical relations; and, however frequently they are referred to in economical text-books, they do not properly belong to political economy at all. It does not fall within the province of our science to expound the heating value of wood (unnecessary explanation if there were no doubts, that appear in the following paragraph and show what the real issue is: the theory of interest he is developing is inconsistent and needs ad-

hoc explanations, such is this new dichotomy in value theory)... *I have given these illustrations purely as illustrations, (deplorable term with the intention of hiding a tremendous error we stress) with the intention of putting in clearer relief the very intimately related nature with the above of that branch of objective values (again the non-different-special, that needs clarification because it is a different-special, the same that happens when he introduces other unnecessary dichotomies) which, of course, has the greatest possible importance for political economy, namely, the objective Exchange value of goods...*

By this expression I mean the objective worth of goods in exchange; or, in other words, the possibility of obtaining in exchange for them a quantity of other economical goods, this possibility being looked upon as a power or a property of the former goods (the "leit motive" we stress, for all this unnecessary and, worse, wrong development)... It is true that the two conceptions, "Price" and "Exchange Value," are by no means identical. Exchange Value is the capacity of a good to obtain in exchange a quantity of other goods. Price is that other quantity of goods. But the laws of these two coincide. So far as the law of price explains that a good actually obtains such and such a price, and why it obtains it, it affords at the same time the explanation that the good is capable; and why it is capable, of obtaining a definite price. The law of Price, in fact, contains the law of Exchange Value. Evidently his expression "objective exchange value" is equivalent to the Wicksellian concept of the "purchasing power of money", in particular considering his expression "the exchange value of goods is expressed in money" (note 32 in V.IV.7) Nevertheless, Böhm-Bawerk had stated that this "purchasing power" belongs to everything that is exchanged. His error is not found there, but in the development of a whole theory of value linked to an "exclusive" human need satisfied by an economic good, in this case the need to exchange, and to base it on an objective value (objective exchange value). It would be as if we needed to develop the objective "nutritional" value to explain the economic goods that nourish us... This means rejecting the category of "law" acquired by SVT. On the other hand, we need not refer to the "objective exchange value" to base the "definition of price" (not a "price law", price is a concept, a term, a definition, it never was a law, an underlying error in him, or he would not have had such a distraction) which is sufficiently explained by SVT and its influence in the demand for goods...

What is essential here is that Böhm-Bawerk will need this misguided dichotomy of value because it will be the main foundation of his dichotomy of interest (PTTP and interest rate). Evidently, the first dichotomy will lead him necessarily to the other.

This unfortunate situation can also be considered as the origin of the disqualification of exchange as an economic good, which would imply a regression to the idea that money is sterile as it satisfies exchange which is sterile, because "it does not produce goods". Clarification that is relevant insofar as it underlies the concept of "virtual currency" that appears with Wicksell and will prevail over currency thought in the twentieth century.

We trust what has been said on the subject will suffice for the reader to see the enormous consequences of this new dichotomy presented by Böhm-Bawerk, which prevailed over the

whole of currency and interest theory of the twentieth century, expressed in the concept of “purchasing power of currency”, and that only TET was able to discern.

This section is very important because Böhm-Bawerk is considered to have applied SVT to the subject of interest, implying that if he did it in this manner, he was not only misguided, but incurred in the elementary scientific error of considering there was a need for a different theory than that applied to other goods and prices, to apply SVT to interest.

We could conclude this section saying Böhm-Bawerk upheld SVT; let us see a paragraph in a chapter he titled *The individual determinants of price*.

...the subjective theory of value is the basis for everything; i.e., subjective value theory is the indispensable basis for price theory...

A concept with which we can only agree, but at the same time is in complete disagreement with his position on objective exchange value... the current “purchasing power of currency”...

The dichotomic theory of exchange, and interest

Now is the time to comment on the “dichotomy of exchange” in Böhm-Bawerk. Let us see several of his well oriented paragraphs. (IV.I)

...the motive which gives rise to exchange in general, namely, the striving after economical advantage, should maintain a commanding influence in the fixing of the exchange prices... (a correct opinion he will forget when analyzing exchange, where there is also the search for a direct advantage, i.e., the direct need to exchange is similar to the direct “need” of feeding oneself, there is no need for an additional theory of exchange of economic goods to explain the economic good exchange). ...all who take part in the exchange act exclusively from the motive of pursuing their immediate economical advantage in it. (as with all human action)... The law which we shall arrive at in this way I have already, for very good reasons, called the fundamental law of the formation of price... For just as, among the motives that determine price, that of striving after self advantage in exchange has the lion's share, so does the lion's share in the theoretic explanation of the phenomena of price fall to the "fundamental law" here stated. An exchange is economically possible only between persons who put a different value, even an opposite value, upon the commodity and upon the price equivalent.

We read expressions that, terminological nuances notwithstanding, are in complete agreement with the concept that exchange is effected to better the condition of those participating in it, as opposed to the concept that is based on the idea that one party loses and the other wins, or that the value of things exchanged is the same. This correct criterion is essential to Austrian thought, which we adhere to in TET, but from this same source from which PTTP and TET derive, come different orientations in the theories of currency, interest, etc.

The reader will wonder then why we speak of dichotomy in Böhm-Bawerk’s theory of exchange, if his expression coincides with the concept basic to exchange. This problem appears when he forgets this approach in postulating his theory of interest based on temporal preference, present in this chapter.

...And it is sufficient for us in our present task, as we have not to pursue the theory of price as an end in itself, but only so far as is necessary to establish the theoretical connection between the elementary phenomena of subjective value and the complicated phenomena of interest.

Evidently he considers the *phenomena of interest* as an entity that needs a different explanation from other economic entities, since it needs a special connection between SVT and the definition of price of all other economic goods with the *phenomena of interest*.

Evidently his ideas will have great influence on Wicksell and all other thinkers of the twentieth century, being part of the foundation of their theoretical developments.

The “pure” theory of temporal preference (PTTP)

Now is the time to approach Book V, titled *Present and Future* -starting with chapter I, *Present and future in economic life*, where he establishes the foundations for the following two books- which would have great influence in the development of interest theory.

(V.I.1)*Present goods are, as a rule, (this should not be the case when presenting a law, which supposedly explains particular cases, not “as a rule”, which would inspire Mises’ “theory” –PTTP- in the same manner he “theorized” based on the historical case of Menger’s origin of money) worth more than future goods (a central error TET would correct) of like kind and number... (unfortunate condition that he would try to remedy in the same chapter) (V.I.8) Thus we give present money in exchange, not only for the present consumption good... for the... future good... (this is correct and it rights what he wrongly said before, but he did not realize this or he would have excluded from the text the expression of like kind and number –apart from this, the exchange axiom is very clear in the sense that with the passage of time nothing is equal, which does not imply we cannot compare-value different things, a situation that will require him to extend the text in this same chapter) (V.I.1) This proposition is the kernel and centre of the interest theory which I have to present... (which will be Mises’ PTTP, in search of a solution to the conflict, with a “pure” theory of interest) (V.I.1) All the lines of explanation, by which I hope to elucidate the phenomena of interest, run through this fact; and round it, (what we have underscored ratifies our exposition on his dichotomy in the theory of value) *both essentially and superficially, is grouped the whole of the theoretical work we have to do.* (a ratification of everything we have seen in this text; if not, he would not need the “statement” referred to grouping everything in the theoretical work, but he also walked a “para-scientific” path, proof of this are his dichotomies.)*

Further on he says:

(V.I.15) *I repeat that the element of uncertainty, which is the cause of a lesser value being put upon particular classes of future goods, has no causal connection*

with the phenomenon of interest (pretending a theory of “pure” time-interest of uncertainty is like speaking of air “pure” of oxygen or a living man “pure” of life. In short, fallible man, the origin of economics, implies uncertainty insofar as man exists in time). (V.I.15) *The lesser valuation which is its effect is a special one, and extends to one class of future goods only, and there it bears the character of a deduction as premium for risk* (use of the problem of determination of the market rate in the subject of interest theory, a reflection with which we anticipate Fisher – inconsistency of confronting the *existence* of interest with the *calculation* of the rate of interest). Bread exists, which does not mean that all bread is the same and/or is worth the same, and/or has the same price. The same is true of interest, depending on who commits to delivering present economic goods in the future. In other words, the difference in risk is a necessary component since it is fallible man’s time. It is the same as the different qualities of flour for bread, which does not imply it is not bread; this simply distinguishes different breads. It is the same as silver money and gold money; they are different, but both are currency. In short, this clarification is not necessary to theorize on interest. The factors that have incidence on the price of time as an economic good are a different thing.

In the same page he summarizes his dichotomic approach to the theory of value:

(V.I.16) *We arrive thus at a proposition which is a fundamental one in our inquiry: As a rule (a scientific inconsistency when pretending to establish a law, but that Mises will use as such –sic), present goods have a higher subjective value than future goods of like kind and number.* (ignorance of the change axiom, already present in Heraclitus) *And since the resultant of subjective valuations determines objective exchange value, present goods, as a rule, have a higher exchange value and price than future goods of like kind and number* (sic). A clear ratification of his goal with his dichotomic approach to value.

Then Böhm-Bawerk tries to establish the foundations (his controversial three causes) that lead him to pose his theory of interest, a chapter we will not consider, since he refers to subjects already seen here or objected to by Mises in the section *Observation on the evolution of the theory of temporal preference* in his work *Human Action*.

Böhm-Bawerk ends chapter I, introductory to Book V, with a summary that establishes the foundations of this “theories of interest” (yes, in plural).

And so we can accept the following as the conclusion of this chapter: (V.V.18) *The relation between want and provision for want in present and future, the undervaluation of future pleasures and pains, and the technical advantage residing in present goods, have the effect that, to the overwhelming majority of men, the subjective use value of present goods is higher than that of similar future goods* (he abandons his expression: *of like kind and number*) *From this relation of subjective valuations there follows, in the market generally,* (he does not abandon this scientific inconsistency) *a higher objective exchange value and market price for present goods,* (now we fully understand what led him to the unfortunate dichotomy of value, it was to apply it here to the subject of interest) *and this,*

reflecting back on present goods, gives them a higher subjective (exchange) value even among those whose personal circumstances happen to be such that the goods would not naturally have any preference in subjective use value. (again the idea of “in general”) Finally, the leveling tendencies of the market bring the reduced value of future goods into a regular proportion to their remoteness in time. In the economic community, then, we find universally that future goods have a less value, both subjective and objective, (future market value) corresponding to the degree of their remoteness in time.

We cannot complete the analysis of the fundamentals of PTTP without referring to the previous section, “The dichotomic theory of exchange, and interest” where we established that the principle and the economic reason for exchange is such that the intervening parties (ex-ante) can see an advantage in the exchange they want to pursue. According to PTTP the party that receives the present goods benefits, and the party that receives future goods loses out. If we affirm that interest is there to “compensate-pay-recognize” that “disadvantage in value”, we find ourselves in a serious problem of circularity, which TET will denounce as an “inverted circularity” compared to classic circularity.

Now we will refer to one of the many consequences of PTTP, in this case the attempt to “apply” it to different aspects of economic life. An attempt to “justify-prove”, that again shows its inconsistency relative to TET, in this opportunity specifically referring to indirect materialization of time.

VI.I.1 The source of interest: ... the natural difference that exists between the value of present and the value of future goods... (expression of PTTP) is the source and origin of all Interest on Capital... and I shall endeavor to show that, notwithstanding all differences in shape and appearance, the active cause in them all is one and the same... (underscored by us).

This section is not surprising due to the presentation of PTTP, but because interest can “be” or “present” different forms, and he says he has a common solution for all of them. Apart from the difference with TET that presents “only one” interest, evidently we are in the presence of an opening towards the multiple and imprecise later theories of interest: theories of real interest *versus* currency; natural *versus* currency; interest as the price of currency (Keynesians) *versus* interest as the price of credit (Austrians); etc. He starts on this road with the best known “cloak” of interest, loans

(VI.I.2) By far the simplest case of this difference in value is presented in the Loan. A loan is nothing else than a real and true exchange of present goods for future goods

In an introductory note to chapter VIII in *The Theory of Economic Relativity* we attributed that definition of credit to Mises, and we added “interpersonal”, in reference to this type of exchange if there is to be credit. An important detail that differentiates TET from the theories that present interest as the price of credit, in an attempt to distance themselves from those that present interest as the price of currency, not taking into consideration the situations TET presents us

when $i_m = p_m$ and/or $i_m \equiv p_m$, which will show the connection between theories that are supposedly different (Austrian, Keynesian, and monetarist-Quantity).

In TET we would say that due to the fact that credit is an interpersonal exchange of *economic time*, interest is the price of credit. We underscore this commentary considering that, though PTTP and TET present a “unique” theory of interest, their foundations, causalities, and consequences are diametrically opposed. A comment that refers only to the version of his “theory of interest” (the sphere of PTTP) and not to the “theory of interest rates”, resulting from Böhm-Bawerk’s dichotomies.

Then he presents other situations or “guises” of interest (involving subjects that are not required for a theory of interest: rent, perishable goods, fungibility of goods –where he assimilates goods in different periods of time because they are fungible, forgetting the axiom of exchange-; use theory; time in superior order goods and corporate activities, etc.).

In the section on “*Complications*” he has the same goal and adds unnecessary reflections (underscoring that a month is not the same as a year, as if it were necessary to explain that a pound of bread is not the same as ten pounds) that again circumscribe the subject of interest to the capitalist productive process, a situation that leads us to believe up to a certain point that he did not completely reject the preceding approach, which he called the “most naïve theory of interest” a theory that tried to explain interest based on the productivity of capital. Then he extends interest to the sphere of work, the basic survival market, durable goods, land rent, etc.

We cannot close this section without mentioning one of the most important weaknesses of PTTP, defined by TET:

“PTTP necessarily implies the negation of the existence of present wealth (whatever its condition: savings, capital, availability, merchandise, hoarding, precaution, speculation, etc.) as a manifestation of preference of the future over the present, which is why they have the category of stock, for future use”.

In other words, PTTP does not see present wealth as an action that values the future more than the present. A conclusion of TET that exempts us from the concept of abstinence, sacrifice, etc. And again establishes that every human action (which implies exchange, option) seeks economic advantage.

We need to clarify that the observations made here in reference to PTTP are equivalent or more severe than those referred to the Keynesian “preference for liquidity”, since this was not as profound in its analysis as PTTP, its errors notwithstanding. In other words, PTTP was a scientific stimulus for TET, which is not the case with the preference of liquidity. Opinion that does negate what we expressed in reference to Keynes’ efforts, commenting on chapter XVII of the General Theory –in *The Theory of Economic Relativity*- which we considered the centre of his thought, in complete contradiction with investigators that consider it a useless chapter, and that not reading it would help understanding Keynes. For us it is the chapter that shows all his contradictions that, as we will see, were not exclusively his.

Interest, profit, and surplus value

Now we must comment on one of the most critical aspects of what TET stresses in Böhm-Bawerk’s concept of original interest:

(VI.II.6) *Knowing now that the undertaker buys the future commodity, "Means of Production," for a smaller number of pieces of present goods than the number of pieces which will compose their future product, we ask, How does he come by his profit? ... The increment of value is the profit of capital. ... (VI.IX.4) I do not see that there is anything objectionable in this. For natural reasons, present goods are certainly more valuable commodities than future goods. If the owner of the more valuable commodity exchange it for a greater quantity of the less valuable, there is nothing more objectionable in this than that the owner of wheat should exchange a peck of wheat for more than a peck of oats or barley, or that a holder of gold should exchange a pound of gold for more than a pound of iron or copper. For the owner not to realize the higher value of his commodity would be an act of unselfishness and charity which could not possibly be translated into a general duty, and as a fact would not be so translated in regard to any other commodity... (VI.IX.5) In the essence of interest, then, there is nothing which should make it appear in itself unreasonable or unjust...*

From this paragraph we conclude deductively that in Böhm-Bawerk original interest –that derives from temporal preference for present over future goods–, is the same as the profit of capital (“surplus value” in Marx and “benefit” in Ricardo), which leads us to conclude that Böhm-Bawerk was not able to overcome the entanglement he wished to solve, because **if original interest is at the same time the profit of capital and the price-value of time, this implies the profit of capital (its goal) is zero if time has a price-value (PTTP), or time has a zero price-value (PTTP) if interest is the profit of capital.**

In other words, BB is an “adscript partner” of those who ask the eternal question about the origin of interest, which implies also ascribing to FEAE.

Corroborating what we have said in the previous paragraph, Böhm-Bawerk tells us:

(VI.VIII.12) *But how far does the Ricardian, or any other rent theory, take us, even if it were correct in every point where it is disputable? ... But it is just then that the chief question of the problem suggests itself: why there is a net interest within that gross interest which is yielded by the year's use or service of the threshing-machine or the field, after deduction of all other costs. (a formulation equivalent to Hausman's “modern” interrogative) And to this question—which the rent theory up till now has entirely omitted to put—no answer can be given, either as regards the field or the machine, but to point to the under-valuation of future goods and future services. Inverted causality and/or, vices of circularity, present in this reasoning that TET would clarify.*

We can summarize this analysis with questions, which not by chance continue those the classics did not answer. Does Böhm-Bawerk present interest in another guise, now as the profit of capital? Or does he assimilate interest to benefit-surplus value, like the classics did? Any answer is unsatisfactory and expresses the continuity of the Ricardian-Marxian doubt. A doubt that would continue all along the twentieth century, in other “guises”, and that TET would clarify at the beginning of the twenty-first century.

What we must stress in this section is that Böhm-Bawerk “reintroduces” –though he does not want to or realize it- the subject of interest within the framework of the classic FEAE, from which he wanted to preserve it. Possibly we should say that Böhm-Bawerk did not return to FEAE because he really never left it, as he supposed? The confused role he assigns to the “naïve theory of productivity of capital” gives considerable credibility to this last interrogation, though he tries to deny it.

Interest in prices

When Böhm-Bawerk answers Knies’ criticism in which he wrongly objects to considering a loan as an exchange, he introduces a very important reflection “...*the interest of a loan is part of the price...*”, statement that would allow TET to present a theory of prices –referred to consumer and capital goods- and that it would employ to prove the circularity of PTTP. On the other hand, it is a valid attempt at an economic definition of the millenary expression of the financial sum (with compound interest): $p_n = p_0(1 + i)^n$, from where we deduce the “current value” = $p_0 = p_n(1 + i)^{-n}$. An expression that explains the popular concept that the value of assets is in inverse relation to the rate of interest.

It is evident that Böhm-Bawerk wished to express that interest is part of the forward price. This axiomatic reasoning is in line with TET insofar as it underscores the necessary presence of interest in all prices. An equation that includes the case of the price of present goods where time has no incidence, that is, where $n = 0$, which makes current sum and value the same, because present and future coincide. Once again TET shows us that we do not need ad-hoc reasoning to explain economic phenomena, such as the centennial formula of total amount, and its inverse, the well-known current value, and it would be better to call the expression p_0 current or present price, and forward price the expression p_n .

The conflict present in the causality of prices that Böhm-Bawerk introduces here is reflected, among other things, by these two aspects: 1) pretending to solve the variable i outside FEAE, which he will not be able to do, and 2) to do it through the scientific inconsistency of PTTP, which will be corrected by TET.

The rate of interest and its positivity

We begin the analysis of the last chapter, called *The rate of interest*, which seeks to explain that the rate of interest will always be positive, an unnecessary goal implying the rejection of the axiom of economic good-price presented by TET.

It begins with the need to apply the theory of exchange to the subject of interest.

(VII.I.1) *The exchange of present goods for future, in which interest has its origin (treating interest as a phenomenon, not establishing if it is an economic good or a price, which is what the axiom of economic good-price requires), is only a special case (which implies that there would be a need for a special theory or explanation) of the exchange of goods in general. It goes, then, without saying that the formation of price in this case is subject to the same laws as govern the formation of price in economical exchange generally...*

Up to here it would seem we are confronted by a special case that does not need a special theory, which is contradictory in itself, but that would not be important if we do not deduce the reason for this expression.

The problem appears with his intention to apply the “general” theory of exchange to his “special” exchange of goods in time based on the preference of present over future goods, and the difference would be the “original interest”. A very weak argument since we are left with the conclusion that the party receiving the future good loses what the party receiving the present good gains.

This situation leads us to two conclusions:

- a) The party receiving the future good loses with the exchange, which denies the very reason for exchange, which we have seen in the preceding sections.
- b) the answer he would give with his PTPP will say that the difference for the party receiving the “sub-valued” future good will be compensated-rewarded-remunerated precisely with interest.

Evidently the conclusions we must derive from this situation, result from not accepting the first option since we agree with the reason for any exchange. So we only need to consider the second reflection, which leads us again to the classical cost-price vicious circle –from which Böhm-Bawerk pretends to extract himself-, since we need i to determine the price of a good. A situation no one was able to see as long as there “was no theoretical need” to comply with the economic good-price axiom, which is the reason nobody saw that interest is the price of a factor (economic time) that TET shows us so clearly and that not only allows us to escape from the price-cost vicious circle, but also from the need to develop a “special” theory to apply SVT to interest (the price of time) and operate outside the FEAE.

Evidently also, the sole fact of considering interest as a compensation for the time that will transpire until the future, fully shows an ex-ante calculus (present calculus of the future, the financial “sum”) considers the intervention of a factor (economic time) with its corresponding retribution (interest). Once again TET offers the solution within FEAE –“complete or total” compared to “partial or incomplete” in all other theories- and of SVT, with no need for the referred dichotomies.

Summary of Böhm-Bawerk’s dichotomic theory of interest

Stressing the central importance of prices in economics, it is timely to mention that Böhm-Bawerk returns to the subject of prices to explain the rate of interest:

VII.I.1 *The question whether present goods in general obtain an agio (here he refers to the sphere of the “theory” of the origins of interest –PTTP), and also the further question of the height of that agio, are both to be answered according to the rules ... as regards prices of goods in general. (Here he refers to sphere of the price, the calculus-determination of the rate of interest).*

He evidently presents a dichotomic analysis –unnecessary and wrong in light of TET- since he considers two different entities: the temporal preference agio and the rate-determination of interest. This is the basis for theoretical developments in the twentieth century that do not offer a

theory of interest to carry out the scientific mission of “explaining” the existence, the origin of things –in economics, within the economic good-price axiom- but simply content themselves with “calculating”, which would be like measuring the speed at which bodies fall with no need of a law of gravity. Evidently in this scientific framework economics is an pre-Newtonian age.

In light of TET, the conclusions we come to on the treatment by Böhm-Bawerk of the entities interest and price, and his attempt to “reconcile” them, are the following.

- *He did not acknowledge the economic good-price axiom, which we would see with TET
- *As a consequence, he did not identify the interest “phenomenon” as an economic good or a price.
- *We can summarize that he identifies “the rate of interest” as a price, which is implicit in his term “determination of the rate of interest”, since calculating quantities-percentages implies the meaning of price.
- *If interest is a price, then it is clearly a mistake to apply this price to different economic goods (his famous “guises”). In this way we have to break from the economic good-price axiom, because there is no determination of the economic good the price refers to. TET tells us interest is the price of the good economic time which materializes in other economic goods... it does not need to analyze the case of credit, capital, etc., to prove the existence of the good or its price, which is subject to the law of supply and demand of all prices.
- *Again, if interest is a price, the effort of proving the “rate of interest” is positive is completely unnecessary. A clear manifestation of lack of recognition of the positivity of prices axiom, but he and all the economists of the twentieth century new the concept of scarcity, implied in the concept of economic good, the law of supply and demand, etc.

From another point of view we could deduce that: if he embarked on the task of proving the positivity of the rate of interest, as others did later, maybe it was because he did not consider the rate of interest a price. His text suggests he did, but we leave to our readers the consideration of this subject. In any case, it is evident that his different considerations do not comply with the axioms, terms and laws of economics. Within this framework Mises will tell us “*interest is not a price in itself*”, which would be a very confused precedent for TET –especially its reference to indirect materialization (TER)- or that it is not a price.

Then he continues his narrative of subjects we need not discuss, similar to our reference to all the “guises of interest”, concerning consumer loans, production loans, different rates according to the period (remember 1 kg of bread vs 10 kgs), marginalism in interest (within the recurring stress on the explanation of interest with the approach of the median production capital):

(VII.II.24) and the law be simply formulated thus:—The rate is determined by the surplus return of the last permissible extension of production This coincides almost to a word with Thünen's celebrated law which makes the rate of interest depend on the productiveness of the "last applied dose of capital" (alluding to what he considers to be Thünen's correct idea. A “law” that evidences the dichotomy of his concepts of interest: the one deriving exclusively from PTTP, and the rate of interest that depends on PTTP + productive capital + rent capital).

Continuing with the idea of showing Böhm-Bawerk's theory in light of the new TET, let us see the following paragraph from note 34 of the chapter we are analyzing (the fact that this is in a footnote does not invalidate our commentary, since, it derives from the concept in the main text):

(VII.IV.16-Footnote 34): ...*The full bearing of my contention is best expressed in this;—that in event of the taking away of private right to land, or heavy and confiscatory taxation of land rent, interest in that community would stand lower than it would otherwise. The causes of land rent, in themselves, would depress interest, but land rent, as one of the shares in the division, through its effects on the division, makes up for a portion of these influences.*

This paragraph corroborates our previous conclusions: interest and the rate of interest are for him two entities of different theoretical dimensions, since in his theory of interest he does not accept FEAE and searches for a solution outside it (PTTP), while in determining the rate of interest he accepts it (inadvertently). If not the rent one factor obtains (wrongly expressed because factors do not “obtain” anything, their owner's do) another loses. He also presents this aspect when referring to work, while on the other hand he tries to prove that his theory shows where Marx was wrong in supposing the profit of capital is taken from the worker (leaving us with a situation where capital helps increase the rent for both, which is undisputable, but this ratifies FEAE again, something we need not deny to refute Marx).

A summary of book VII, *Interest*, would be this: in chapter I he unnecessarily refers to the subjective basis that allows us to apply SVT to interest, initiating PTTP. In chapter II he tries to prove that the rate of interest will always be positive (an unnecessary task, because in speaking of numbers we are speaking of prices, and if we speak of prices we must consider the positivity of prices axiom), and in chapter III he tries to explain the determinants of the rate of interest, in a scenario that has nothing to do with chapter I, since he is trying to explain the level of the rate of interest relative to marginal productivities, in the framework of competition between land and work, with capital. We do not exaggerate in saying the first chapter seems to be based on the concept of rent-capital (with interest originated in PTTP), and the other two in a rent-capital, productive-capital mix (physical productivity of investment) and PTTP.

Summary of Böhm-Bawerk's theory of interest and capital

We can summarize that Böhm-Bawerk's thought was concentrated on unnecessary and insurmountable dichotomies and observations:

- 1) *Dichotomy of capital*: Unfortunate introduction of the terms productive-capital and rent-capital
- 2) *Dichotomy of value*: unfortunate attempt to establish a “special” theory of value, different from the “sufficient” concept of SVT, to explain interest dichotomously.
- 3) *Dichotomy of exchange*: unfortunate attempt to establish a “special” theory of exchange to explain exchange of goods in time (his PTTP).
- 4) *Dichotomy of interest*: unfortunate attempt of approaching the theory of interest in two completely different spheres, that of its “origin” (PTTP), and that of its “determination” (rate of interest). Dichotomy which is made worse since for PTTP he presents an extra

FEAE framework, while presenting his determination (rate of interest) within the framework of FEAE (summation of PTTP + productive-capital + rent-capital).

- 5) *Dichotomy of prices*: unfortunate attempt to establish a “special” theory of prices to explain interest. A situation manifested specially in the unnecessary task of “proving” their positivity, ignoring the positivity of prices axiom.
- 6) Asynchronic theory of production and rent.
- 7) Forgets the economic good-price axiom since he pretends to define interest from a need or valuation (preference), without referring to the economic good he assigns the price to.
- 8) Causal explanation of the existence of interest relative to the prices of capital goods. In contradiction with TET causality, in which all economic subjects having to do with time derive from the existence of economic time, and its price, interest. In other words, TET derives the theory of capital from the theory of time-interest, and not the Austrian inverted causality of interest, that needs to “prove” the existence of interest based on the theory of capital. Inverted causality that is essentially visible in the typical “guise” of interest as credit, to the point that later Austrians would say interest is the price of credit, instead of expressing it is the price of economic time.
- 9) Attempt to theorize on interest outside FEAE, an approach that would inevitably lead him to analyze rent outside the sphere of economic goods, expressing the possibility of the existence of rent which is not economic goods and vice versa. A clear negation of the economic good-owner axiom, opening the door to the varied and inconsistent explanations based on “circularity of rent”, and from there the determination of economic aggregates (national product, etc.) in detriment of the use of accounting as the best economic model, insofar as it is the accounting manifestation of the fundamental economic equation. Equivalent to pretending to have accounting without double entry.
- 10) Expressing his desire to offer a theory of interest outside FEAE saying original interest explains or is equivalent to the profit of capital, apart from the error in itself, which implies the idea of explaining it as the remuneration of “something”. Evidently within the classic interrogative (Ricardian benefit and Marxian surplus value), that would continue until the arrival of TET.
- 11) Unfortunate introduction of what would become PTTP, implying a return to the classic “Inverted” vicious circle: pretending to attribute interest (“positive by observation”) to a (residual) productive factor that is not considered as such. Opposed to Ricardo that considered land as a “zero” cost productive factor.

We reiterate that the French economist Emil James was wrong when saying that “*Böhm-Bawerk had already established interest as the price of time*”. It was TET that discovered that interest is the price of time, and to do this it first had to discover that time is an economic good, and a *necessary factor of production*. Evidently that James expression points to the enormous importance the temporal analysis of economic processes by Böhm-Bawerk had for economics, instead of the comparative static analysis that preceded him.

We can close this section of the theory of interest, dedicated to Böhm-Bawerk’s work, referring to a reflection by Schumpeter⁽⁵⁾ in italics, with our commentary:

...Because Menger, far from welcoming that theory as a development of suggestions of his, severely condemned it from the first. In his somewhat grandiloquent style he told me once: “The time will come (the birth of TET?)”

when people (TET?) will realize that Böhm-Bawerk's theory "is one of the greatest errors ever committed". (Schumpeter, 1954, p. 847, note 8)

¿Would the conclusions of this work have been the same as those Menger arrived at and derived in the commentary he made to Schumpeter? I cannot say if TET has come to confirm Menger's view, but we have no doubt that the fundamentals of TET are in line with Menger, and not so –as we have stressed in this text- with Böhm-Bawerk.

KNUT WICKSELL'S THEORY OF INTEREST

Together with Böhm-Bawerk, Knut Wicksell was one of the economists that had most influence on the twentieth century relative to interest theory, which Wicksell would “confusedly” involve in currency theory. We do not exaggerate the relevance of these two cultivators of economic theory if we say that the enormous amount of pages written in the last century do not offer anything essentially different from what these two great thinkers developed. Because of this, the task of investigating and analyzing Wicksell’s legacy should follow the same extensive and thorough method that we have employed with Böhm-Bawerk. On the other hand this is the best tribute to what we consider his valuable efforts, our differences notwithstanding.

Now we must study the contributions made by Knut Wicksell, a contemporary of Böhm-Bawerk, with whom he maintained correspondence. From the letters we observe that the latter paid little attention to the former, insofar as he was trying to explain the presence of “fiduciary” means that influenced the “phenomenon” of interest, not realizing he was operating within Böhm-Bawerk’s framework, and not seeing that those means belonged to the “guise of credit” in which the “phenomenon of interest”, as Böhm-Bawerk called it, manifests itself.

The methodology we will use is the same as with Böhm-Bawerk, in this case referred to Knut Wicksell’s work “*Interest and Prices*”,⁽⁶⁾ and the reader can already see what the title means in the framework of TET and its relevant discoveries, referred here to the different relations present between currency interest and currency prices, considering the alternatives $i_m \equiv p_m$ or $i_m = p_m$. A first reflection is the inappropriateness of the title, since with level of *prices* he is referring to the price of an only good, currency.

Continuing with the structure of thought we have generated when analyzing Böhm-Bawerk, it will not be difficult to identify Knut Wicksell’s place, since we are speaking of different stages in the same line of thought, that extended until the arrival of TET.

Introduction to Wicksell

The change from barter to economic exchange with a means called currency, which in its first stages appeared as money –a present economic good as means of exchange- (TET will show us that it can also acquire the form of credit –future economic good as a means of exchange-), produced one of the greatest errors in the development of economic theory: supposing this new order should be explained with “different economic theories than those sustaining economic knowledge in the framework of barter”.

This “different” scenario presented the idea that currency required a new economic theory. The first thing that comes to mind is the supposition that in the new currency world the principles that explained exchange –that we already had the opportunity to see in the section dedicated to Böhm-Bawerk- were altered, and from there it was necessary to develop a whole currency theory that needed to explain the “new economy with currency”. This is the way that the dichotomy “real non currency world” and “virtual currency world” begins. But if you thought that only exchange theory –with currency theory implicit- was going to suffer such a regressive impact, you would be wrong; the theory of interest would not be saved from this unnecessary ad-hoc theoretical whirlpool.

Following Böhm-Bawerk’s path of dichotomies, a contemporary of his would add other dichotomies, of the currency world versus the real world, of currency interest versus real interest,

of “absolute” prices (a terminological inconsistency considering price is a relative concept) versus relative prices. Many pages were written on this “inconsistent difference” that theoreticians pretended to find, all tending to prove that while Böhm-Bawerk had developed a theory of “real” interest, because he worked within the framework of barter and “neutral” currency (TET has already expressed the theoretical impossibility of such an event), Knut Wicksell would explain the “currency” theory of interest. In other words, Böhm-Bawerk had developed a theory of (real) interest, without considering the influence of currency, essentially outside of what appeared with the new reality of “fiduciary” means of payment (another terminological inconsistency since there is no economic payment without a present economic good, apart from the institutionalized prerogative of judiciary cancelation powers).

Once established that currency (money or credit) covers the need to facilitate exchange – overcoming the typical state of illiquidity of barter- and this being in itself an economic good, it is evident there can be no currency theory that considers currency as sterile, since exchange is not sterile, a concept that in ancient times led to consider charging “interest in currency” as immoral. Though it sound impossible, currency theories of the twentieth century gyrated in a “para-scientific” theoretical framework close to ancient mysticism, insofar as currency is sometimes “virtual” (mystical flow) and sometimes “real” (*stock* that has value). Though this has been abundantly analyzed by the currency theory in TET, we needed to present it here given its enormous influence on the theory of interest.

Posing Wicksell’s problem

Let us begin to unravel Knut Wicksell’s thought:

How far its use as money, or how far its use as a commodity ... really depends, as we have already seen, upon purely quantitative relations (in TET the first category that man is confronted with is quality -insofar as it defines if a thing is a good- then quantity, defining if it is an economic good. This essential error condemns Quantity theory, since it does not understand there is a lack of scientific rigor in quantifying without classifying first) It is just because the metal used in coinage is employed so little for industrial purposes,' and because, above all, its real consumption proceeds at so small a rate, that the value of money, at any rate over short periods of time, is not dependent on these factors, but is governed by quite different laws, which we still have to discuss... In passing, there is a point to be noticed. The growth in the use of money, and the increase in currency stocks, tends more and more to reduce the significance of the commodity characteristics of money. On the other hand, the development of the currency system results in a displacement of specie by credit instruments and so-called money substitutes (it is evident he did not consider these last as credit, since he differentiates them, a treatment similar to Mises'), and there exists, therefore, an important tendency towards a strengthening of the commodity aspect of money and of its influence on prices.

Wicksell tries to create a theory of prices different from the ones based on the laws of supply and demand of all economic goods, considering: 1) the good used as money acquires precisely this new and “transcendental” function of means of exchange –it is a serious situation if for every

economic good that adds or loses a function of satisfying this or that need we must have a new theory of prices-, and 2) there is a regression in the idea that money “is only useful” for exchange... If you are wondering, is this a regression to sterile money because it is only useful for exchange?, so are we.

Evidently Wicksell began the road to justifying the Quantity theory of money, based on analyzing the price of money in reference to the variations of prices expressed in currency, deriving from statistical observations in time, that lead him to the expression “purchasing power” of money. We will see TET considers inconsistent the approach of this theory, which had direct influence on Keynesians and modern monetarists.

We had to refer to this unfortunate start in Wicksell, because it would have great relevance in his attempt to relate the rate of interest and prices, with a concept on a general level of currency prices, that he would unfortunately call “absolute”, with which the relative essence of prices started to be forgotten. A situation Mises and Hayek will point out, though with different arguments than TET.

Dichotomy of prices (relative *versus* “absolute”)

Now we need to go back to previous pages, where Wicksell expressed he would need the Quantity theory of money, and the theory of production costs to develop his theory relating prices and interest. Let us see the chapter *Relative Prices and Money Prices*, a title that by itself is contradictory, ratifying what appears in previous paragraphs.

(p 22) *In short, money as such serves the purpose not only of a medium of exchange in the narrow sense but also of a store of value* (you do not need different theories for each good satisfying more than one need). (p 23)*The exchange of commodities in itself, and the conditions of production and consumption on which it depends, affect only exchange values or relative prices: they can exert no direct influence whatever on the absolute level of money prices.*

This brief text leads us to think there are prices that are different from those defined by science, and introduces “currency prices” which in economic thought would mean prices of goods expressed in quantities of currency units for which they are exchanged, instead of saying it is the price of currency expressed in amounts of units of the “rest” of goods for which they are exchanged.

Such inconsistency had to be topped off assigning that new entity the also inconsistent name of “absolute prices”, the plural implying a reference to the price of goods that are not currency, instead of the price in the good currency.

This last observation must have been what led Wicksell to “create” a new terminology in the terrain of prices, because it is known that the term price is relative by definition, but since he is in a dilemma he does not know how to solve within the referred primitive term, he decides to add an ad-hoc term.

It is our greatest desire that the reader understand the enormous importance of this initial error, which would persist until the arrival of TET at the beginning of the twenty-first century. We are speaking here of nothing less than altering the theory of prices, with the role they have in the “spontaneous order” (Hayek) of economic life of free human beings. An appreciation that allows TET to assimilate Mises’ concept of impossibility of calculus in socialism to the

impossibility of calculus in capitalism, with irregular-fractional currency-financial systems, sustained by current theories.

Wicksell continues with his thesis

(p 24) *If there is any reaction whatever away from a general level of prices that is too high or too low, it must originate somehow or other from outside the commodity market proper. Though he makes this comment leaving aside the function money has as a “store of value”, evidently his consideration has no substance, except if he is referring to “money that is **not** an economic good”, to “virtual” money. If this seems strange to you, it is the framework of twentieth century currency theory that Wicksell inaugurated –though to tell the truth, the Quantity theory already had important bearing on these fundamentals. (p 24) *Either the commodity which serves as money, being traded ... during which money fulfils the function of a store of value. But it seems that when we analyze reality “money is an economic good”, and therefore it will lose its condition of “virtuality”.**

Dichotomy of the worlds (real versus “virtual”)

The situation would not be so serious if he had not developed a *theory* starting from these two equivocal dichotomies of “virtual” money (with no value) *versus* real money (with value). But he did, and based on that currency dichotomy he builds two worlds. As we can see:

(p 24) *We shall later undertake a closer examination of both these views, one of which is connected with the so-called Cost of Production (real) Theory of Money and the other with the so-called Quantity Theory. Whichever of these views may be regarded as the more correct (they are in no sense opposed to one another) one thing is certain: money prices, as opposed to relative prices (as if this were not enough, the two worlds, with different prices are opposed, and then it will be hard to get them to work in “harmony and balance”), can never be governed by the conditions of the commodity market itself (or of the production of goods); it is rather in the relations of this market to the money market, in the widest sense of the term, that it is necessary to search for the causes that regulate money prices. (“widest sense” meaning, $M_1, M_2 \dots M_n$)*

(p 25) *These considerations are sufficient to enable us to examine a view which is so widespread that to question it at all would seem almost paradoxical. In discussions of the causes that have led to the fall of commodity prices during recent decades, it is constantly asserted that in part, perhaps for the most part, the cause resides “on the side of goods”. By this is meant that technical progress in... must have led to a cheapening of all, or of most, commodities, and so to a fall in the general price level.*

(p 25) *Such a statement can be formally derived from one or other of the independent theories of the origin and causes of the value of money, for instance, from the Cost of Production Theory or from the Quantity Theory. (It seems we can choose, but we will try to harmonize them, balance each world and the relation between them: “harmonic balance”).*

Later on and referring to authors that reject these two theories presented by him, he ratifies them, saying

(p 25) *...writers who actually reject the theories that have just been referred to as well as every other independent theory of money. It is as though this kind of explanation replaces every other theory of the value of money.*

(p 26) *In short, the same causes which can, as a matter of experience, be cited to account for a rise or fall in the price of any single commodity are put forward without further explanation, as soon as they extend to several of the most important groups of commodities, as the source of changes in the general level of prices.* Evidently Wicksell needed an exclusive theory to explain the price-value of money. What we do not know is what authors he is referring to, since all of them considered money as something special, as we saw in Böhm-Bawerk. The Austrian critique is commendable –in its cycle theory- insofar as it did not agree with the study of price levels, but of relative prices, but those same Austrians in turn considered money as something different, special, that required special theories (regression theorem, “special value for money” theory, continuing Böhm-Bawerk, accepting Gresham’s Law –even considering the forced circulation added by Hayek-, “money demand paradox”, “Inverted Keynes paradox”, Garrison’s graphs, etc. that TET will show us).

The “virtual” world of Quantity theory

The following passages of the chapter titled *The Quantity Theory and its Opponents*, where Wicksell criticizes Tooke, are a clear demonstration of the unfortunate road the theories of interest, of currency, and prices followed based on Böhm-Bawerk and Wicksell.

Quoting Tooke: (p 44) *"That the prices of commodities do not depend upon the quantity of money indicated ... nor upon the amount of the whole of the circulating medium; but that, on the contrary, the amount of the circulating medium is the consequence of prices."*

Wicksell’s commentary: (p 44) *There can be no doubt that there is much truth in this, but clearly it provides no clue to the causes that determine the value of money; it simply leaves the question an open one.*

It is completely evident that Wicksell’s causality of prices is completely inverted relative to price theory, being obsessed with explaining a statistical number, which is all Quantity theory is, pretending there is a need to find a cause or price theory that is special for money, “its general price level”, “its purchasing power”... That is why this paragraph presents two very important mistakes: rejection of the law of prices, since it pretends that the amount of money is what determines it, not realizing the amount of money has influence in determining the price of money as a good; and his expression “leaves the door open”, clear proof that his theory would need a theory of the prices of money different from that of economic goods. The most serious aspect of this is that all economic thought in the twentieth century followed the same road, money as something “special”, different”.

Continuing with the referred argument in defense of Quantity theory he needs to reiterate the fundamentals of his error, the divorce of two worlds.

A quote from Tooke: (p 44) . . . *As the cost of production is the limiting principle of supply, so the aggregate of money incomes devoted to expenditure for consumption is the determining and limiting principle of demand.*" Wicksell missed the chance to observe this passage from Tooke, being the origin of the modern and unfortunate macroeconomic analysis of national rent, different from the total wealth equation in TET, validating at the same time the dichotomy that presents the world of goods on one hand, and the world of rent (with and without goods), on the other. There is an evident dichotomic continuity in Wicksell that started with the classics, and was followed by Böhm-Bawerk (productive capital vs rent-capital) and the whole theory of the twentieth century.

Wicksell's commentary: (p 45) *Incomes determine prices; but we might just as well say—so at least it would appear—that the former are determined by the latter. With the possible exception of interest on loans (debentures, government securities, etc.), there is no category of income that is not, to a greater or less degree, dependent on, or regulated by, the prices of goods and services.* Evidently he confuses the causality of goods (rent is its flow) and prices (produced by the exchange of goods) deriving from the economic good-price axiom, that implies the existence of the good previous to the event of price; there cannot be a price of a good that does not exist. But though it may seem strange to you, this essential and simple truth was not seen from there on, and this was so because there was a need to explain the "coexistence" of a real world and another that was not real.

He continues his defense of Quantity theory with another expression:

(p 49) *Strictly speaking, we can assert that all money—including metallic money—is credit money. For the force which is directly responsible for the generation of value always lies in the belief of the receiver of an instrument of exchange that he will be able to obtain for it a certain quantity of commodities*

This is the same as saying the following two absurd things: 1) that bread is energy insofar as eating bread implies ingesting energy, in this way all food is energy, or that everything generating energy is bread, and, 2) he ratifies the fact that the whole of currency theory, previous to TET, theorized on currency based on the theory of money, here with the inverted aggravating factor of confusing a present economic good (money) with the future economic good (credit) and pretending to apply the same theoretical treatment to both. This mention of an inverted aggravating factor results from the fact that currency theories in general developed credit-currency theory based on the theory of money, but here Wicksell presents the inverted originality, considering money equivalent to credit, i.e., ratifying the fact that "even money" is not a present good, is something "virtual" (it is not even gold) that will become an economic good only when it is exchanged... If you see a similarity here with fiat-money, etc., you are right.

In chapter VI, titled *The Velocity of Circulation of Money*, Wicksell attempts to "solve" the conflict that appeared in the Quantity theory with the advent of the new financial-currency

systems –we know the conflict was already there with money- characterized by the presence of Paper Currency (PC) and the fractional banking system. To do this he presents three “imaginary” scenarios and combining them, the scenario of daily life would emerge, but he is not able to make it real, instead he continues with a “virtual” financial-currency framework. He presents case A – An economy with pure cash money (we suppose this is the equivalent of money for TET, though we will analyze the consequences for PC); B –An Economy with simple credit between private parties; and C – An economy with organized banking credit. In this framework, the paragraphs we consider to be central to this scheme will be sufficient to analyze the basis of the whole financial-currency system on which theory was developed in the twentieth century.

In the section dedicated to case A he simply describes the concept of rotation of pure money, while analyzing the “idle amounts of money”, which is nothing more than an analysis of the rotation of *stocks* of any economic good used in the financial-corporate world. But it is an “idle” *stock*, i.e., he regresses to the old concept of sterile money. It is the same as saying that bread in stock is sterile. Thus he installs the Keynesian idea that this “idleness” could be used to good advantage with the “new instruments”. In this section he presents the idea, also Keynesian, that there can be a demand of money for speculation and exchanges, a reality that unfortunately will be analyzed outside FEAE.

Things start to get complicated for quantity theory.

(p 59) So far we have imagined a pure cash economy without credit or the lending of money (we suppose money in the sense of TET). This is a purely hypothetical case, for at no stage of economic progress can the phenomenon of credit have been entirely absent. If we proceed now to take it into account the whole situation would appear to be altered; the ground would at once seem to have been cut away from under the Quantity Theory. But no substitute for money is provided by simple merchandise credit or simple lending of money from one person to another. What they do is to provide a powerful pulley for accelerating the circulation of money (a very serious mistake, since the circulation of money does not accelerate, what accelerates is the use of credit denominated in money). Indeed there would be absolutely no theoretical limit to the extent of this influence if it were possible to leave out of account those practical obstacles of which we shall be speaking shortly ... But with the aid of some form of credit, the need for money and the amount of cash holdings could be diminished to an unlimited extent.

I believe there is no need to read more of the tons of printed paper of the twentieth century that simply refer to these basics. Evidently Wicksell “discovered” the existence of credit denominated in money, and that allowed him to say the quantity of money is multiplied with the use of the “new instrument”, not realizing that money is one thing, and credit denominated in money –with indirect materialization- is another. To simplify the idea, you can commit to returning bread, and that will not affect the *stock* of bread or its rotation, a situation that could appear at the time you have to cancel the credit since you will be demanding bread to do so. Unfortunately Wicksell believes, the same as all the theory of the twentieth century, that credit can be “limitless”, forgetting there is no credit without the presence of a present economic good that validates it as credit –be it PC “printed by the State”, or a bank balance “printed by banks”. We must also mention his absurd expression that the reduction of a *stock* can be “limitless” –

does it just change from an economic good to a good?- an occurrence only admissible in a “virtual”, paradisiacal framework, where economic goods acquire the category of goods.

This paragraph presents the foundation for current currency theories, without exception, that are based on the idea that as long as there is demand for credit-currency and its bank fractional multiplier, there are no risks, everything is going fine. The truth is that credit is generated with present economic goods, and for borrowers this implies returning in the future present economic goods. And all debts come due at one time or another, though some think that PC or a bank check made out to cash have no due date and do have “debt cancelling power”, a juridical aspect that is in contradiction with the economic aspect, since we are in the simple presence of debt novation.

The following paragraph clearly shows the confusion with the concept of credit

(p 60) *And equally in the case where credit takes the form of loans rather than of merchandise credit.* Evidently for the world of the twentieth century there is a need for a concept of credit when there is money involved and another for commercial credit. The only possible explanation is that they consider it possible to generate credit without present economic goods, the heart of the error in current currency and interest theory, which TET would correct.

(p 61) *nowadays an enormous amount of such business is settled entirely without the use of money.* Everything is fine until he says “settled”, if by this he means closing the operation with the delivery on both parts of present economic goods, i.e., “cash”. But we know that if credit is present (PC and bank checks) this is not the case, the operation is not “closed” until the debtor delivers present economic goods.

(p 61/2) *The velocity of circulation of money is now seen to be a somewhat elastic quantity, but it still possesses sufficient powers of resistance against expansion or contraction for the conclusions of the Quantity Theory to retain the appearance of substantial validity.* He repeats the mistake of supposing it is money that is circulating, instead of credit denominated in money, i.e., as if saying the velocity of circulation of carts has increased because there are less carts being used for transport, instead of realizing carts are no longer used, an example that does not imply adhering to the idea of the “barbarous relic”. From that error derives his fruitless effort at “saving” QT.

In section C it will suffice to refer to the following paragraphs:

Before ratifying that “commercial credit allows an increase in the speed of rotation of money” he reiterates that in theory there is no limit for its expansion (p 62) *...But in practice...* (p 62/3) *In a developed credit economy both these obstacles are removed, and either actually or virtually (textual) a higher velocity of circulation is provided—or, more correctly, the velocity of circulation is capable of being increased more or less at will.* We must stress that the term “virtual money” used by TET shows clearly that it could not have better “endorsement” than the one presented by the offer of the “virtual” world, himself. Here we observe another peculiarity that sustains twentieth century thought: it places “virtual and real” in the same scenario.

(p 64) *It turns out therefore that bills merely provide once again a method of causing a virtual acceleration in the circulation of money ... (p 65) and they can thus actually dispense with money. .. (p 65) The circle of payments is then completed without the employment of any money whatever. (p 65) have developed so far as to have dispensed almost completely with the use of money.* Evidently he adopts the juridical criterion of credit cancelling capacity to accelerate the speed of circulation of money *virtually*, and does not see that in economics the only way to cancel a credit is with indirect materialization, i.e., giving in payment a present economic good, the balancing entry for the initial indirect materialization that originated the credit.

(p 65) *A more powerful influence in this direction has been exerted under the head of our second category, the development of the banking system (here we find that Wicksell mentions credit, not money, but within the fatal error of thinking that its origin is the banking system, not the market, as TET would later show)...*

(p 66) *Then experience shows that the aggregate holding is subject to relatively much smaller variations than the individual holdings. This is partly due to the regularity of chance, the "Law of Large Numbers".* A direct reference to the motive for the emergence of the multiplier derived from fractional bank reserves, which only indicates that the calculus of speed increases relative to considering credit denominated in money as money. In other words, the fact that there are 100 kg of potatoes and credits denominated or given in potatoes for a period for 1000 kg of potatoes does not imply at all that the velocity of circulation of potatoes has increased 10 times, it simply tells us that there is credit in potatoes equivalent to 10 times their *stock*, we do not observe any difference between money and Wicksell's credit in money and potatoes and credit in potatoes in our example.

(p 68) *It is possible to go even further. There is no real need for any money at all if a payment between two customers can be accomplished by simply transferring the appropriate sum of money in the books of the bank. (p 69) A bank note is essentially to be regarded as a kind of deposit-receipt or check, which passes through a number of hands before it is presented to the bank either for redemption or as a deposit.* If we still needed something to justify the terminology of virtual money that TET uses, this paragraph is it. If the reader wishes to get a better grasp of the view in TET, in the book "*Theory of Economic Relativity*" not only can he find the theory, but also a detailed accounting demonstration that allows us to conclude that PC and bank notes (fractional) are credits, never money. We must stress that Wicksell equates the automatic endorsement on view of money (a deposit certificate of a real economic good, a certificate of property of money, gold, silver...), with the deposit certificate of a "credit", equivalent to an IOU. And he establishes this assimilation based on the fact that both are "on sight"; what he forgets is that with money one has gold "on sight" and in the other case a promise of "novating" or of "being able to buy". TET correctly shows the consequences when novation is embodied in an irregular credit such as PC.

(p 69) *Notes can be obtained only on payment of interest (or in exchange for commodities) (as TET has established, as long as there is no first exchange for merchandise, present economic goods, there is no credit. But here we find the*

confusion, the bank simply credits “papers” in a current account –bank accounting entry- and will debit interest for the time agreed with the receiver of the accounting credit. But it is the market that ends up giving the loan, when it contributes the present economic goods in exchange for the accounting balance. In this manner it is clear that who gives the credit is the party receiving the balance in its current account at the time of delivering the present economic good in the exchange. This means that the market that holds the “accounting balances in current account” in exchange for present economic goods is “permanently” giving Wicksell’s banking system credit. (p 69) *but they earn no interest for their owners.* (in reference to the fact that owners of balances in current accounts –with a multiplying effect because of the fractional system- do not receive any retribution for the credit). An excellent description of reality, the market gives the credit and the interests are perceived by the irregular-financial-state-currency system.

69) *The matter can be put in other words as follows : Notes provide in themselves the basis for a more or less elastic system of credit, and (according to TET the basis for credit is the market, with no cost for the State-Banking system) (70) they circulate with a velocity which is more or less variable (considering the market can bear the fiscal-financial cost of loaning without charging interest). (70) It is for this reason that it was never possible for even the older supporters of the Quantity Theory to provide a satisfactory demonstration of the exact relationship which they held to exist between the price level and the quantity of notes (and coin).* We see the “older supporters” did not mix money and credit, i.e., their “ignorance” did not admit adding pears and potatoes ($M_1, M_2, \dots M_n$), an idea with which Wicksell believes he can “rehabilitate” QT. (p 70) *We intend therefore, as a basis for the following discussion, to imagine a state of affairs in which money does not actually circulate at all, neither in the form of coin (except perhaps as small change) nor in the form of notes, but where all domestic payments are effected by means of the Giro system and bookkeeping transfers. A thorough analysis of this purely imaginary case seems to me to be worthwhile, for it provides a precise antithesis to the equally imaginary case of a pure cash system, in which credit plays no part whatever. The currency systems actually employed in various countries can then be regarded as combinations of these two extreme types.* Evidently passing from two imaginary worlds to a real one is akin to magic, but this does not stop him. (p 70/1) *If we can obtain a clear picture of the causes responsible for the value of money in both of these imaginary cases, we shall, I think, have found the right key to a solution of the complications which currency phenomena exhibit in practice.* Evidently Wicksell undertakes the task of dominating the world of magic –a theory that simply describes the scenario confronting currency authorities- and will end up offering explanations of something that does not exist, as is the case of his two imaginary worlds that must become reality. TET clarifies that we are in the presence of currency that can be money and/or credit, which can be regular or irregular (PC) and to which a fractional banking system can be added. He continues: (p 71) *(A close examination of such a simplified system should also be of service, as we shall see, in settling certain other economic questions.)* that exclusively derive from this

reasoning of a “bi-polar” currency system, not realizing that this world with currency is real, not imaginary.

Then he describes (p 71) *The actual exchange of commodities* (actual here means daily operations, not the real world) *proceeds very simply.* (p 71) *The buyer draws a check on his balance (or on his credit) for the appropriate sum, and the seller cashes the check, the sum being thus credited to him by the Bank. But within a short space of time goods must be paid for by goods...* Implicitly admitting the presence of a credit operation, which implies exchange of goods in time, even if it is a financial transaction in a tenth of a second, a situation that is ratified in what follows: (p 72) *It follows that the sum of the amounts debited must be equal to the sum of the amounts credited...* Confirmation that we are talking of a credit operation, since we know in the balance of the social set, or in related companies, credits and debt cancel out. Evidently the accounting settlement of credits and debt, referring to the macro level, leads to the superficiality of not realizing that there are debts and credits in the micro world, a theoretical blunder that is related to managing aggregates that originate the inconsistent concept of “fallacy of composition” that TET denounces.

As we have repeatedly stressed in the book *The Theory of Economic Relativity*, the fact that credit is on sight is confused with a cash operation. This simply allows the holder of an on sight credit (PC) to exchange it for present goods immediately, but the PC will be in the hands of another and will continue to be an on sight credit. This is repeated many times with the simple argument that everything is a question of a simple accounting entry. Now we can see the origin of Wicksell’s error.

The referred aspect of “credit on sight” for each individual, that becomes “permanent” for the whole of society, must not lead us to lose sight of the central error in Wicksell’s description, insofar as the bank did not extend any credit to the “buyer” for his balance, instead the first acceptant of this “current account balance” (the “seller” of the present goods) is the one extending the credit to the “banking system”, a credit that at every moment is being extended by the owner of a current account balance and PC. The bank is not extending credit at all for the balances “credited” in a current account; the owner of that balance is extending credit to the bank system.

We are coming to the point where Wicksell starts to apply his arguments in defense of Quantity Theory, which can only offer failed results, due to their “virtual” framework:

(p 75) *What is it in our system, and so by inference in the real world, in so far as its conditions correspond to those which we are postulating, that determines the exchange value of money and the general level of commodity prices?* The fact that this question is asked ratifies what the basis for his reasoning is: he equates the money *stock* to the credit *stock* (PC and fractional bank system) exchangeable or novatable for money, and considers it a money *stock*... (p 75) *No money circulates and for the purposes of domestic trade no money need be kept in reserve.* (Keynes was not original, somebody had already presented the “barbarous relic”). (p 75/6) *Means of payment, or purchasing power, can be*

provided in accordance with the dictates of choice and necessity. (money with no cost, “virtual” money, is at hand for anyone who needs it, you only need to “print the ticket to paradise” that comes in the format of PC and/or a current account balance) (p 76) *The Quantity Theory of Money would appear to be deprived of its very foundations* (Wicksell tries to reestablish those foundations that are in doubt with the expedient of adding dogs and cats, money and credit).

There is no other way out and he ends the chapter stating the problem of bringing down to earth that virtual currency-financial world, of limitless resources, in which interest does not exist, time has no price –that led Silvio Gesell to propose, with Keynes’ support obviously, stamping PC in an attempt to make it “real” and giving it a cost.

In the following chapter Wicksell will try to “go back to the real world” including the real rate of interest, that acts as a regulator of the virtual and limitless world he proposed. In other words, TET says simply that there is no currency, be it money and/or credit (regular and/or irregular) that does not have its origin in the real world, and that is not based on present economic goods. TET always operates within the real world of FEAE.

The interest-prices relation *between* Wicksell’s two worlds

Now we will analyze chapter VII titled *The Rate of Interest as Regulator of Commodity Prices*, title that synthesizes the whole of twentieth century thinking, which would be known as the “indirect transmission mechanism”, referring precisely to the interest ↔ prices relation. To deploy his idea he compares the different approaches that existed on this matter and then presents his own, which we will analyze in light of TET.

(p 82) *According to Ricardo, such a new issue of notes must necessarily bring about a rise in prices.* We reiterate that in the classics there was the error of not seeing the “inverted causality of currency prices”, i.e., not realizing that it is the relative price of currency and not absolute prices of other goods. Thus, the expression “*rise in prices*” is referring to the variations in the price of money, Wicksell’s general price level. If you believe this is of little importance, for us it is the essence of the problem: abandoning the concept of price, which is relative by definition.

(p 82) *Quite a different line of approach is to be found in the writings of the school of Tooke ... It is here maintained that on the assumption that the banks issue notes purely by way of lending ...the banks are entirely dependent on the requirements of the business world for means of payment and have no means of affecting these requirements or of influencing prices.* It is evident that Tooke was close to TET, since there is no credit without the presence of a present economic good (which is in the “real market”), but he could not realize this since he did not understand the real causality of the origin of credit. He believed also that banks generate credit, not the market, a situation evidenced by the paragraph we underscored.

(p 83/4) *It is necessary then to admit that it lies within the power of the banks to diminish the quantity of means of exchange, for instance by raising the discount rate. It is scarcely logical to deny that, by means of the reverse operation, the*

banks can bring about an increase. Here we are within Wicksell's thinking, where he says "regulated prices" alter the functioning of markets. For this he does not need any theoretical development outside of the treatment of prices by economics. Here the only consideration that is needed is that what is being regulated is the price of economic time, in this case through interpersonal exchange (credit). If a community gives credit at no cost to a certain sector (State-Banks), with zero interest, it is obvious that this will have a different "discretionality" from a competitive market. In other words, a sector that is given an economic good as a good. I believe this is what Tooke referred to, but without TET he could define it precisely.

(p 87) *that a fall in the rate of interest...or more generally an easing of credit (privileges for the State and Banks is more adequate), takes place without any other change in the market situation, so that it really increases the profitability of Enterprise....* (corroborating the commentary we have made on the preceding paragraph, the party receiving privileges obtains benefits, that "somebody always pays for" in economics).

(p 88) *A low rate of interest is by no means always accompanied by high, or by rising, prices.* (a ratification that an instantaneous redistribution of wealth occurs –there is no need of "cycles" to explain it- since economic time always has a price, interest, and just like any other price, can never be zero or negative). (p 88) *In fact the opposite is the general rule.* (p 89) *The "other stimulus" of which Nasse speaks cannot possibly reside in anything else but the hope of higher profits.* Evidently that, apart from not being able to establish a law that avoids the flawed "general rule", he also originates the idea later sustained by Keynes that benefits derive as a consequence of the rise in prices, a condition that is not necessary, as Hayek correctly observes.

(p 94) *It is to be supposed that the maintenance of a lower rate of interest has effects, ceteris paribus, which are not only permanent, but also cumulative. To understand the connection, attention must be devoted to the rather formal nature of money prices, and also to what may be termed the vis inertiae in the economic mechanism. Though the determination of money prices often appears to be supported on very airy foundations, it is outside the power of any individual to fix them to suit his own desires.* Evidently the "transmission mechanism" leads him back to the world governed by gods that human reason cannot reach. Even so, he will propose a solution so everything can return to this world, to normality... (p 94) *But for the economic system as a whole, there is no tendency for any alteration in a structure of prices which has been once built up.* If you see here something similar to the original sin that led us to be expelled from paradise, and to which you can return by repenting, I believe you are not wrong. Though it may sound incredible, this is the argument he will present to "recover the natural state" that has been lost (natural interest rate).

(p 94/5) *So a fall in the rate of interest, even though it is casual and temporary, will bring about a perfectly definite rise in prices, which, whether it is big or small, will persist as a permanent feature even after the rate of interest has returned to its former value.* Here he speaks of the possible punishments we must receive for the currency sins, something that has occupied economic thinking in

the twentieth century, to our day, with recurring crisis. A totally different theoretical panorama than the one presented by TET.

(p 98) *I can think of but one exception to the rule that easier credit must lead to a rise in prices. This is the case where goods are produced to order, or the very similar case where goods are sold for delivery in the future (on a forward basis). The producer or seller then has to include in his estimate of costs the interest payments which he incurs over the intervening interval of time.* A text that ratifies clearly that Wicksell did not realize the currency-financial system that he was trying to explain is based on credit, since here he accepts that interest should be paid for credit. In other words, if Wicksell had understood TET he would also have appreciated that there was no need for a new theory of interest, since the “guise of credit” of the “phenomenon” of interest had already been analyzed by Böhm-Bawerk, though we do not agree with his approach.

Then he continues:

(p 100) *We had arrived at the conclusion that, so long as the situation in the market remains unaltered, any permanent fall, no matter how small, in the rate of interest maintained by the credit institutions will cause the general level of prices to rise to an unlimited extent in a continuous and more or less uniform manner. And in the same way, a rise in the rate of interest, no matter how small, will, if maintained for sufficiently long, results in a continuous and unlimited fall in the prices of all goods and services*

Here Wicksell ratifies his defense of Quantity theory insofar as he centers his analysis on the general level of prices (his currency or absolute prices), not realizing obviously that it really is the currency price levels relative to “other” goods.

Wicksell’s search for “neutral” currency

At this point it is evident Wicksell should start searching for the formula that will allow him to take advantage of the benefits of the world with money without the problems of a world with money or, if you prefer, the benefits of barter in a world with money... If you consider this to be incoherent, that is the terrain we are in, and Wicksell continues...

(p 100) *But it has to be remembered that the rate of interest referred to as the "previous" or the "normal" rate, away from which our deviations are imagined to originate, does not always remain the same and cannot be thought of as so much per cent. It merely means that rate which, having regard to the situation in the market, would be necessary for the maintenance of a constant level of prices. That there must always be such a rate was the implicit assumption underlying our whole argument.*

A ratification that there is a currency world and a non currency “previous-normal” world, in which things would be otherwise –the paradise lost because of the original sin where we could return establishing “currency rules”- where the “general price level” (i.e., the price of currency)

would be constant and for this all you need is for the “previous-normal” rate of interest to fluctuate. One of the most serious problems Wicksell “starts to introduce” here, that would later influence all economic thought, is the “need” for the “general price level” to remain constant, a theoretical and factual impossibility –here we refer to the price of currency, but it is valid for all prices based on the exchange axiom.

Then he compares the currency situation: (p 100) *It should now be clear that, in so far as our hypothetical conclusions are in accordance with reality, the movement and equilibrium of actual money prices represent a fundamentally different phenomenon, above all in a fully developed credit system, from those of relative prices.* Since we consider that a price remaining constant is a theoretical and factual impossibility, this is more so for more than one price. (p 100/1) *The latter might perhaps be compared with a mechanical system which satisfies the conditions of stable equilibrium...* (p 101) *in so-called neutral equilibrium...* (p 101) *It is, of course, clear that such forces (that unbalance) can never be entirely absent, (an implicit acceptance of the exchange axiom) no matter how developed the credit system may be, if a precious metal or some other material substance serves as a currency basis. The simple quantity theory is no longer adequate to deal with the nature of these reactions and with the manner of their operation. It is this question which we shall shortly be considering.*

Evidently when he introduces a different currency-financial system from money –a Böhm-Bawerk framework, if you will- with paper currency and fractional bank system, he states that Quantity Theory cannot explain things. This means that the world of relative prices (which he limits to the real world) presents difficulties for the currency world (of the general price level that does not remain “stable-constant”) and in this case he sees clearly Quantity Theory cannot “explain things”. One would suppose he would then abandon it, but no, he simply strives to find the “cement” that will allow him to fix the bridge that has broken down between the two worlds.

From here on economic theory and politics have gone in search of the “cement”, by trial and error, with no sustainable theory. And this because it is confronted with the problem of attaining constant and simultaneous stability of both worlds, i.e., what he is presenting is an inanimate world. All this is what he summarizes with his idea of economically neutral money, a theoretical inconsistency that TET has pointed out, both in Wicksell’s ideas and in those of the twentieth century...

Before we leave chapter 7, *The Rate of Interest as Regulator of Commodity Prices*, we must underscore the evident conceptual distance –in reference to causalities of economic goods and prices- between Wicksellian proposals of the twentieth century and those of TET, derived from the equations $i_m = p_m$ or $i_m \equiv p_m$, depending if we are in the presence of money or credit (regular and/or irregular) as currency.

Wicksell develops the formula of “neutral” currency

In chapter VIII Wicksell goes on the search for the “cement” that will reestablish the bridge that linked the two worlds –the return to the “natural-normal” world- and for this he recurs to his well known “natural rate of interest” (*natural rate of interest of capital*). So as to analyze in as

concise a manner as possible this transcendent chapter, foundational for all the later deviations of interest theory, it is very interesting to read his first page and a footnote:

(p 102) *THERE is a certain rate of interest on loans which is neutral (concept of theoretical impossibility in economics, for any price and/or economic good) in respect to commodity prices, and tends neither to raise nor to lower them (evidently he does not consider the necessary intervention of interest in the formation of all prices, because if we consider this, it shows interest must be constant in the relative participation of all economic goods all the time). This is necessarily the same as the rate of interest which would be determined by supply and demand if no use were made of money (evidently he does not have a theory of interest that can explain all cases, including barter and Robinson Crusoe, as was Frank Fetter's wish, which was fulfilled by TET) and all lending were effected in the form of real capital goods. It comes to much the same thing to describe it as the current value of the natural rate of interest on capital.*¹

¹ *It is usually said that in modern communities capital (of the mobile kind) is lent in the form of money. But this is a metaphorical and inexact manner of speaking which can easily lead to error. Liquid capital, which is what we are considering, or in other words goods, are never lent—they are never given and taken by way of borrowing—they are simply bought or sold. Even merchandise credit does not involve any lending of commodities, either from the legal or from the economic point of view. It represents a sale where payment is temporarily postponed, or, if you like, a cash transaction combined with a money loan. (We believe he is referring to the wide concept of money in TET, not gold-money, but this does not affect our reasoning). Otherwise it would be necessary to pay back the same or an identical parcel of goods, together with accrued interest; or there would have to be a guarantee that in exchange for the stipulated sum of money the same quantity of commodities would be obtainable at the time of payment as at the time of purchase; but this is never the case (in line with the exchange axiom that tells us nothing remains the same in time, but that does give consistency to his reasoning).*

Evidently this is the reasoning underlying the currency and interest theory of the twentieth century, that considers the possibility of the existence of exchanges other than cash and credit, and that it could be carried out without a present economic good, an error that leads to “virtual” money, obviously not forgetting exchanges of credits, called today “secondary”. If we read the whole text we have underscored, we are left with these reflections:

- 1) If goods are not loaned, evidently there is no credit –interpersonal exchange of present for future economic goods, that TET simplifies with interpersonal exchange of economic time-, therefore no interest rate appears in that market.
- 2) *It is a sale with temporarily deferred payment*, a defective definition of credit, since there is an exchange of a present for a future economic good.
- 3) *Or, if you prefer, a “cash” transaction combined with a “money” loan*, a very interesting expression that contains the “mystery” of the error of theories that followed this path, and we are left with the following alternatives:

- a) *“Cash” transaction*: refers to a formal purchase-sale contract, in line with the rest of the text. Here we must suppose an exchange of present economic goods today and present economic goods in the future.
- b) *Combined with a “money” loan*: which tells us that money is a mere contract that simply stipulates the temporal aspect, i.e., it only establishes the time during which this cash transaction “is not effective”. In other words, Wicksell’s money is a simple contract that stipulates the conditions; the money does not exist as an economic good, it simply covers the legal aspect of the terms of exchange in a period of time. This puts us in a serious dilemma since we are confronted with the inverse of case (1), in which there is no credit because there are no goods; here we have credit because there are goods, because the credit is in money, and this is a mere contract...

Here it is important to stress Wicksell sustains the wrong idea that:

p 49) *Strictly speaking, we can assert that all money—including metallic money—is credit money. For the force which is directly responsible for the generation of value always lies in the belief of the receiver of an instrument of exchange that he will be able to obtain for it a certain quantity of commodities.*

The fact of considering metal money as a non present economic good, or that it is present but will only have “value” (will be a good) as money at the time it is exchanged, implies a double error:

a) assimilating money to credit-currency, which is why currency theory is developed based on the theory of money, supposing both types of currency are the same, which can only lead to error, since one is subject to all the economic laws of present goods and the other of future goods—which is the origin of what we have called “the paradox of currency demand”.

b) Stating that money only has value at the time of the exchange; this is like saying bread only acquires the condition of bread at the time it is ingested. From this concept also derives the idea of the velocity of circulation that sustains Quantity theory, not realizing it is the same as studying the rotation of the *stock* of any economic good used for the financial analysis of asset rotation, and multiplied by profit margins on sales allows us to define the type of business we are analyzing; whether low margin and high rotation or vice versa.

We can see all currency and interest theories of the twentieth century are based on this, insofar as they theoretically admit the possibility of credit without the presence of present economic goods. A situation we find in the idea that the State generates currency through Paper Currency (PC) and banks generate credits through the fractional system. TET has shown, with double entry accounting in currency and physical units, that in both cases it is the market that confers on them the economic entity of credit; meanwhile they are simply printed paper or accounting entries.

The observations we have made in this section discover the real seed of the idea that the irregular-fractional-financial-currency system is what expands or contracts credit, and that economic cycles originate there..., with the market having no incidence, as if there were no link to it. This means that the State and financial centers profit from the business of credit with the cost born by the people, i.e., there is no difference between “real rates” and “currency rates”, there is a cost for the service of economic time, and no matter what the price, selling leaves a

profit for the party that does not pay the cost. As the saying goes, “there are no free lunches”; recurring crisis are only a scenario to make somebody pay.

A theoretical regression in search of neutral currency (profit and interest)

Then Wicksell continues in search of the earthly “norms” (the “cement” in commercial packaging) that will allow us to return to the previous world, for which he regresses to trying to prove interest derives from the profit of capital, from the productivity of capital, etc. In other words, he follows Böhm-Bawerk’s path in establishing the rate of interest to draw away “the veil of the virtual currency world”:

(p 49) *Strictly speaking, we can assert that all money—including metallic money—is credit money. For the force which is directly responsible for the generation of value always lies in the belief of the receiver of an instrument of exchange that he will be able to obtain for it a certain quantity of commodities.* (p 103) *If this procedure were adopted by all entrepreneurs who work with borrowed capital (the opportunity cost allows the inclusion of all business people, including those that work with their own capital), competition would bring about a certain rate of interest that would have to be paid to the capitalists in the form of some commodity or other. (He is oblivious to TER, and adheres to “classic adjustment”, instead of Mises’ “enterprise” spirit and Kirzner’s “alertness”). The amount of this rate of interest would be determined by the “supply and demand” for capital (here he needs to find an anchor for the virtual world in the real world, the origin of the later and unfortunately famous IS/LM curves, Philip curves, Garrison graphs, etc... and any model not realizing that $i_m = p_m$ or $i_m \equiv p_m$)... (p 103) But it is possible to set for the rate of interest an upper limit which has a more palpable significance. This limiting value is the amount by which the total product (or its equivalent in other commodities) exceeds the sum of the wages, rents, etc., that have to be paid out. The magnitude of this excess depends on the productivity of the business on the one hand, and on the other hand on the level of wages and rents... It is clear that the entrepreneur cannot pay more than this limiting amount... If you perceive we are in the terrain of assimilating profit and interest; of trying to return to the rent-capital versus productive-capital dichotomy; where Böhm-Bawerk’s capital-rent concept is as “virtual” as Wicksell’s currency world; and the terrain of Ricardian benefit and Marxian surplus value... we perceive the same.*

(p 103) *Now if money is loaned at this same rate of interest, it serves as nothing more than a cloak to cover a procedure which, from the purely formal point of view, could have been carried on equally well without it. The conditions of economic equilibrium are fulfilled in precisely the same manner. In such a case, there is no occasion for any alteration in the level of prices. In a developed credit system, ... there is no need for metallic money at all. TET’s “world without money”, as a superior stage of interpersonal exchange where money-currency is replaced by credit-currency, with a different theoretical causality, with the proviso of differentiating regular from irregular credit (PC).*

Wicksell has just explained that human economic development that discovered the enormous benefits of interpersonal exchange, led us to this stage: **“a state of barter (because money does not exist) without barter (because goods are not exchanged directly), with the benefits of the world with money but without money”**. Evidently TET’s answer is much easier: from the state of interpersonal exchange with barter we went to the state of interpersonal exchange with money, and from there to the state of interpersonal exchange with credit. From this it clearly results that currency can be in the form of money and/or credit, which in turn can be regular (“gold-silver, rice standard” etc.) or irregular (PC), to which the fractional financial system is added.

Wicksell fully into twentieth century thought

Then Wicksell fully introduces the explanation of interactions between the two worlds, that of the natural (real) interest rate, and that of the currency (virtual) interest rate, which he links to his inconsistent average price level:

(p 105/6) *Now let us suppose that the banks and other lenders of money (the State) lend at a different rate of interest, either lower or higher, from that which corresponds to the current value of the natural rate of interest on capital. ... If prices remain unchanged, entrepreneurs will in the first instance obtain a surplus profit (at the cost of the capitalists) over and above their real entrepreneur profit or wage... the prices of commodities must rise... If the rate of interest rises, the opposite situation is created... and prices fall.* Wicksell shows us that with cheaper credit companies will sell more, and the increase of demand will make prices rise, i.e., he does not explain anything that needs explaining with the laws of supply and demand, of which business people know much more than us, economics theoreticians.

(p 106/7) *But the money rate of interest (assimilating money to currency, just as theory followed this unfortunate error of trying to develop currency theory based on money theory, which was uncovered by TET) (p 107) can lie sometimes above and sometimes below the natural rate, and there is no reason for not expecting a sufficient degree of coincidence to prevent substantial fluctuations in prices.* Evidently the relation between currency rates of interest and currency prices deriving from his analysis did not include the equations $i_m = p_m$ or $i_m \equiv p_m$ found in TET; if it had, he would not even have considered Quantity Theory, and he would have considered the average price level as a simple statistical datum and not have used it to develop a “currency-financial policy” that, in light of TET, is always (immediately and in the short and long term) appropriation of others’ wealth.

But in this same page (107) he completely validates TET, obviously ignoring its existence:

(p 107) *Our problem is, therefore, to show that in those periods when upward movements of prices have been observed, the contractual rate of interest—the money rate—was low relatively to the natural rate, and ... It is only in this relative sense that the money rate of interest is of significance in regard to*

movements of prices. There can be no greater contradiction than Wicksell speaking of the rate of interest of money as a price relative to the prices of all other goods. Where did his average price level go as the center of his theory of money for an original economic good, that now turns out not to be an original economic good, since its price is relative to the prices of all other goods? Or does Wicksell consider prices are only relative in barter? With his approach there is no doubt he considers prices to be relative only in the world of barter. Obviously he needs to continue his explanation because he finds himself in a real bind... *It can at once be seen that it is quite useless to try to demonstrate the existence of any direct relation* (official birth date of the unfortunate “indirect transmission mechanism”) *between absolute movements of the rate of interest (i_m) or of the discount rate and movements of prices* (variations of p_m).

Evidently Wicksell found a great conflict in his discourse and this was due to his not seeing any of the situations that TET clearly shows us: with money $i_m = p_m$ and with PC $i_m \equiv p_m$. Both situations explain theoretically Wicksell’s “factual” conflict. In other words, his whole construction falls with these two simple equations from TET. We can see currency and economic theory in the twentieth century did not understand all this either. If it had, it would not have followed all the paths that TET criticizes.

Then Wicksell shows his worries, referring to the sensitive issues that appear:

(p 108) *The money rate of interest depends in the first instance on the excess or scarcity of money. How then does it come about that it is eventually determined by the excess or scarcity of real capital?*

In this passage he corroborates the main defects of twentieth century currency and interest theory:

- 1) He states that interest is the price of currency, since it depends on its excess or shortage. This was not modified by any school, since Keynesians and monetarists considered interest to be the price of currency, and the Austrians as the price of credit, ergo, when credit is currency, both theories are “pure” Wicksellian theories. In other words, it is wrong to state that Wicksell inspired different schools. All of them continued with the same train of thought, with discrepancies in secondary subjects, specifically in the treatment of “crisis and/or recurring currency cycles”.
- 2) The dichotomy of interest, since he considers there are infinite guises, depending on the economic goods that exist, and that he places in two different worlds: the (virtual) world of money and the (real) world of infinite economic goods.

A footnote in the previous passage shows Wicksell’s preoccupation: otherwise he would not have presented the fundamental question: *What is interest?*

Then he ratifies his ideas:

(p 109/10) *If an attempt had been made to search for the real cause* (that he finds in the dissonance of real and the “virtual” worlds), *instead of being satisfied with such catch-phrases as "capital loaned in the form of money"* (reviling the

existence of the two worlds he created), *it would have been seen that the connecting link is supplied by the level of commodity prices* (his general level of prices – sic). *The only possible explanation lies in the influence which is exerted on prices by the difference between the two rates of interest. When the money rate of interest is relatively too low all prices rise.* Wicksell does not realize that it is not that relative prices of goods increase, but that the relative price of economic good currency decreases relative to all other economic goods. This inadvertence is originated in his assigning the variations of the relative price of currency, vis-à-vis all “other” economic goods, to “average” variations in the relative level of prices of “other” economic goods expressed in currency. A thought structure that becomes even more complicated because he also does not consider the TET equations we have reiterated: $i_m = p_m$ or $i_m \equiv p_m$.

As can be expected, in the following paragraph he opens the door to “virtual” money, Keynes’ “green soap factory if people want green soap”:

(p 110) *Money is continually becoming more fluid, and the supply of money is more and more inclined to accommodate itself to the level of demand.* There is nothing new in this relative to supply deriving from human needs, or that demands are the manifestation of human needs that are never fully covered. Wicksell tries to clarify what the laws of supply and demand had already established... (p 111) ... *it follows that the banks, or rather the aggregate of banks taken as a whole, can within limits to be stipulated in a moment lend any desired amount of money for any desired period of time at any desired rate of interest, no matter how low, without affecting their solvency, even though their deposits may be falling due all the time...* There can be no better description for encouraging legislators to approve a Fractional-Irregular-State-Banking system.

A very unfortunate expression because it implies these four circumstances:

- 1) That currency can change from the category of economic good to that of a simple good according to human will. In other words, man has paradise at his fingertips, since he has solved the problem of money. This passage reminds us of “Keynes asymmetry” described by TET.
- 2) His analysis of causality of supply and demand of credit used as currency, works under the consideration that supply originates from the State-Bank currency financial system and market demand. TET clearly showed that the situation is the opposite, the market offers present economic goods to configure credit (PC and/or gold standard, plus the fractional banking system), and that the State-Banking system is the one demanding those economic goods.
- 3) We know credit expands and has a cost according to the supply of present economic goods for that end –being offered as credit-, therefore the limit of credit that the State-Banking system can borrow will be determined by the market (which is often shown by so-called “currency crisis”), not the banks as Wicksell’s and other theories maintain, except for TET.

- 4) We can only agree with Wicksell relative to the paragraph we have underscored: *not putting its solvency at risk*, since where there is no investment there is no risk. It is the market-creditor that offers credit, but within it the experts in managing “rational expectations” do business in the “financial market”. A market that appears as a consequence of “institutionalizing” the Irregular-Fractional-State-Banking system, justified by Wicksellian “theories” and their derivations in the twentieth century.

This observation is very important since I have had the opportunity to see that even those who sympathize with the Austrian school are ready to say: ¿What is the problem with printing currency if demand absorbs it? A reflection supposedly justified by the unnecessary Say’s Law. Wicksell continues:

...It follows that if the rest of our theory is correct the banks can raise the general level of prices to any desired height.

Evidently, in this reflection Wicksell does not realize that, with this measure he calls “raising the level of prices to any desired height” what really happens is that price of currency relative to “all other” goods falls, and since currency is a credit the fall of its price is equivalent to an irrecoverable credit. Citizens know this well and more so the “businessman” that manages what is called “rational expectations”.

Wicksell continues with his exposition on “the limits” of his virtual currency world, on which we will not extend considering we have covered the theoretical aspect that interests us in this work

As we saw, Wicksell is also incapable of separating the “phenomenon of interest” –recurring to Böhm-Bawerk’s vocabulary- from the profit of capital. Let us see what he says in chapter IX, *Systematic Exposition of the Theory*, where he emulates Böhm-Bawerk’s attempt to “explain” the determination of the rate of interest:

(p 134) *...distinction has been made between the original (term used by Mises) (uncontrolled) rate of interest and the contractual (lending) rate of interest — does this imply that the other rate does not derive from exchanges or that there is no exchange without a contract?- (p 135) For the difference between the two rates, which constitutes the entrepreneurs' profit as such (a theoretical regression to surplus value as the origin of profits...), constantly tends towards zero under the influence of competition among entrepreneurs; or at least it tends towards a certain small amount which is not very different from zero (classic adjustment).*

As one could image, the paragraph ends:

There is only one case in which the difference cannot be neglected. This arises when it is a question of a change in the average level of commodity prices expressed in money (we already know of the error in causality implicit in this reasoning, instead of speaking of the relative price of currency –a situation that expresses his general level of currency prices p_m - he supposes the relative prices of all other goods is what changes), For such a change takes its real origin in the existence of such a difference between the two rates of interest.

In other words, Wicksell is presenting rules for “benefiting financially” in PC-Fractional-State-Banking currency-financial system. These rules are very simple: if you see such a system is created, you will gain lots of money just by belonging to the privileged “State-Banking” circle, and your task will simply be to “lobby” for “inside information” that will allow you to anticipate the ups and downs of the price of credit-currency. But if you do not belong to this circle, you only need to observe the variations of the price of currency –a price that is relative, like all others, though Wicksell does not realize this- which you can see through the statistical data of the behavior of “all other goods” expressed in currency, i.e., the wrongly called “general level of currency prices” (p_m), and comparing it with the rate banks are charging for loans: if this last is lower, you will profit taking loans, if not, you will lose. From there the well known consequences derived from $i_m = p_m$ or $i_m \equiv p_m$. In other words, you will learn to profit from other people’s time.

We can finish with Wicksell presenting the foundations for the currency-financial policy that dominated the whole of the twentieth century:

(p 189) So long as prices remain unaltered the banks' rate of interest is to remain unaltered. If prices rise, the rate of interest is to be raised; and if prices fall, the rate of interest is to be lowered; and the rate of interest is henceforth to be maintained at its new level until a further movement of prices calls for a further change in one direction or the other.

He forgot to analyze reality in times of crisis, such as the current situation: if he needs to keep people busy digging Keynes’ holes, he can keep on printing PC and bank balances, since the level of currency prices in the country printing the bills will continue to be depressed. Evidently, current theories cannot explain this event (even if it is temporary), which is what TET calls the “paradox of currency demand”. And this is so since they did not see that these papers and bank balances do not become credit because the market does not exchange present goods for them. In other words, there is no “currency” expansion because the market does not validate it, they just remain unused printed paper and bank balances. This means they do not see that they are dealing with a world in which the currency is credit, not money; and there can be no theory of credit based on the theory of money. What must be developed is a theory of currency, including the possibility of it being money or credit, and the credit regular or irregular; then there would be no paradoxes.

His proposal is a summary of all possible errors in economic theory:

- 1) Supposing there can be a price that remains constant over time
- 2) Inverting the causality of prices or currency relative to the prices of “all other” goods, since p_m is the relative price of currency, not the absolute (currency) price of all other goods.
- 3) Not realizing that he is speaking of a currency world where one of the two following situations is present: $i_m = p_m$ when there is a currency system with money and/or a money standard, or $i_m \equiv p_m$ when there is a currency system with credit (especially when it is irregular, such as PC).

As we conclude the analysis of the influence of Wicksell in currency theory developed in the twentieth century, we need to say the natural rate of interest, the real rate, or the capital rate, are similar, equal or equivalent, to capital productivity in Böhm-Bawerk. In other words, Wicksell endeavored to explain the incidence of *currency* in the real world, which Böhm-Bawerk had already pretended to explain in reference to a world with *money*.

Unfortunately, not having discovered TET, economic thinking would be forced to travel the inconsistent road of suppositions such as: that the currency world should work as a non currency world, or that it should be explained in the same terms as a world with barter; the possibility of a world with neutral currency; a constant price of currency (wrongly identified as the general level of the prices of “all other” goods); a constant amount of currency; the proposal of a basket of goods as a constant currency (not specifying if physical units or their prices would be constant)... etc. All theoretical inconsistencies, originated in not realizing the possibilities arising from TET’s equations, $i_m = p_m$ or $i_m \equiv p_m$ in a currency world.

In short, Wicksell, in his search for an explanation of the workings of the “slippery economic good, currency” did not realize that there is no such thing as prices that are not relative; there are no prices outside the world of the economy (no virtual world, where he pretends to locate currency, pretending to define a “special” law of prices for it); prices only belong to economic goods; the fact that there can be no price that is not “relative” and that does not belong an economic good, implies that it is not theoretically feasible to accept Böhm-Bawerk’s concept of currency-rent \equiv capital-rent, not referring to economic goods, etc. In other words, there can be no economic theory outside the economic good-owner and economic good-price axioms, nor is there any price that is not positive (interest is just another price, that of economic time).

Lastly, the *necessary condition* of interest participating in the formation of all prices, stipulated by TET, is also a *sufficient condition* to establish the relations with interest (no matter what “guise” time comes in) and the prices of “all other” economic goods.

All disciples of Wicksell’s dichotomic world

It is generally said that Wicksell was the origin for all theories developed in the twentieth century (Austrians, Keynesians, and monetarists). Based on TET this is totally wrong. What is correct is saying that Wicksell’s ideas continue the dichotomies in Böhm-Bawerk (of which Menger is horrified), and from such a *stock* of inconsistencies it was natural that some would take one part, and others another. What is tragic is that (up to the arrival of TET) no one realized this situation.

If we were asked to summarize Wicksellian thought, that guided currency and interest theory in the twentieth century, where we can find Keynesians, Austrians, and Quantity-monetarists, we could say:

- 1) There are two worlds, of goods (real) and currency (“a world without goods”).
- 2) There are two types of prices, of goods (relative) and currency (absolute)
- 3) These two worlds, with the Wicksellian pretension of being a “new” contribution to theory, are equivalent to the two worlds of the dichotomy of capital in Böhm-Bawerk, where one refers to goods and the other to rents. From this derives the inconsistent idea – inadvertent foundation of the ideas of the twentieth century- that there can be rents that are not economic goods, and that can at the same time not belong to an owner, implying denial of the economic good-owner axiom. It is because of this flaw that all theories

present the market circuit in which “currency” at a certain point “is nothing”, until it is exchanged again for goods, and since that is inconsistent, there is the need to add the function of “source of value”, as if any economic good needed that. At some point there is the need to add that function, while, when “calculating”, all that is needed is the function of unit of measure of exchanges. TET tells us that exchange is a human need that is satisfied with an economic good (for example: credit), not with something that is an economic good at one point and a good at another. Interest is a price in itself (Mises), the price of economic time, not an economic good.

- 4) Wicksell tries to tell us the ups and downs of prices can be explained by:
 - a) The study of the “market of goods” (the “real” world of goods).
 - b) The study of the “currency market” that evidently does not include goods (the “virtual” world of currency). TET would explain this very easily, saying that credit can be currency, with no need to invent a “virtual” world, we simply speak of present economic goods in the future, which “are not visible” in the present.
 - c) The relations existing between his real and virtual worlds. For that, he defends the Quantity theory of money, implying the existence of a virtual world, given that its equations include goods and currency. This last with a circulation speed even though it is not an economic good (if your thinking of ghosts... maybe they exist... in any case it would be better to analyze them in the framework of science). An ad-hoc argumentation, deriving from a desperate and inadvertent attempt at defending said theory, which is indispensable in turn for developing the Wicksellian currency and interest (Keynesians and monetarists).

We have no doubt that Wicksell establishes the foundations for everything that came later, since:

- 1) The interest of Keynesian-Quantity currency would be found in the world of currency.
- 2) The Austrian credit-interest would be found in the world of credit.
- 3) But if currency comes in the guise of credit (paper currency and its “optional” fractionary banking) both schools have the same foundation in Wicksell’s interest theory.
- 4) The natural interest of goods (Austrian-Keynesian-monetarist) is determined in the world of goods, the real world, the world of investment-savings; and the world of “virtual” rent, which will not necessarily be composed of goods, in the currency world. From here we can deduce the inconsistency of all models based on: $S = I$; $i_m \neq p_m$, etc.
- 5) To summarize, the whole development of the twentieth century that did not realize what TET saw when $i_m \equiv p_m$ ó $i_m = p_m$ has the same origin, in Wicksell, which is the reason why its roots are similar.

THE THEORY OF INTEREST IN THE TWENTIETH CENTURY

The whole of economic thought in the twentieth century referring to interest did not diverge from what we have developed up to this point, and its foundations can be found in Böhm-Bawerk and Wicksell, which is the reason why we have dedicated so much space to them in this text.

We have already shown the secondary aspect of all the central discussions in the main currents of ideas, referred to those that postulate interest as the price of money (Keynesians and modern Quantity-theorists or monetarists), and those that say that it is the price of credit (Austrians). This is different from what TET presents, and for that reason we have reiterated its equations $i_m = p_m$ or $i_m \equiv p_m$.

The relevant idea hovered over theory of interest in the twentieth century was the continuation of the question posed by Ricardo (*what is the origin of profit?*) and Marx (*why does surplus value exist?*), that will appear as follows:

Böhm-Bawerk: *Where and why does the capitalist obtain that permanent flow of goods if he does not even move a finger to create it? How is that rent of capital derived, no matter what capital... without this permanent flow of rent exhausting the capital from which it derives...?*

Irving Fisher: we can summarize Fisher's most relevant conclusions as follows:

- 1) Fisher was only interested in determining the rate of interest, not in defining its existence. This means he did not consider the economic good-price axiom. And he pretended to calculate "pure" interest, a concept originated in Böhm-Bawerk, and to do that he needed to "purify" it of the variations of currency prices, clear evidence of his ignoring $i_m = p_m$ or $i_m \equiv p_m$.
- 2) He considered interest as retribution of abstinence.
- 3) He adopted the idea that "pure" interest should be considered positive, considering that observations "ratify" Böhm-Bawerk's temporal preference. But he admitted the possibility of it being negative, based on that the temporal preference could be negative in some cases. This is one more demonstration of the inconsistency of PTTP, since preferring the future (saving, hoarding, etc.) does not imply that interest is negative; an axiomatic impossibility by definition of price and the economic good-price axiom. See our final reasoning in the section on Böhm-Bawerk's PTTP.
- 4) Possibly Fisher was the one who introduced the millenary formula of current value of assets in the terrain of economics as a science: $VA(X) = X' (1 + i)^{-n}$, where X' is the current value of the good X in the period n and with an i rate of interest.
- 5) We must not forget to mention that Fisher operated within Quantity theory, one of the four expressions of it are attributed to him (we develop it in the *Theory of Economic Relativity*). Which configures one of the many examples of the confusion that dominated the twentieth century, while some consider him part of the Austrian school.

Evidently he not only did not contribute anything new to what we have seen of the theory of interest, but he tried to systematize without realizing it the development of the two worlds. A task he undertook with his knowledge of mathematics and statistics, which gave a "scientific

appearance” to Wicksell’s “general level of currency prices”, something he descended to, after a good start in the sphere of microeconomics.

In short, Fisher evidently worked within the dichotomic structure of Böhm-Bawerk – Wicksell.

Finally it is important to stress that Fischer, due to his lack of concern for the theory of interest, never asked himself the “eternal” question that was at the center of all economic thought referred to the subject of interest.

Frank Fetter: *Why should payments by business men to factors contain, in themselves, a net surplus, a return of interest?*

Keynesians: as followers of Wicksell’s dichotomies, we can summarize here all the theories that consider the entities i_m and p_m as different (IS/LM models and their different variations, considering alternatively i_m or p_m as ordinate –denounced by TET; identifying interest as the price of money; working outside FEAE; validating the analysis based on the partial wealth equation that leads to the flawed equation $S = I$; Keynes’ asymmetry, Keynes’ paradox, liquidity preference (a modified version of PTTP); validating the existence of virtual rent (because they did not consider the equations $i_m = p_m$ or $i_m \equiv p_m$); etc.

In other words, insofar as Keynes has the theory of money as the basis for the “phenomenon” of interest, evidently he is in the same virtual terrain as Quantity theory. That is the reason we will not extend on this, since we do not consider he made important contributions to the development of economic thought, though his ideas (that were not original) are the basis for the current currency-financial systems. With the current state of affairs as its consequence.

Modern Quantity theorists or monetarists (Milton Friedman): we will not extend on them since they are the expression of Wicksell’s “currency” or “virtual” world.

Readers will now understand why we presented such an extensive review of Wicksell’s Quantity theory. This exempts us from the need to analyze the ideas of Keynesian and monetarist schools in the twentieth century, since the enormity of texts available are based on Wicksell’s virtual world.

Before we conclude this brief section on Quantity Theory we need to point out that there are four recognized versions of the same, which are analyzed sufficiently in chapter XV of the *Theory of Economic Relativity*. Evidently considering our reflections here, the referred text can appear as a simple historical analysis of an epoch of economic thought. But it will always be reference material as long as currency -financial-irregular-fractional systems persist.

If you read the afore mentioned chapter evidently you will find it easy to understand due to the deeper analysis of the theoretical foundations developed in this text, that is at the same time more specific. Also, we start here from those thinkers that established the foundation of the central themes of economic thought in the twentieth century. In other words, after reading this text, the *Theory of Economic Relativity* will be much easier to understand.

Austrians: the school created by Carl Menger continued the work began by Böhm-Bawerk, to which he added part of Wicksell’s work. It was always understood that Mises tried to reconcile Menger and Böhm-Bawerk.

The fact that nobody realized that the two approaches were incompatible is a clear demonstration that the Austrian school not only was based on the same foundation that deviated

Böhm-Bawerk from Menger, but that it included part of Wicksell's ideas, whose intention was to "extend" Böhm-Bawerk's legacy to the world of "new currency", with the conviction that he had developed the theory of interest for a world without currency.

Possibly it would suffice to refer to Mises' attempt at applying the concept of marginal utility to money, which leads him to develop an analysis to prove money must also be considered as a *stock* (a Wicksteedian concept), and that is the reason why the theory of marginal utility should apply, that belongs to someone at any given instant. Questions that can only be presented in the realm of Böhm-Bawerkian and Wicksellian dichotomies.

The following reflections seem theoretically necessary: a) there were doubts that money is an economic good, implicit in the need to consider it a *stock*, b) supposedly it is considered an economic good, because if not there would not have been an attempt to apply the theory of marginal utility to it, c) from the previous conclusions is deduced that it is a "different" good, surrounded by classical mysticism, d) this existential doubt explains the amount of time dedicated to explaining, in line with Böhm-Bawerk, the concept of subjective use value to apply it to money, given that it is only useful for "exchanges", a typical consideration of ancient times, e) We can observe Mises correctly realized currency is a *stock*, what he did not realize is that it can be a *stock* of credit; f) it is evident that his explanation of demand of money derived from his Wicksellian "purchasing power" derives from all these doubts, g) his unnecessary regression theorem explains why he did not realize the possibility of credit being currency, etc.

In this framework the reader will be able to clearly understand all we have said in TET referred to the rejection of subjects such as: the theory of temporal preference (widely commented here); Gresham's Law (even with the condition of forced circulation introduced by Hayek); the need to have a theory of capital and/or profit to explain the existence of interest (ratified by the continuity of questions that lead back to Ricardo and Marx); not considering the economic good-price axiom, which leads him to think that you only need to calculate the rate of interest, that there is no need to define it (good and/or price, and in the case of it being a price, of what good), a situation that does not let him see interest is the price of time, and the Misian expression "*interest is not a price in itself*" (which we already saw does not imply an early expression" of indirect materialization of time in TET, but...); Wicksell's postulation of the two worlds (expressed through concepts such as currency "substitutes", fiat-money, etc.), that does not allow them to see they were developing currency theory based on Menger's theory of money, and that is why they confront the "paradox of money demand"; the "inverted Keynes paradox", and others; developing a theory out of the narration of a historical *case* (Mises money regression theorem based on Menger⁽⁷⁾); making a theory out of Böhm-Bawerk's temporal preference observation (PTTP); not realizing that every type of currency (even with a different history from money, example PC) has its origin in the market –central idea for Menger, the theoretical development by Mises to explain the unnecessary regression of SVT (already commented in Böhm-Bawerk and Wicksell, that will derive in the "purchasing power of money" based on the "objective exchange value"...) working outside FEAE; validating the analysis based on the partial wealth equation which derives in the flawed equation $S = I$; validating the existence of virtual rent (not realizing the equations $i_m = p_m$ or $i_m \equiv p_m$); etc.

I consider convenient to add a commentary referred to the inconsistency of Mises regression theorem: since currency appears as a consequence of a need that must be satisfied –illiquidity-, and though any need can be satisfied by a pre-existing good in which the necessary properties are present, it is not theoretically prudent to suppose that there could not appear a new economic good to satisfy that new need. Further, in most cases man progresses precisely because of the

discovery-creation of new economic goods, to satisfy new needs or to give better solution to needs satisfied more precariously in the past. Why should the economic good currency be excluded from this possibility? Acting in this way is remaining within the flawed framework that says that currency is a “*special*” economic good.

I believe that a reference to Israel M. Kirzner will summarize very precisely the stance of the Austrian school on the subject of interest.

Israel M. Kirzner: Within the Austrian school it is important to mention Kirzner, since he produced a summary of sorts of Misesian thinking. We are referring especially to his work *Essays on Capital and Interest – An Austrian perspective* (Edward Elgar Publishing Limited – 1996), one of the best books I have read on the subject of interest, a text suggested by my dear friend Gabriel Zanotti.

The title already shows the influence of Böhm-Bawerk, since it needs to speak of capital to refer to interest. We have already stated our position.

We will not extend on said text, as we did with Böhm-Bawerk and Wicksell; it will suffice to stress the conclusions we consider relevant.

Mises’ disagreements with Böhm-Bawerk are the following:

- 1) *On the role of time:* While Böhm-Bawerk mentions temporal preference as an “empirical regularity” (that we have already mentioned), Mises considers it a “category of human action”. From the point of view of TET, Mises makes the mistake of “theorizing” on the temporal preference that Böhm-Bawerk “humbly” mentioned as derived from an observation. We point out that in this text we have approached the temporal preference from Mises’ theory. The same error that led him to develop a theory based on an observation, in this case PTTP, is what Mises did with his regression theorem, based on a historical reference by Menger on the origin of money.
- 2) *On the role of productivity:* a critique not only by Mises.
- 3) *On the definition of capital:* though we have already commented on the referred text by Böhm-Bawerk, we can quote Kirzner since it involves Menger.

... Böhm-Bawerk defined capital as the aggregate of intermediate products (i.e., of produced means of production) and in so doing was criticized by Menger. Menger sought “to rehabilitate the abstract concept of capital as the money value” ... Mises emphatically endorsed the Mengerian definition... Economists, Mises maintained, fall into the error of defining capital as “real capital”, as an aggregate of physical things... Mises’ refusal to accept the notion of capital as an aggregate of produce means of production expressed his consistent Austrian emphasis on forward-looking decision-making. Menger had already argued that “the historical origin of a commodity is irrelevant from an economic point of view”... the measurement of capital has significance only for the role it plays in economic calculation...

Evidently, once again, based on Menger, Mises and TET come to different conclusions:

- Böhm-Bawerk’s analysis was dichotomic, as we have seen, i.e., one part was “real” and the other “virtual” equivalent to Mises’ calculus. Proof that Mises worked in this

dichotomic context, though he was not conscious of this, is his need to differentiate the concept “capital goods” (productive capital) from “capital” (rent capital).

- Mises rehabilitates Menger’s abstract concept (Misian abstract calculus-capital \equiv Böhm-Bawerkian rent capital \equiv Wicksellian currency rent) based on Menger’s idea of stressing that man decides the present based on looking towards the future, not the past – a pity he did not realize this when he created his money regression theorem. Precisely this “inconsistency” led Mises to follow in the path of BB’s two worlds, the two concepts of capital which he simply “re-names”.

The approach of human action oriented to the future is the reason why one can think of credit as superior to money as currency; we only need to eliminate the “irregularity” of PC, and the fractional framework of the banking system. Keeping in mind that final materialization of credit (cancelation on maturing with a present good or partial or total default) is the temporal condition that left the past behind and reached the present. We must look to the future without forgetting the things that the past left unresolved, which does not imply in the least the regression theorem.

- In reference only to the calculus included in the concept of capital, it is a pity that Mises did not realize the currency systems he developed are precisely what do not allow for calculus in capitalism, in line with his observation about the impossibility of calculating in socialism. If he had seen this he would have avoided his whole theoretical development on the topic of cycles, since these are nothing more than the financial crisis of the companies-industries-States-banks that cannot cancel their obligations on maturity. In other words, TET vindicates the zealous Austrian attitude towards the enormous importance of prices for economic efficiency (spontaneous order \equiv invisible hand), and that is why it alerts on the “enormous difficulty of calculating” in capitalism with irregular currency systems.

Finally, we only need to add that Kirzner was one of the many authors that circumscribed the subject of interest to Ricardo and Marx’s original questions. Kirzner erroneously states that his question is a “modern formulation of the problem of interest”:

THE INTEREST PROBLEM... The modern formulation we cite is that of Hausman. Hausman points out that an “individual’s capital (social capital \equiv BB’s productive capital?)...enables that individual to earn interest (interest \equiv profit?). If the capital is invested in a machine, the sum of the rentals the machine earns over its lifetime is greater than the machine’s cost... The problem is how this can occur. “Why is not the price of the machine (paid by capitalist at the time he invests in the machine) bid up (by the competition of others eagerly seeking to capture the net surplus of rentals over cost) – to the point where no such surplus remains —(does this imply a remnant of classical adjustment?).

Evidently Kirzner believed Mises and Hausmann were presenting a new scenario of the “phenomenon” of interest, different from the Greeks, the classics and neoclassic. It was not until the arrival of TET that we would realize that all of them tried to offer explanations of interest in the same scenario, a theoretical framework that extended to the attempted explanation of currency.

The time has come to summarize the Theory of Economic Time we have mentioned so many times in this text.

THE THEORY OF INTEREST IN TET

Continuing with this work on the theory of interest, a “retrospective” history of sorts (in the style of Mark Blaug), the time has come to deploy the contents of the Theory of Economic Time, on which we based the retrospective analysis.

Precisely, a good introduction to TET is to place it in the historical context we have established, and in that sense we can say with complete certitude and simplicity, that is the continuation of the legacy of Carl Menger, in a direct jump with no intermediate stops. This means TET is based on Carl Menger’s following fundamentals:

- It continues the legacy of the foundational economic laws (supply and demand, FEAE, etc.).
- It adds SVT, which avoids the vicious circle of the classics (to which the twentieth century returned, as we have seen).
- It adds its historical description of the origins of money in the market. An idea that validates TET proving –with the use of double entry physical and currency accounting– that in those cases where currency is credit (example: PC), it also always has its origin in the market.
- Its simple and convincing classification of goods: superior order goods (production or capital goods) and inferior order or consumer goods. From where it infers the prices of capital goods derive from the prices of consumer goods.
- Continues Menger’s work within FEAE, implicit in the already mentioned classification of goods and the formula of prices of capital goods, operating as a type of “retribution of factors that produce consumer goods”.
- There are doubts as to Menger’s opinion on Böhm-Bawerk’s work; it seem that while Böhm-Bawerk was preparing his *Positive Theory of Capital*, the former considered that the latter’s research would be an important contribution, but when he was confronted with the work in its final form he was “horrified”, according to Joseph Schumpeter’s account. In any case, we must stress that Menger belonged to the group of those that posed the eternal question on the origin of interest, which explains why Böhm-Bawerk’s dichotomies of productive capital vs rent capital also seem present in his work. Whatever the circumstances, evidently Böhm-Bawerk was the first to systematically approach the subject of the incidence of time in productive processes, which invalidates Emile Jame’s expression that Böhm-Bawerk *had defined interest as the price of time*, since TET proved that the theory of time precedes the theory of capital.

All these central foundations of Carl Menger’s economics are adopted and expanded by TET. In other words, TET develops based on Carl Menger, which allows it to avoid all dichotomies and inconsistencies we have pointed out in this work.

Before we summarize TET, I wish to reiterate once again my great consideration of the intellectual honesty and capacity of Carl Menger, as I consider he did not extend his writings on money to the terrain of currency (which TET would do a century later), because he had nothing

solvent to present, a scientific premise he adhered to. I base this reflection on the fact that in his time there already existed the world that Wicksell tried to explain.

The time has come to present TET with greater precision.

UNIVERSAL CONCEPTS AND AXIOMS, PREVIOUS TO TET

From these universal primitive terms we can approach the content and development of TET with greater soundness, and based on them we will present a summary of economic thought in clear contrast with all previous theories of interest and currency on which we have commented.

Since in the development of TET I have encountered concepts that can be considered part of “universal knowledge”, and that are in turn powerful tenets of TET in particular in economics in general, I refer to them as an introduction.

Let us see these central and universal concepts that I add as a “necessary” condition, to introduce the treatment of time in general and economic time specifically (TET):

General relativity of time: the study of time is equivalent to the study of change in entities. Any temporal event implies variations *in entities*, necessary elements of space. Time does not change, what changes are the entities that compose space, therefore referring to change implies referring to the variations of space (composed by entities) in time.

I believe this concept led Einstein to consider time (implicit in the component velocity, since this implies the passing of time) as a constant, approach that allowed him to study physical variations –changes in the elements that compose physical space: mass and energy produced in time, though many believe he adopted that attitude to be able to find a unique solution to his problem. I believe this brief reflection will allow us to interpret everything referring to what has been called the sphere of *space-time*, which economics cannot elude if it pretends scientific rigor.

Change axiom: the conclusion we come to on the sphere of *space-time* allows us to deduce affirmatively, by inverse reasoning, that the occurrence of change in space (entities) implies that time has elapsed. If there is time there is change, for change to exist there has to be time. Let us remember this idea was already present in Heraclitus.

The necessary presence of time axiom: from the change axiom derives that all change implies the necessary presence of time. This ratifies that the study of change in entities (space) implies the study of time.

CONCEPTS AND AXIOMS OF TET

Here we will only stress the primitive terms (concepts and axioms) of TET that have central relevance for the theory of interest.

ECONOMIC TIME

Special relativity of economic time: In economics the entities that change with time, apart from man, are economic goods, as in physics what changes are mass and energy. In this manner we universalize the cell of space-time knowledge. The study of time is relative to changes in space, which is composed by entities –economic goods- that change with the passing of time. So

the study of changes in entities implies the study of time, which in economics is circumscribed to man and economic goods, necessary and sufficient elements of the Subjective Value Theory.

Economic time: time, insofar as it is a good (a useful thing for human beings), and insofar as it scarce (for the satisfaction of all needs), is an economic good.

Indirect or improper materialization of economic time – (Theory of Economic Relativity – TER): time is the only economic good that does not have a life of its own, it always materializes in another present economic good. This indirect materialization of economic time allows time to be scientifically explained in economics, extracting it from ancient mysticism and the later theories of the “virtual world”.

We observe that TER is a direct consequence of the special relativity of economic time we have mentioned.

WEALTH AND RENT

Wealth (W): set of the economic goods of an owner at a given date (date implies *stock*).

Rent (r): variation of wealth that, as all change in entities, is produced with the passage of time (period implies *flow*). We can define it as the *flow of wealth*. See *Income (y)*.

Savings (S) – “Dispensable term”: considering this is rent that is not consumed, it is a flow that becomes a *stock* at the end of the period. In other words, the concept of wealth expresses the term savings very well.

Present economic good (peg): an economic good that exists in the owner’s current moment.

Future economic good (feg): an economic good that will be present in the future for the owner.

Demand axiom (DA): there is no economic good that does not have a demand, if not it is not an economic good (this axiom is referred to in one of the interpretations of the so-called Say’s Law).

Supply axiom (SA): there is no economic good that does not constitute a supply, and no supply that is not composed of economic goods. Considering the concepts of wealth and supply, from this it logically results that wealth (W) and supply are the same, no matter if it refers to one economic good, to a set of goods, to an owner or a community.

Scarcity axiom ($E = D - O > 0$): for an economic good or a set of economic goods, Demand is always greater than Supply: $D > O$; or the equivalent, $O < D$. This axiom implies economics is the study of maximums, not of equilibriums, a concept confused with the “moment” when interpersonal exchanges of economic goods cease, since there is no agreement between demanders and suppliers in continuing them, because they value more the retention of their respective *stocks*. This axiom stresses the incongruence of terms such as insufficient demand and sub-consumption. We can express scarcity and its axiom as: $E = D - O > 0$.

This axiom can be considered the basic cell of economic knowledge, being a simple mathematical formulation of human fallibility, the origin of economics expressed with the term scarcity.

But on the other hand, this axiom greatly simplifies economic analysis, since it allows us to include mathematics for its study. But we alert that accounting must establish the framework for mathematical models, as we show in the section “axiomatic relation of economics-accounting”.

Bi-univocal relation “economic good-owner” axiom: there can be no economic good without an owner nor an owner without an economic good. From this axiom derives a concept that is frequently forgotten in theoretical developments: owners are the ones that obtain rents, composed always of economic goods. Rents are distributed among the owners of production factors, goods do not produce rent. Ergo, the owner can be a physical and/or juridical person. We have already seen the consequences of forgetting this axiom, considering rents that are not (“real”) economic goods

Bi-univocal relation “owner-holder-economic good” axiom: since economic goods can be loaned, this implies the holder can differ from the owner. In turn, the relation is as mentioned, since the owner antecedes the holder, at whose disposition the former places (loans) the economic goods. This axiom allows credit to exist in the economy.

Economics-accounting axiomatic relation: the bi-univocal relation *owner-economic good* is the basis in economic science for accounting techniques. Double entry accounting has led to the error of interpreting it as a ratification of the concept of balance, erroneously filtered with the permanent equation of debit and credit (both in patrimony statements –*stock* of wealth – as in results statements- equivalent to rent, *flow* of wealth).

Income (y) ≡ rent (r): expression that indicates the variation (*flow*) of wealth (*stock*) –rent (r)- insofar as it always refers to the owner. This concept is in line with the owner-economic good axiom (expressed in accounting with the axiom of debit equals credit) and is the central basis for any theoretically consistent model of economic equations.

In short, as long as we can consider that rent (*r*) as the variation in wealth refers to economic goods (debit), income (*y*) refers to the variation of the same wealth insofar as it refers to the owner (credit). Important clarification; forgetting this is the source of “virtual and currency rents, etc.”, the theories of two worlds, production period and asynchronic distribution... and all the dichotomies we have seen. See *Rent (r)*.

Equation of total wealth versus $Y = C + I$: once we have understood the axiom of the bi-univocal relation economic good-owner, the economics-accounting axiomatic relation, scarcity axiom, I believe we can approach the Fundamental Economics and Accounting Equation (FEAE)

I propose that the fundamental equation of economics used up to now, $Y = C + I$ –which I call partial wealth equation- be replaced with the total wealth equation presented by TET:

Since Savings (S) is the set of produced economic goods, from the appearance of human beings in the universe, not consumed, we conclude that S is equal to the assets of all the economic agents. From this derives: $S = C + D + Bc + Cr - P + A + I$.

Note: S (saving); C (consumption goods); D (availabilities); Bc (goods of exchange or merchandize); Cr (credits); P (passive); A (preventive-speculative hoarding); I (investment-capital).

If you are thinking the proposed equation is the patrimony and economic equation of accounting, you are right. In other words, TET has invented nothing, it simply shows accounting is the best economic model. For this we only need to say the S in the formula is equivalent to *Assets* in accounting, that is always equal to the *Patrimony* (as we consider Cr – P net in the debit).

Considering society as a whole, we can eliminate the components Cr and P from the preceding equation, since they are always equal (the credits of a group of agents are the debts of another group), and so we have: $S = C + D + Bc + A + I$. From this Total or Complete FEAE, TET deduces the theorem of permanent disequilibrium: $S \neq I$, versus the current idea that $S = I$ – since it implies all other components of the second term must be zero.

PRICES

Exchange axiom: Every economic human action implies the existence of an exchange of economic goods. In other words, the simple existence of fallible man implies work, and the existence of it necessarily implies the existence of an exchange, at least intra-personal, which requires time, as all exchanges.

Exchange is an economic good: though the exchange axiom implicitly includes the idea that every exchange of economic goods by human beings is an economic good, and considering that what is exchanged are precisely economic goods, it is good to bear it in mind: the exchange of economic goods is an economic good. This concept is in complete harmony with the Austrian school's principle that human beings exchange to better their economic situation, though some theoreticians, as we have seen, forget this.

Inter-personal exchanges: in economics there are two types of inter-personal exchanges, according to the type of economic goods being present (cash) or future (credit).

Cash: inter-personal exchanges in which there are only present economic goods. This type of exchange includes:

Barter: Cash exchange without *money*.

Indirect with money: Cash exchange with *money*.

It is important to stress the use of the term *money* (present economic good: gold, silver, cereal, etc.) in *cash* and *barter*, not currency (that can be credit: for example, PC). This is in line with the difference TET establishes between money and currency, opposed to current theories that considers them to be synonymous, because of their functionality; we have seen the theoretical consequences of this in all previous schools.

Credit: TET defines it as *inter-personal exchange of economic time*. It is an *inter-personal* exchange in which present and future economic goods appear. See below the section on Credit, treated separately because of its importance.

Concept of price: information that measures the scarcity of an economic good expressed in quantities of another economic good it is exchanged for.

The following characteristics appear in this concept of price: a) a wider concept, since it includes the different types of prices considered by TET,⁽⁸⁾ b) price implies information, c) prices derive *necessarily* from exchanges, which are unique and unrepeatable events in space-time, d) the relativity of the price of an economic good in quantities of another good implies the non existence of what is known as an “absolute” price, e) ratification of the economic good-price axiom, there is no such thing as a price in “itself”, f) considering prices as information for coordinating human economic action in society, and g) the duration of a price is ephemeral, it only lasts as long as the exchange in space and time that originated it, this concept does not imply that there cannot be price statistics, which are those used on a daily basis.

We can see this simple definition of price, together with the economic good- price axiom, means that many of the theories presented here cannot even be formulated.

“Economic good-price” axiom: there is no economic good without a price, and no price that does not refer to an economic good. This axiom derives deductively from the concepts of economic good, exchange and price. From this axiom we derive that an economic entity cannot be an economic good and a price at the same time.

Positivity of prices axiom ($p > 0$): by the axiom of scarcity and the definition of prices, every price is axiomatically positive (always $p > 0$), if not the economic good to which the price refers would not be an economic good. From the deductive chain in TET derives the fact that prices always refer to economic goods, and their condition of scarcity precludes that they should acquire zero or negative value. The difference with current theories that present developments with negative prices, generally referring to currency prices and/or interest, is visible. This axiom ratifies the popular sayings: “everything has its price” and “there are no free lunches” (Milton Friedman).

“Permanent” scarcity of economic time: it is the only good that will always be an economic good, the importance this will have for studying its price is evident.

Necessary presence of economic time (necessary factor of production): the special relativity of economic time also operates as a ratification of the axiom of the necessary presence of economic time in the production of all economic goods, and from this point of view they ratify each other. This concept is a preview of the presence of interest, as the price of the economic good time, in forming all prices.

TET offers a very simple line of reasoning in the interest-prices relation that worried Knut Wicksell and all thinkers in the twentieth century, the “indirect transmission mechanism”. The interest-prices relation in TET is **very direct and with only one causality:**

“Interest is a part of all prices”

INTEREST

Concept of interest: it is the price of economic time. TET not only emphasizes the characteristics of the economic good time, it also establishes with complete precision its

exclusive categories and establishes interest as its price, and in so doing not only is consistent with the economic good-price axiom, but avoids the byzantine discussions about what economic category corresponds to both concepts, or none at all, which is the origin of many theoretical blunders.

Indirect materialization of interest: opposed to all other theories of interest, TET is the only one that understands this unique category that is the price of time. Other theories try to apply this category, confusedly, to money and/or currency.

Existence of interest: current theories (explicitly or implicitly) make the *existence* of interest depend on business profits, physical productivity or value, ... etc. Current theories do not consider the existence of economic time as an economic good, and interest as its price, and that is why they do not comply with the economic good-price axiom.

Permanent positivity of interest: given the axioms of *permanent scarcity of economic time* and *positivity of prices*, and the concept of interest, this will always be positive, ie, the condition $I > 0$ will always be met.

It is important to realize that what is stressed here is not the positivity of interest, the price of economic time (since all prices comply with this condition, or they would not be referring to an economic good) but the *permanent* condition of economic time as an economic good, from where it results that $i > 0$ always.

In other words, TET does not need to discuss the positivity of interest, but simply say that it will always be an economic good for human beings.

Necessary presence of interest in the formation of all prices: considering the necessary presence of economic time in the production of all economic goods, we deduce that its price, interest, is a necessary component in the formation of all prices.

CREDIT

Concept of credit: interpersonal exchange of *economic time*. According to TER (indirect materialization of economic time) credit is the interpersonal exchange of present economic goods for future economic goods.

For credit to originate the following conditions are required: 1) *one (or more) agents that exchange*, since one agent -Robinson Crusoe- realizes inter-temporal intra-personal exchanges, but this does not configure a credit (difference with Mises' concept of credit), and 2) *initial indirect materialization*, ie, without delivery of a present economic good there is no credit – argument used in TET to prove the origin of credit-currency (such as PC) is also the market, not the State; something which is also true with money-currency (gold).

With the concept of initial materialization we can understand the posture of TET when it says PC and bank balances are credit that have their origin in the market, and that the irregular-fractional financial-currency systems are debtors to the market. Which is the reason why crises such as the current one must be understood simply as common financial crises, the debtor cannot cancel his obligations. A popular saying is that “the failed party is the last to know” (his situation); here the situation is worse: “theory was the last to know”.

We can see that *credit* as interpersonal exchange of economic time, *requires double indirect or improper materialization, an initial one to exist and another to cease*. In other words, the application of TER to credit appears in two instances, an initial one and at the end.

Now we can classify credit –as TET indicates- in a necessary and adequate manner:

Types of credit:

Regular credit: TET defines as *regular credit* that which, at its birth, *defines the quality and quantity* of the future economic good with which the obligation will be cancelled. This means that at its origin the regular credit *specifies* the amount and quality of the present economic good in which the final indirect materialization will occur. In other words, the final materialization is specified at the time of the initial indirect materialization.

Irregular credit: opposite to the former, TET defines as *irregular credit* the credit that, at its initiation, ***does not*** *define* clearly the *quality* and/or *quantity* of the future economic good the obligation will be cancelled with. This means that at its birth the irregular credit *does not specify* the quality and quantity of the present economic good in which the final indirect materialization will occur. In other words, with the initial indirect materialization the final materialization ***is not*** specified, typical situation in which PC is exchanged for a present economic good.

What common language calls “buying” with PC, is a “charge purchase” operation, not cash, since the seller receives a credit that, being PC, has the aggravating factor of being irregular. This is the situation Wicksell referred to when he said there is no buying or selling of goods with the use of currency. And he was doubly wrong:

- a) If the currency is money, it is a cash purchase-sale operation.
- b) If the currency is credit, it is a credit purchase-sale operation.

The reader will see the enormous importance of having an adequate classification (indispensable taxonomy in science) of the types of exchanges that are possible, cash (barter and money) and credit (regular and irregular). From here it also derives that the supposed payment of a debt with PC is really a novation of debt, as is the whole financial circuit nominated in PC. The fractional banking system belongs to another sphere, though we have to mention the “explosive cocktail” that appears when it combines with PC.

If you are wondering about the possibility of the existence of irregular credit, we have already mentioned paper currency (PC); if in doubt, we suggest you read the text in any bill and see if you find any reference to the economic good in which it will be cancelled. For example, a dollar bill “trusts” that “God” will pay. All this ratifies that PC is a credit, and just like all credit, it implies time, changes, uncertainty...

Not understanding this simple line of reasoning led to appealing to the gods in antiquity and to the “virtual” world in the first steps of scientific era (Wicksell and the twentieth century), only reaching the true scientific sphere with the arrival of TET.

The price of credit: by definition of credit, its price is interest.

We must remember that interest has all the characteristics that TET assigns the economic good of which it is its price: economic time. This logical-deductive chain of TET avoids the

byzantine discussions on the causality of interest-prices, interest-capital, and interest - rate of interest, and at the same time it alerts us on the risks implicit in establishing economic policies with the econometric models of common use.

CURRENCY

Concept of currency: exchange means of common use that satisfies the need for liquidity.

The reader can observe that this is the concept generally assigned to money –I believe this is due to Menger’s view regarding money- so it will be necessary to classify the types of currencies defined by TET.

Speaking of Menger, it is very important to stress that the key to currency is in the fact that it satisfies the *need for liquidity*, which determines its existence, while barter presents the extreme case of *illiquidity*. Menger expressed this very well incorporating his original and very precise concept of *fast salability* without much loss between its purchase and sale prices. I believe that in Menger’s honor, this would be a better definition of currency: *economic good of fast salability without significant loss of price between purchase and sale*.

You can choose, both definitions have the great virtue of including credit –that is also bought and sold- within the category of currency. In turn, this definition includes the recurring case of PC that is rejected because the debtor (State-Bank) is in default and nobody demands it as its price falls (“paradox of the demand of money” that is no longer a paradox in the context of TET).

Types of currency: TET tells us currency can be money (present economic good used as currency) or credit (future economic good). Both types of currency satisfy the need for liquidity, which is the reason for the existence of currency.

Price of currency (p_m): amount of currency units for which the economic goods that are not currency are exchanged. In other words, as with any economic good, each exchange in which it intervenes defines its price relative to the amounts of currency delivered and the amounts of the other good received.

There is no such thing as a currency price of economic goods; the idea that there was gave rise to the unfortunate concept of absolute prices for goods, in reference to the prices of all other goods that are not currency. A statement that does not imply that statistical data of any price and/or group of prices, essential for calculus, are useless; this is the reason why TET, following the path set by the Austrian school, is so zealous in everything pertaining to prices, especially when there is an attempt to deny their “existential condition” of being relative.

Purchasing power of currency: it is what current theories define, when speaking of the capacity of currency to acquire or “price”. All economic goods exchanged have “purchasing power”. In other words, all economic goods exchanged interpersonally have “purchasing power”, if not there could not an exchange, an action human beings incur in to better their situation, as the Austrian school correctly stresses.

TET did not need this theoretical entity, since it is part of the definition of the price of all economic goods.

Currency as an economic good for calculus (again p_m): given the common use of currency as the means of exchange, it became the economic good used for calculus. This is the causality and not the inverse that implicitly is considered when speaking of currency as a tool for calculus. You immediately drift towards “virtual currency” or “accounting currency” if you do not correctly understand the causality.

In other words, the price of currency (p_m) is used as a unit of calculus because it is currency, and not because currency can appear as a measurement unit (basis of current theories). This reasoning is in line with seeing the market as the origin of currency, be it money (Menger) or credit (TET), and zealously ascribing to the spontaneous system of prices.

The error of causality expressed here gave rise to the concept that currency can be “virtual” or abstract for calculating, and “real” as “reserve value” for exchanges. As if these properties determined that you need to redefine the good depending on the different uses it has, ie, we should present a new theory of bread if we discover that it can be used to cure a headache.

Money (currency) endogenous and exogenous. Concepts of the current paradigm that leads to classifying a money that appears within the economy (endogenous) and another that is added externally (exogenous). TET does include these categories since currency, being an economic good, cannot be neuter in economics. It would be the same as accepting an economic good with zero price, ie, it is contrary to the axiom of the permanent positivity of prices ($p > 0$). Evidently this concept can only exist in the virtual world that covered economic thought in the twentieth century, and served as a justification for the recurring interventions of currency authorities.

THE INTEREST-PRICES RELATION

Currency interest (i_m): with the presence of currency (in any form) evidently credit materializes in currency, and so interest also materializes in currency (i_m). **Again the market spontaneously takes the more efficient road, an aspect very few times linked to interest in such a simple and evident way as TET shows.**

Interest as the price of currency: TET is the first currency and interest theory that presents the situation in which interest is at the same time the price of currency. Different from all known currency and interest theories, which present them as different and/or independent variables. This theoretical finding by TET question the utility of mathematical models developed in the twentieth century, based on said independence (prices in one ordinate and interest in another). But based on this relevant discovery TET itself tells us of the need to establish two fundamental differences, that of equality (“variables”) and of equivalence (“entities”) between i_m and p_m .

We can clearly see the confusion relative to the recurring currency-financial crises in capitalism, which we will come back to.

Equivalence axiom $i_m \equiv p_m$: when *currency is credit* by axiom $i_m \equiv p_m$. This axiom, as opposed to the preceding equivalence, defines that the mathematical models that treat currency interest and the price of currency as different “variables” are inconsistent. This means they are not equivalent entities since we are in the presence of money currency, not credit currency.

The $i_m=p_m$ equality axiom: when the *currency is money*, by axiom $i_m = p_m$. This axiom, opposed to the preceding equivalence, determines that mathematical models that treat currency

interest and the price of currency as different “variables”. This means we are not speaking of equivalent entities because we are in the presence of money currency, not credit currency.

Currency demand paradox: situation that appears with current theories since they cannot explain why the demand of currency decreases when its price falls. TET clarifies that this happens because we are in the presence of currency in the form of credit, for which demand falls with the loss of trust in its capacity to repay, ie, when the risk of not being able to collect increases. In other words, this “paradox” only exists because of the error of “extending” the theory of money to the theory of currency, not realizing it can adopt the form of credit.

Paradox of interest: This is how TET calls the theory that defends the need to increase a price of a good to make it scarcer. The concept of “paradox” is due to the incongruence of solving the economic problem of scarcity promoting more scarcity. We assign it the name “paradox of interest” since the most common practical manifestation of this is its application to interest by currency authorities, especially when trying to avoid the wrongly denominated increases of currency prices, instead of decreases of the price of currency. Because they do not realize that $i_m \equiv p_m$, currency authorities actions are counterproductive.

Currency crisis with credit: it appears when irregular credits are adopted as currency, which derives in undue appropriation of wealth. Currency and credit crises are typical of irregular currencies because they infringe on the temporal characteristics of credit.

Currency crises with money: It appears as a consequence of money becoming dearer with the expansion of interpersonal exchanges. It is what led Keynes to his famous expression, “barbarous relic”. You can clearly see it does not present any characteristic different from any other present economic good, something current theories ignore and leads them to ascribe special characteristics to money.

Garrison’s graphics: these graphics pretend to compare the Keynesian model with Hayek’s “triangles”. TET does not conceive these graphics, since they place i_m and p_m in different coordinates, as do all current econometric models based on Keynesian-monetarist ideas.

Economy without money: refers to the relative loss of weight of money compared to credit, linked to the composition of currency in developed economies. As an economy progresses, credit replaces money as a means of exchange. This growth presented a difficulty for calculating in capitalism, as a consequence of the irregular nature of the credit, multiplied by the fractional banking system.

The dangerous chain of credit: arising from the combination of two illicit: 1) considering credits as cancelled with the delivery of irregular credits (PC), and, 2) the fractional reserve system.

The solution of balance: the pretense of balancing the real and the currency or virtual world, individually and as a whole, not realizing there is only one world and it is currency. In the attempt to fix what does not need fixing, Central Banks appear as having the function of making

i_m and p_m coincide, which would supposedly lead to the $S = I$ balance, not realizing that by axiom $i_m \equiv p_m$ and $i_m = p_m$.

Gibson's Paradox: that cannot explain the correlation prices-interest rates, based on the theoretical error of assimilating money and credit, a concept close to *Keynes asymmetry* and *Keynes paradox*. TET presents all this with its axioms of equality and equivalence.

Keynes' paradox: a theory that pretends to solve a problem that does not exist. How can money that becomes relatively scarcer with time become cheaper? We are in the same terrain as the concept of *Keynes' asymmetry* and *Gibson's paradox* (that Keynes pretended to have solved), all due to the confusion of assimilating money and credit.

Inverted Keynes' paradox: is the pretension of solving *Keynes' paradox* replacing interest with prices in the Keynesian model. This appears due to dissatisfaction with the use of the variable i_m , and then there is attempt with p_m , an attempt that clearly shows the lack of understanding of TET's axioms of equality and equivalence.

Keynes' asymmetry: a concept with which Keynes explained the passage of money (currency) from an extremely high cost (his "barbarous relic") to a zero value and even a "negative" value ("illiquidity trap").

With TET we get a clear understanding of the *instability* generated when recurring currency - financial crises appear. This is due to current theories not realizing that we are in the simple presence of a failed debtor and the traditional methods that the market knows are not applied.

This situation of instability is not only not solved, it is exasperated, when the debtor with a complicated financial situation pretends to obtain more credit and with lower rates... That is the real paradox, which does not appear in the framework of TET.

This analysis ratifies the proposal we have made in "*Capitalism and currency*" for the world to start moving, with a plan to avoid greater damage, along a path towards an international regular currency financial system and definitively solve the scenario of recurring crisis in capitalism.

Now that we have presented all the primitive terms (concepts and axioms), equations, and denunciations of current "paradoxes", which are necessary for our approach to the theory of interest –which imply the theory of currency because $i_m \equiv p_m$ e $i_m = p_m$ —, we now can explain the implications resulting from this new approach that appeared at the beginning of the twenty-first century.

TET IN THE HISTORY OF ECONOMIC THOUGHT

TET allows us to appreciate a "new synthesis of economic thought" from the classics to our time –referred in this case to the theory of interest that would influence all areas of economics. Let us see that TET:

- Ratifies, and at the same time is the expression of, the axiom of the necessary presence of economic time in every exchange event in the economy, becoming a *necessary factor of production*.
- The condition of economic time as a necessary factor of production makes *interest a necessary participant in the formation of all prices* and allows us to place the theory of interest, within the solvent theories of prices, of supply and demand, of SVT, FEAE, etc., without mysticism or ad-hoc theoretical developments.
- *We do not need a previous development of currency theory to develop a theory of interest –implicit in the Wicksellian world and twentieth century thought.
- We do not need any theory of distribution to develop a theory of interest, as can implicitly be observed in the eternal question about the origin of interest (including Ricardian benefit and Marxian surplus value, and the whole of the twentieth century and the “modern presentation” by Hausmann). And because of this there is no need for the question, to prove the existence of interest.
- Develops the theory of interest within FEAE, originally presented by the classics (in an imperfect form, but following a correct path). An equation implicitly sustained – confusedly and inadvertently- by all interest theories that posed the eternal question, if not the question would have no meaning. In TET it has no theoretical meaning, because of its causal inconsistency, to pose a theory of interest outside FEAE.
- Adheres to SVT that solves the vicious circle of the classic FEAE. It does not need special theories to sustain the theories of currency and interest.
- Adheres to the laws of supply and demand and the definition of relative prices. It does not need “special” theories of value to sustain “exclusive” theories of prices for currency and interest.
- *Denounces the economic inconsistency of the legal framework that gives exchanges effected with credit-currency and/or denominated in it the power to cancel debts. Which constitute novations of debt or genuine credit operations.
- This means credit exchanges should not be considered cash exchanges, a problem that is aggravated when we speak of PC (irregular credit). This observation is central insofar as it is a decisive step for capitalism to work with a currency system coherent with its principles of freedom. If not it will be the authorities, together with the fractional banking system, that determine the *economic grade* of “cancelation” with the use of said instruments. This means that while the market must deliver a present economic good to cancel its debts the sovereign State-Banking system can avoid this “formality”.
- It does not need a theory of capital to explain the existence of interest. TET proves that causality is precisely the opposite.
- It does not need the causality of capital goods prices to prove the existence of interest, on the contrary, the existence of interest implies it can be imputed to calculate all prices (of all types of present and future economic goods). This means causality goes from the existence of interest to the prices of capital goods, not the opposite, from where there is the intent of proving the existence of interest (the eternal question that endured through all schools of thought, since the Greeks and up to the twentieth century).
- TET includes as particular cases the regression theorem, PTTP and preference for liquidity, and also the cases these reject or do not consider. As Popper said, a theory is superior to preceding theories when it says the same thing in a simpler way and/or says more.

- It avoids the “*post-classic inverted vicious circle*”: pretending to link interest (“positive by observation”) to a productive factor (residual, but still a factor) that in turn is not a productive factor. An *inverted* reasoning compared with Ricardo that considered land as a productive factor with “zero” cost.
- In other words, if time is clearly involved in capitalist production, with is the center of Austrian thought to prove the existence of interest, how is it possible that time is not considered a factor in production? Evidently there is inverse causality in the theories that postulate or derive “the existence of interest” based on the formulation of the theory of prices of capital goods. The causality is precisely the opposite, prices of all goods, including capital goods, are derived from the theory of economic time and its price is interest, with a necessary presence in all prices.
- *It avoids what I have called “*Flawed Austrian paradox*”: an inadvertent deductive causality that pretends to explain the existence of interest with a theory of capital, presenting a theory of interest that does not explain the existence of capital. I say “flawed” because they need a theory of capital to explain interest, when it is interest that explains capital (similar to the flaw of the classical view that costs determine prices, when it is prices that determine costs).
- It does not incur in unfortunate theoretical developments (as Hayek) such as those that postulate that inter-temporal price variations should not be confused with interest (or similar situations), not considering the cases $i_m \equiv p_m$ and $i_m = p_m$.
- It does not need and discards the theory of benefit, surplus values and productivity (physical and/or of value) to explain the existence of interest (implicit in the eternal question).
- TET, different from PTTP, allows man to value economic goods more or less, according to there being better or worse related temporarily to the human needs they satisfy. A reasoning that is in line with the concept of marginal utility, very present in Gossen’s ideas –a true anticipation of SVT-, to which Hayek gives priority in this study. TET avoids the problem called *reswitching* (in Samuelson and others).
- It does not need a special theory to explain the price of capital goods.
- It does not enter into the inconsistency of establishing interest as the price of money or credit, because this would imply accepting that without money or credit there is no interest.
- It does not need a theory to explain the existence (*stock*) of any present economic good, insofar as that axiomatically implies preference of having it for the future, ie, it is a different foundation than PTTP.
- It does not need and at the same time shows the inconsistency of the:
 - *Dichotomy of value* (“objective exchange value of money” vs SVT)
 - *Dichotomy of exchange*
 - *Dichotomy of capital* (productive vs rent)
 - *Dichotomy of prices* (relative vs “absolute or currency”. The theoretical error derived from ascribing the concept of *currency prices* to “all other goods” –those that are not currency-, and its derived concept the *general level of currency prices*, to the price of “all other goods”, instead of realizing we are always referring to the price (quantity) of the good currency, that is exchanged for other goods (quantity).
- The inconsistency of this arises from the theoretical “need” to add a new and unnecessary terminology, that of the “absolute prices of goods”, which would be the same as speaking

of the “wheat” price of goods if we make (express) the prices of all economic goods relative to wheat.

- *Dichotomy of interest* (real vs “currency or virtual”).
- *Dichotomy of the two worlds* (economic goods vs “virtual”).
- It does not need the preference for liquidity, because it is inconsistent and takes us back to the vicious circle of classic FEAE, PTTP and its Keynesian similar.
- It does not need any indirect mechanism to theoretically relate interest and prices. The expressions $i_m \equiv p_m$ and $i_m = p_m$ of TET are eloquent.
- It does not need to incur in the concept of “neutrality of money” (no economic good can be and not be at the same time an economic good).
- It does not need a theory to explain the positivity of interest.
- It does not recur –not only as an hypothesis, also as a theoretical need- the existential possibility of constant prices, be it the price of currency and/or any economic good, based on the impossibility of this happening according to the change axiom.
- It does not need any theory to explain interest outside FEAE, ie, of the real world (PTTP, liquidity preference, calculating the rate of interest without complying with economic good-price axiom, not considering interest as a price, etc...).
- Establishes that **the central subject of the interest-price relation is offering the possibility of altering economic calculus**, to the point of making it impossible and paralyzing human action –with recurring crises such as the current ones. A similar state to Mises’ impossibility of calculus in socialism (theoretical observation through TET).
- Which leads TET to state:

“The impossibility of calculating in capitalism with irregular-fractional currency financial systems.”

- It does not need a special theory of prices to calculate the price of capital goods, nor the inverse causality of needing the calculus of the prices of capital goods to explain the existence of interest, and its positivity.
- It discards the atemporality of production and distribution processes implicit in all theories, though these theories say the opposite, insofar as they accept a real world (of goods), and another virtual world (of rent).
- It does not need virtual explanations to prove the property of rent, as a flow of wealth. This means that TET clearly shows that a good does not need the status of being a *stock* for there to be a property assigned to it, an important detail that confused all thinkers of the twentieth century. This error is the same as saying we must consider the water in a dike as a good, and that it is not a good as long as it is a river flowing; if this were so, factors of production would not be goods.
- It does not invert the causality of prices, since you cannot speak of a price without naming the specific economic good it refers to.
- It complies with the axioms:
- *Economic good-owner-holder, which allows us to work with only one real world (with or without currency)*
- *Economic good-price*: that allows us to define interest as the price of the economic good time. In this manner it achieves a unified theory of interest.

- *Positivity of prices*: prices are positive quantities by definition, therefore there is no need to explain the permanent positivity of interest.
- It allows us to clearly see that through its expression $i_m \equiv p_m$ and $i_m = p_m$ central authorities (the State and the fractional financial system under its orders) control the price of a fundamental economic good that is the currency, unit of measure of economic calculus, distorting its use (the economic good calculus).
- It ratifies and is an expression of the axiom of the **necessary presence of economic time** in every exchange event in the economy. This **necessary presence of interest in the formation of all prices** eliminates the byzantine theoretical discussion on the causality of price-interest, interest-prices, interest-rate of interest, value of capital, price of capital goods, distribution theory, value of productivity or productivity of value, concept of capital as an abstract entity only to the effect of calculus, etc.
- Avoids the inconsistent comparison of goods that are the same in time, infringing on the time axiom (with time everything is different). TET does not need to include this formulation to prove the existence of interest (PTTP, preference for liquidity, theories of capital-benefit, surplus value-variation of currency prices, etc...).
- Explains the aspect of preferring the future to the present, implicit both in the act of saving (implies prioritizing future consumption) as in that of investment (implies prioritizing the future result of a present action). In this manner it does not enter into the inconsistency of confronting the S with the I since both prioritize the future, ie, both savers and investors bet on a better future. This reflection, along with the expressions $i_m \equiv p_m$ and $i_m = p_m$ are a serious alert for econometric models now in use, and will mobilize us to develop new one based on TET, of which the “very elementary” equations presented here can be considered a simple orientation towards them, ie, they are an elementary guide for new models.
- It tells us that the need for liquidity –arising from the existence of the economic good interpersonal exchange- is satisfied with the discovery of currency that acquires the status of economic good because of its scarcity. Thus, currency has value and generates its prices, and it cannot be considered “virtual”. Exchange is not sterile and the currency that satisfies it is not sterile either; believing this is the origin of the ancient mysticism and the para-scientific status of the twentieth century.
- It clearly shows that there is no inconsistency in the concomitant existence of a good fiscal situation of a country and currency -financial instability. In other words, a good fiscal situation does not imply the impossibility of currency -financial crises.
- TET also shows that a good currency does not imply the non existence of banking crises.
- Lastly, TET shows us to that the so called twin surpluses (fiscal and balance of payments- a concept we have analyzed deeply in the Theory of Economic Relativity) are no protection for avoiding currency -financial crises.
- In other words, TET shows us recurring currency -financial crises in capitalism derive from the existence of irregular fractional currency financial systems.
- All aspects underlying the recipes that are proposed in situations of crisis, both for diagnosing them and determining a treatment.
- It avoids unfortunate conclusions such as those by Joseph Schumpeter ... *the real function interest has in the economy ... so to speak is as a brake or regulator that does not allow individuals to establish productive periods* (Böhm-bawerkian sphere) *with a duration that exceeds the economically admissible*. Insofar as it implies the possibility,

even if only theoretical, of the existence of zero interest, or the existence of credit without a present economic good originating it, or that every investment must be lucrative or efficient. An investment does not need to be economically efficient for interest to exist, is another of the erroneous arguments that link the existence of interest with benefit, surplus values... ie, with the millenary and unfortunate question on the origin of interest.

- It allows us to clarify the enormous mistake in the argument underlying the forceful and unfortunate concept of “barbarous relic”, insofar as it shows that a small ounce of gold can originate multiplicity of credits denominated in it, with the clarification that no virtuality will originate in it, since we know there can be no credit without the presence of a present economic good originating it.
- Possibly, beyond trying to control the credit originated by the market, the tasks of the State should be to avoid that a few appropriate the efforts of millions that deliver (market) the present economic goods for the existence of credit.
- It is timely to stress the inappropriateness of the suggestions of those that advise us to overcome currency -financial crises through the expedient of increasing the control over the currency-financial system, not realizing that

Human action naturally tries to liberate productive forces to overcome economic limitations, therefore any attempt to control these free forces inevitably implies poverty.

- In other words, once again we have a scenario where the spontaneous order of things is perverted, and this brings consequences that are erroneously called recurring crises of capitalism. All this because of the lack of understanding precisely of the anti-capitalistic totalitarian nature of the fractional-irregular-currency -financial systems that subvert the state of freedom.

THEORY OF PRICES IN TET

Considering the enormous importance of prices in managing spontaneous imperfect, disperse and scarce information, it is necessary to present a paragraph on the clarifying implications of TET on the subject:

Current value (CV), the equation of bonds and the price of capital goods: In TET it is completely valid –with a more consistent and simple deduction than current theories- that: $\text{Current Value} = \text{Future Value} / (1 + i)^n$, implying, simply, within TET, the incidence of the economic good time in the calculus in which it must be considered as a factor or input, ie, with the passing of time.

Thus, the relation known as the *bond equation* –generalizing, the price of a good that has the time component- , that postulates an inverse relation between present price and interest, arising from the simple application of TET. If an economic time consumes time-necessary presence-interest must be included in the input of the formation of its price, in the same manner as the price of bread must input the participation of flour, work, etc.

In other words, the calculus of current value is in tune with the principle that the value of present goods is relative to the future income-benefits a good will present, a formula TET

extends to all economic goods, and not only to capital goods. A simple way to understand it is supposing for the calculus of current value of a present consumer economic good that $n = 0$.

We must not forget that the i in the formula is subject to indirect materialization.

Unified theory of prices: TET unifies the theory of prices of all goods, be they consumer, capital, for hoarding, speculative, merchandise. This means that the fact that we can calculate the interest included in the price of all economic goods –added to SVT and the theory of input–allows us to remain within the framework of FEAE without the classic vice, applying at the same time indirect materialization characteristic of time and its price, interest. All these central arguments are presented in the search for a synthesis of economic thought.

TET AND RECURRING CURRENCY CRISES (IN CAPITALISM)

Considering the postulates of TET, we summarize these aspects:

Paper currency: irregular credit that the market awards the State, as a currency.

Banking system: it is the market that awards credit to the banking system –except what comes from its patrimony–, which in turn becomes irregular when it is denominated in PC and creates a scenario of greater instability when combined with a fractional banking system.

Central Bank (Treasury). TET concludes that: *in irregular currency systems their independence of the State is utopian, and in regular currency systems its existence is unnecessary.*

Theory of economic cycles: TET clearly states that so-called currency cycles are nothing more than an expression of situations of financial conflict in companies, which are generalized when the firm that suffers them has great weight in the economy as a whole.

Recurring currency crises are nothing more than an expression of a financial crisis in the State-Banking system with irregular-fractional system. Current theories have not understood this because they do not realize that PC is an irregular credit multiplied by the fractional system.

Among other aspects, the theory of economic cycles, derived from TET allows us to show the inconsistency of the concept of “liquidity trap”, closely linked to the cycles we are referring to:

Liquidity trap: this is the situation in which currency policy (manipulating “currency aggregates”) does not produce any effect on the economy (meaning expanding or contracting it with the pretext of attending to unemployment, alteration of prices –not realizing only one is altered–; etc.):

According to current theories: the trap consists of not being able to explain realities such as this: *that from the expansion of “currency aggregates” –which in current theories erroneously “implies” an expansion of the supply of credit– can result a contraction of the economy, and a fall or non acceleration of currency prices (deflation and/or stagflation).*

According to TET: the analysis of this reality is:

1) Expansion of the issue of “currency aggregates” (paper currency or amplifying the fractional system) does not imply an expansion of credit, because if the market does not carry out the exchange of the initial materialization of those “papers” for present economic goods there is no expansion of credit. This is what has been seen in recent years, currency authorities “filled” the vaults of financial entities with these “papers”, discouraging a “run on the banks” with those “rearguard battlements”, *but the market did not confer credit on the financial system.*

2) The fact that there was no expansion of credit implies that no expansion of the economy can be expected from this source. In other words, for TET the scenario of stagnation of the economy with these “stimuli” is no surprise.

3) The generalized uncertainty regarding the economic future (loss of employment, etc.) implies a contraction of the demand of credit.

4) The fact that credit has contracted, implies that the economy must contract in this sphere.

5) The fact that the erroneously called “currency prices” remain constant or fall (deflation) is consistent with the framework established by the contraction or stagnation of credit.

6) That the rate of i_m remains in very low levels, together with p_m , is a direct consequence of the equivalence axiom $i_m \equiv p_m$ in credit-currency systems. We must not confuse negative variations of i_m and p_m with the impossibility of their acquiring negative values, since we are referring to prices.

7) That the economy is immerse in permanent instability is a typical consequence of the fact that a number of companies are suffering from the collapse of a great debtor (totalitarian irregular-fractional-currency -financial system); etc.

8) The transitory or permanent “capitalization” of banks by governments only corroborates the necessary “State-Banks” connivance in current currency-financial systems, in line with the utopia of the independence of Central Banks (Treasury) from political power.

In other words, the system is statist in its essence, with banking “franchises”, the “capitalizations by the State” are simple formalisms, since they only represent the installation of a “rearguard with the appearance of a fortress to ward of the attack” of the *enemy creditor market.*

It is evident that if the market starts giving credit to the financial system again, ie, transforming the “papers” (“rearguard battlements”) into credit, the opposite effects will be seen. A situation that will continue to be *expansively unstable* as long as a non fractional regular currency-financial system is not put in place with previous international bankruptcy proceedings.

Comparative summary: there is a clear difference between the simple explanation on the origin, diagnostics, and treatments of the recurring capitalist crises –that TET considers in the well known framework of a failed debtor- and the “astonishment” arising from

analysis based on current theories (liquidity trap, paradox of currency demand, stagflation, etc.).

The simple explanation appears when the situation is observed from the adequate perspective, ie, from the perspective of the market that lends credit to the financial system, as TET does, instead of seeing it from the opposite perspective that “supposes” that credit expansion or contraction is originated by the State-Bank complex. Once this is understood, you only need to apply the law of supply and demand referred to credit, insofar as it operates as a key element for the expansion or contraction of business, especially considering that it is the biggest actor in the economy that is in trouble.

Summary: the trap is in the theory, there is no “liquidity trap” nor a “paradox of currency demand”. In light of TET we understand why “magicians” are needed to respond to recurring capitalist crisis, “professionals” that only conceive “virtual” worlds”, derived from equivalent theories.

TET explains –by *reductio ad absurdum*- why **there are no currency crises in socialism**, because in that type of society there are no irregular or fractional currency systems. A situation that very few studied, the only serious analysis belongs to Mises, referred to the impossibility of calculus in socialism, **that TET extends stating the equivalent impossibility of calculus in capitalism with irregular and fractional currency-financial systems.**

Note: on this subject more can be found in the books “The Theory of Economic Relativity” (The solution of balance, Keynes’ asymmetry, Keynes’ paradox, Gibson’s paradox, inverted Keynes’ paradox, interest paradox, the unknown debtor syndrome, etc.), in “Capitalism and Currency” and in recent articles in the “Application (Opinion)” section of www.carlosbondone.com.

INTRODUCTION TO A PROPOSAL OF THE SYNTHESIS OF ECONOMIC THOUGHT

Based on TET we outline the first hypothesis, subject to revision since it is a draft expression of what could be a new synthesis of economic thought, that would include theoretical developments from the classics up to TET.

Production factors: wealth, man and economic time.

The products of production: economic goods.

Indirect materialization: economic time is materialized in economic goods.

Wealth distribution: based on the economic good-owner axiom.

Rent distribution: being a flow of wealth, it is also based on the economic good-owner-holder axiom.

Fundamental Economic Accounting Equation (FEAE): economic-accounting expression of the economic good-owner-holder axiom, in the framework of the total wealth equation of TET.

Based on this and other derivations from TET, we present a proposal of sorts as a “synthesis of economic thought” with the simple formula of FEAE that allows ex ante “calculus” of the “future” with present data.

$$y_m^n = f(qbk, C - D, p_m, n)$$

Which reads: future currency (m) rent (y) of a period (n) is a function (f) of the quantity (q) of economic goods (b) at the beginning of the period, multiplied by the known productive coefficient (k), credits (C) minus (-) Debts (D), all expressed in the price of the currency used for calculus (p_m) in the period (n) considered.

It is important to observe that the variable interest does not appear, even though we are calculating a period, which implies time. This is in line with the dependence discovered by TER –the indirect materialization of time in other economic goods and its price, interest. The relevance of this expression is evident insofar as it allows us to analyze the different cases presented by the axioms $i_m \equiv p_m$ or $i_m = p_m$ of TET.

This formula applies and explains both micro (patrimonial-economic situation of a company), and macro (a group of companies or a nation).

Its accounting equivalent derives from simply adding to this equation the equivalences of the terms Assets (A) and Patrimony (P), derived from the economic good-owner axiom:

$$A = y_m^n = f(qbk, C - D, p_m, n) = P$$

The formula of the *flow* of wealth that we transform into *stock* of wealth with $n = 0$, and allows us to separate credits and debts from the *stock* of present goods in micro (company) and eliminate them with the reconciliation Credits = Debts in macro (group of companies or nation). It should be observed that this formula eliminates the inconsistent presentation of “composition fallacies”, as if the macro should need a different basis than the micro.

This simple formula is indicating enormous implications for dealing with recurring currency crises typical of irregular currency -financial systems. Enormous implications with a simple diagnostic and easy resolution based on TET and this theoretical-mathematical synthesis: what is altered in irregular (fractional) currency financial systems is the price system, an essential compass for economics, not interest. In other words, the effort of “acting as storm pilots in crises” regulating the currency rate of interest means denying the essence of the problem, ie, the existence of $i_m \equiv p_m$ and $i_m = p_m$.

It is TET that indicates the presence of the axioms $i_m \equiv p_m$ and $i_m = p_m$, clearly stating that i_m is equivalent or equal to p_m and that the central “policy” is preserving the system of relative prices, within which interest is a price necessarily present in all other prices.

We can conclude then that the subject is always prices, not interest. With which TET again establishes economic theory within the framework from which it should never have been removed, the price system that offers the main economic orientation, simultaneously imperfect, disperse, and scarce.

While Mises tells us of the impossibility of calculus in socialism (a theoretical observation we have made in the *Theory of Economic Relativity*), in the same line TET tells us of the impossibility or extreme difficulty of calculus in capitalism, with irregular currency -financial systems, alternatively fractional with multiplying effects.

We can conclude that TET refers to these relevant quotations of the history of economic thought:

A good theory of interest ... Should offer a simple and unified explanation of the value of time, wherever it is expressed... (Frank Fetter).

...Because Menger, far from welcoming that theory as a development of suggestions of his, severely condemned it from the first. In his somewhat grandiloquent style he told me once: "The time will come when people will realize that Böhm-Bawerk's theory "is one of the greatest errors ever committed". (Joseph A. Schumpeter)

Micro explains macro, the so-called "composition fallacies" are theoretical inconsistencies...

Carlos A. Bondone

TET unifies economic thought since it discovers the solution the eternal problems of the origin of interest and its relation with prices. A circumstance that allows us to express:

- 1) Poverty has a positive correlation with the health of relative prices.*
- 2) Interest is part of all prices, which are relative by definition.*

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TET's contribution: our humble impression is that just as SVT (and marginalism) solved the problem of the defect in OVT –a search for solutions to the questions of distribution and interest outside the economic world of FEAE-, TET did the same with the equivalent defect presented by interest theories in the twentieth century, that searched for an explanation outside FEAE, through theoretical inconsistencies for currency and interest.

TET returns economic thought to the sphere of FEAE (begun by the classics) and offers a solid theory of interest and distribution, leaving aside the inconsistent and millenary question on the origin of interest, with no need to abandon or manipulate SVT.

Possibly we could state that just as SVT solved the problem of classical circularity, TET solved the problem of the theory of interest. TET discovered the answer to the millenary question on the origin of interest.

In this manner TET presents a unified and consistent nucleus in the central subjects of economics surrounding FEAE, rejecting the ancient mystical and para-scientific sphere (ie, the need to appeal to ad-hoc theories that pretend to solve special cases that are not so) of the twentieth century.

TET offers a new explanation of the origin, diagnostic and treatment of crises, compared with traditional theoretical proposals:

1) Overproduction (socialism): due to overproduction, ie, man in paradise, where all economic goods become goods.

2) Underconsumption (Keynes' non original ideas denounced by Hayek): there is less demand than production (the same situation as the former with inverted causality, ascetic conduct allows for the same conversion of economic goods into goods).

3) Bad resource allocation (Austrians): an inherent condition of fallible man; ie, this posture presents the possibility of a perfect world with an infallible man, an adjective implying the permanent existence of something better, economically more efficient. Nonetheless it is commendable that it refers to the concept of economic efficiency, ie, the possibility of obtaining maximums in a real world.

4) Currency expansion and contraction (monetarists-quantitativists): based on Quantity theory; we have already expressed our opinion.

5) Scarcity of money (mercantilists): though it appears as the most inconsistent of all cycle theories, it is what the politicians have more at hand when confronted with facts. It considers money as the origin of wealth, when the really causality is the opposite.

TET synthetically presents its explanation of crises and/or cycles:

Credit as the motor of the economy: insofar as the business world knows that expansion of credit implies increase of economic activity –both for the creditor and the debtor-, and its contraction produces the opposite, economic theory seems not to consider this situation. In other words, a country that increases its capacity for taking credit increases its development. Thus the countries that obtained credit with the insertion of their PC in the rest of the world saw their economies expand with the credit they received.

We can say the discovery of PC allowed the development of modern empires in a similar manner to Spain with the discovery of American gold. Again a good economic theory explains historical developments, in both cases it was an expansion of currency as a means that facilitated exchanges, only in the Spanish case those exchanges were cash, and in the modern case (USA dollar, Euro, etc.) exchanges are with credit, and that is why finance, solvency, and economics, depend on the debtor. An analysis of trust that becomes acute when speaking of irregular credit, added to the exponential multiplier that is the fractional system, and its international reach.

TET in turn shows us that political authorities cancel their materialized passive denominated in their own PC (dollar), with the expedient of devaluating it in other countries (international exchange values) instead of validating the devaluation of their PC in their own countries (internal inflation), ie, others pay for their debts. This explains the regression to mercantilist policies of “protecting national interests”.

TET gives a scientific explanation to the confusion of the authorities faced with recurring currency-financial crises and the infinite possible recipes presented by current theories, so politicians are reduced to a guessing game. No theory –except TET-presents concrete solutions with the least possible traumatic effect.

Evidently no concrete solutions can be offered not knowing where to go. Which is precisely what TET proposes: a regular non fractional currency financial system.

When the basics of TET are understood –manipulating i_m implies manipulating p_m – along with its consequences, the time will come for international bankruptcy proceedings, when States-Banks will have to present a plan to pay their debts, according to their particular situations, which will be a definitive solution if regular and non fractional currency systems are adopted.

As long as irregular-fractional systems are in place, capitalism will not be capitalism, it will be operating within socialist inefficiency, given the impossibility of economic calculus, as Ludwig von Mises stressed (according to the theoretical observation of TET).

In ending this work I wish to thank all researchers that preceded me, especially those mentioned in this text, since their efforts –with their right and wrong answers- are the origin of my correct or incorrect answers.

NOTES

⁽¹⁾ Hannah Robie Sewall in her work *“The Theory of Value Before Adam Smith”* –American Economic Association – 1904 - Chapter I – Page 1: *“The Greeks, in common with most ancient peoples, had no conception of “rational laws governing the phenomena of the distribution of wealth”. They studied human conduct to discover a man’s duty, or to ascertain what kind of actions constituted noble lives, rather than to know the ultimate relations of all actions.”*

⁽²⁾ Murray N. Rothbard, *Historia del pensamiento económico – Volumen I – El pensamiento económico hasta Adam Smith*, Union Editorial, Madrid 1999.

⁽³⁾ Böhm-Bawerk, *Positive Theory of Capital* 1930 G. E. Stechert & Co.
New York

⁽⁴⁾ Emile James: *Historia del pensamiento económico* – Fondo de cultura económica – México 1975, página 79.

⁽⁵⁾ Joseph A. Schumpeter, *Historia del pensamiento económico* – Fondo de Cultura Económica – México (1975). Nota 36 al capítulo 5, en pág. 386.

⁽⁶⁾ Knut Wicksell, *Interest and Prices – Reprinted 1962, by arrangement with the Royal Economic Society Library of Congress Catalogue Card Number 65-16993* Printed in The United States of America by Sentry Press, New York, N. Y. 10019

⁽⁷⁾ That led to Murray Rothbard’s (Austrian Theory of Money) unfortunate expression: *In this manner Mises showed the lucid historical conception fo Carl Menger, when postulating that the guise in which money appeared in the market was not simply a historical compendium but a theoretical necessity.* TET returns it to Menger’s terrain of a historical case, since their cannot be a theory of currency based on the theory of money (since currency can also be credit, not only money). The main thing is that, considering money for Menger and credit as currency for TET, in both cases currency is always originated in the market.

⁽⁸⁾ In the Theory of Economic Relativity we expand on the concept of price referred to here (Glossary of concepts).

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