A Theory of Interest

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In a recent survey on interest theory, Professor Sennholz (1996, p. 127) reminded his readers that, as "was the case a century ago, the phenomenon of interest income continues to be enmeshed in much controversy, which makes it one of the most open and demanding subjects of economic inquiry."

What is this controversial phenomenon of interest income? In the most general way, it can be described as follows: Successful business is characterized by a positive spread between the sum total of prices paid for its factors of production and the sum total of prices received as proceeds for its products. The entrepreneur earns more money by selling his products than he spends on the factors of production that bring these products into being. The customers pay more money for his products than he pays for the factors of production of these products.

This phenomenon raises the fundamental question whether the entire spread between selling proceeds and cost expenditure can be "arbitraged away" through entrepreneurial competition, or whether at least a part of this spread cannot be so arbitraged away (see Kirzner 1993, p. 167f.). In other words, does the entire spread consist of entrepreneurial profit, which can be eliminated as a consequence of the competition of other entrepreneurs, or does it contain a component that cannot be so eliminated–does it also contain an interest component? And if it does contain an interest component, what is its cause?

All theories of interest seek to answer these questions. In the present article, we will criticize the established time preference theory and then give the outlines of a realist explanation of interest.

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A Critique of the Time Preference Theory of Interest [1]

Austrian Definitions of Time Preference

Eugen von Böhm-Bawerk's great achievement was to formulate the problem of interest theory as a value problem. He sought to explain interest as resulting from human choice and exchange, rather than as being caused by some factor outside of human action. The crucial point was that, if interest sprang from some feature of human choice, then it sprang from a fundamental value *inequality*, because choice involved the preference in action of a more valuable alternative over a less valuable one. Accordingly, observable interest rates manifested an inequality between the value of products and the total value of the corresponding means of production, including "waiting" or the "use" of capital.

This way of stating the problem departed sharply from previous approaches, such as the interest theory of Carl Menger (1871, pp. 133ff.), which were based on the premise that there was a fundamental equality between these two values. Whereas in Menger's eyes, interest was the value of a component part of the factors of production, Böhm-Bawerk saw it as the fruit of a value differential. He described this value differential, which Frank Fetter would later name time preference, in the following way: "*Present goods have in general greater subjective value than future goods of equal quantity and quality*."[2] It is because of this fundamental time preference of present goods over future goods that factors of production (which will yield some quantity of product X in the future) are less valuable than the corresponding quantity of X existing already here and now.

Let us observe that the time preference explanation of interest transcends the phenomenon of a value spread between products and their factors of production. It makes a more general claim on behalf of any two homogeneous goods situated at different points of time, irrespective of whether they are related through a production process. Böhm-Bawerk (1921b, p. 219) emphatically denied that time preference was rooted in "the general relationship between the value of means of production and the value of their products." And Frank Fetter (1915, p. 236) similarly insisted that time preference referred to "present goods as compared with an equal amount of the like future goods." And despite various disagreements with Böhm-Bawerk, all later champions of time preference theory—in particular, Mises and Rothbard—would also agree that interest was a value differential between a "sooner" and a "later" good. From the point of view of time preference theory, the value spread between products and factors of production is therefore always mediated by the more fundamental value spread between presently available products and like products that will come into being in the future due to the factors of production.

As can be seen from Böhm-Bawerk's cautious definition, which stresses that only "in general" present goods are preferred over like future goods, he did not assert that time preference was universally positive. Neither did Irving Fisher (1907, p. 184) and Frank Fetter (1977a, p. 238f.; 1915, p. 237) think this was the case (they even argued that time preference could be negative), and several contemporary Austrians advocate the same point of view (see Kirzner 1993, p. 171, Lewin 1999, pp. 103ff.).

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[1] For recent criticisms of the Austrian time preference theory, see Pellengahr (1996) and Reisman (1996, pp. 792–97). For previous expositions and defenses of time preference theory, see in particular Böhm-Bawerk (1921b, 1928), Mises (1998, pp. 99ff., 476–534), Rothbard (1977; 1987; 1993, pp. 11ff., 297ff., 313ff.), Kirzner (1976, 1993), Block (1978), and Garrison (1979, 1988).

[2] Böhm-Bawerk (1959, p. 265, emphasis in the original). See also Böhm-Bawerk (1921b, p. 327) and Böhm-Bawerk (1959, p. 259).

By contrast, Ludwig von Mises (1998, pp. 480ff., 524) asserted on *a priori* grounds that time preference was at all times and places positive, and several later Austrians (for example, Rothbard, Block, Garrison, Hoppe, Herbener) followed him in this stance. Mises stressed that human action by its very nature involves a preference for a sooner rather than a later fulfillment of one's ends. Said Mises:

> acting man does not appraise time periods merely with regard to their dimension. His choices regarding the removal of future uneasiness are directed by the categories sooner and later. . . . Satisfaction of a want in the nearer future is, other things being equal, preferred to that in the farther distant future. Present goods are more valuable than future goods.
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> Time preference is a categorical requisite of human action. No mode of action can be thought of in which satisfaction within a nearer period of the future is not—other things being equal—preferred to that in a later period. The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant. He who consumes a nonperishable good instead of postponing consumption for an indefinite later moment thereby reveals a higher valuation of present satisfaction as compared with later satisfaction. (Mises 1998, pp. 480–81)

Here Mises not merely clarifies the phenomenon that his predecessors had in mind when they used the expression "time preference," rather, he gives a complete restatement of time preference theory in regard to two fundamental points. First, he redefined what time preference theory was all about; the "time preference" he was dealing with was not in fact the same phenomenon that Böhm-Bawerk and his other followers had studied. Second, Mises gave a causal explanation of time preference that differed from the one given by Böhm-Bawerk. In what follows we will discuss these restatements in some detail, dealing first with Mises's explanation of the origin of time preference, and then turning to a critique of his time preference theory itself.

The Consumption Theory of Time Preference

For both Böhm-Bawerk and Mises, time preference was only the *proximate* cause of interest. The *ultimate* cause was something even more fundamental.

Böhm-Bawerk (1921b, pp. 328ff.) had famously argued that time preference was itself caused by two psychological dispositions of man, namely, (1) that current needs are usually less well-satisfied than future needs, and (2) that human beings tend to underestimate future needs. He also argued that time preference was caused by the higher physical productivity of more roundabout methods of production—his famous "third cause" of time preference.

Mises (1998, p. 486) accepted Frank Fetter's refutation of this third cause as definite. But he also rejected Böhm-Bawerk's two psychological explanations. Psychology, Mises argued, could never establish that time preference was an element of the very nature of human action. In some actions, the psychological forces that Böhm-Bawerk described were at work and led to a preference of present over future goods of the same kind. But in other instances, this was not the case. Böhm-Bawerk himself had admitted this point, which is why he held that time preference existed only "in general" but not in all cases of human action.[3]

Mises followed Frank Fetter and Franz Čuhel in arguing that time preference was caused by the necessity of consumption.[4] Fact is that human beings could not survive if they did not consume. Hence, there must be some time preference in human action,

[3]See Mises (1940, pp. 439ff.). Mises (1949, pp. 485ff.) also criticized Böhm-Bawerk for having failed to develop a truly praxeological theory of the period of production.

lest the human race would perish. This does not mean that human beings must consume through every single action, so that time preference would be the only factor determining their actions. Rather, it means that in order to survive human beings must, at some point, prefer shorter production processes to longer ones, even though the longer ones are more physically productive.

Consider three alternative fishing processes: the first one leads to catching one fish at the end of a one-hour production process, the second to catching 10 fish at the end of a full work-day (eight hours) production process, and the third to catching 100 fish at the end of a one-week production process. Mises (1940, p. 446; 1949, p. 483) argues that, if one disregarded the need for survival through time, in light of these production figures one would always choose the longest production process. It is the need to survive that prompts the acting person to also consider the passage of time and to prefer, at some point, sooner results to later ones. Thus assume we observe a person pursuing the production process leading to a catch of 10 fish at the end of a day. Mises explains this observation in the following way: The person did not pick the 100-fish alternative rather than the 10-fish alternative because his time preference was stronger than the additional gain (90 fish in six days) he could expect from the longer production process. The only reason why he picked the 10-fish alternative at all, rather than the one-fish alternative, was that, in this case, the attraction exercised by the additional gain (nine fish in seven hours) was strong enough to overcome his time preference.

Before we set out to criticize this standpoint, let us briefly highlight its significance within the overall theoretical framework of Misesian economics. Consumption here appears as the root of all economic phenomena. Carl Menger and his disciples had argued that consumer choices directly determine the prices of consumers' goods, and that indirectly they also determine the prices of producers' goods. Now in light of the Fetter-Čuhel theory, time preference too, and with it the phenomena of capital and interest appeared to be rooted in consumption. Its great charm—at any rate from Mises's point of view—was that it did not stress any psychological dispositions of man, but relied on the fundamental (praxeological) fact that there can be no human action without consumption. The consumption-theory of time preference thus seamlessly integrated the theory of capital and interest into the general theory of prices.

This being said, we now have to address the shortcomings of the consumption theory of time preference. Let us first observe that this theory does not warrant Mises's characterization of time preference as a universal feature of human action. As we have seen in the long quote above, Mises held that time preference was at work in every single human action. But then he goes on to causally explain time preference by the necessity, at some point at least, for man to consume in order to assure his survival. Now, as a matter of fact there are human actions that are not inspired by the desire to survive. Warriors and martyrs, for instance, have the tendency to be oblivious of the physiological requirements of sustained life. The same holds true for those striving for suicide. Yet it also holds true for many people who cherish life, but are ready to give it up if this is required for the protection of some good they believe is higher than their life. Mises recognizes this fact only to dismiss it as "a pathological withering away of vital energy" (1949, p. 487). From a praxeological point of view, however, it is of secondary importance whether an action has a pathological character. We first have to deal with the action as it is, not as it should be from the point of view of physiology or psychology. And here we cannot evade the fact that not all actions are inspired by a desire for survival. It follows that the consumption theory of

[4]See Mises (1940, p. 443f.) where he quotes Fetter (1905, p. 144) and Čuhel (1907, p. 304). For an earlier statement of this argument, see Mises (1933, p. 23f.).

time preference does not apply to all human actions, and that it therefore cannot justify Mises's claim that time preference is a universal feature of human action.

This consideration does not however refute the time preference theory of interest, and not even the consumption theory of time preference. Even if there were no universal link between consumption and time preference, interest could still be caused by time preference and the need for consumption could determine interest in some more indirect way. Mises himself does not seem to believe that the consumption theory of time preference describes a matter of fact that is as obvious, say, as the fact that acting man chooses between alternatives or that he employs means to attain ends. Rather, the consumption theory is in Mises's eyes the most plausible hypothesis to explain the fact that we do not always choose those production processes that are most physically productive, and that we choose production processes yielding fruit in the future only if the quantity of the future product is higher than the quantity we own now. In his words:

> Those contesting the universal validity of time preference fail to explain why a man does not always invest a sum of 100 dollars available today, although these 100 dollars would increase to 104 dollars within a year's time. It is obvious that this man in consuming this sum today is determined by a judgment of value which values 100 present dollars higher than 104 dollars available a year later. But even in case he chooses to invest these 100 dollars, the meaning is not that he prefers satisfaction in a later period to that of today. It means that he values 100 dollars today less than 104 dollars a year later. (Mises 1949, p. 483)

If the consumption theory of time preference were wrong, and even if time preference theory itself were altogether wrong, it is true that we still would have to explain the facts Mises describes in the above quote. But we must also stress that these facts do not themselves prove the validity of any particular theory. They are facts-to-be-explained, not facts that deliver their own explanation. And as we are going to show in the later sections of the present article, there is at least one other theory that can also account for these facts.

The greatest shortcoming of Mises's argument, however, is its reliance on the fallacious notion that 104 future dollars are somehow *inherently more valuable* than 100 dollars in the present. It is true that he does not make this notion explicit. But it is implicit in the very way he formulates the problem: "Those contesting the universal validity of time preference fail to explain why a man does not always invest a sum of 100 dollars available today, although these 100 dollars would increase to 104 dollars within a year's time." Mises thus feels a need to explain why a man should not always prefer the more physically productive choice alternative in the future to a less physically productive alternative in the present. But such a need can only arise if one assumes that the natural thing would be to always prefer the former to the latter alternative. Were it not for the intervention of something like time preference, 104 dollars in the future would always and everywhere be preferred to 100 dollars now.

This view confuses the physical aspect of things with the economic (value) aspect. It is true that 104 dollars are from a physical standpoint more than 100 dollars because the former are a larger multiple of the same physical unit. But from the economic point of view, this comparison is irrelevant. Economic comparisons are not cast in terms of physical units, but in terms of choice alternatives, and choice alternatives are always heterogeneous. In the present case, therefore, the economic comparison does not involve different multiples of the same good, but two different goods. "104 dollars in one year" are for purposes of decision-making a good that is completely different from "100 dollars now" even though from a physical point of view these might be homogeneous quantities. Therefore there is no reason to assume that 104 future dollars are inherently preferable to 100 present dollars. The entire problem that Mises seeks to

solve through the hypothesis of time preference evaporates. All we can say is that some people prefer 104 future dollars to 100 present dollars, whereas other people have other preferences. There is nothing in this fact that would justify introducing the hypothesis of time preference and, therefore, of taking the pains to explain time preference as a consequence of the need to consume.

Böhm-Bawerkian Time Preference and Misesian Time Preference

So far we have mainly discussed Mises's causal explanation of time preference, and only our very last considerations have brought us closer to a critique of his time preference theory *per se*. Before we can proceed with this task, however, we have to discuss the particular features of Mises's time preference theory as compared to the time preference theory of Böhm-Bawerk.

The Böhm-Bawerkian view on the nature of time preference involved two related shortcomings. On the one hand, it was difficult to reconcile with the fact that values and prices are manifest in human choice and that choice is free. How, then, is it that future values by their very nature—or at least in general—stand in a determinate relationship to present values? On the other hand, and more important, the Böhm-Bawerkian approach ran into even greater conflict with the theory of subjective value insofar as it claimed that time preference concerns the value differential between *homogenous* present and future goods. The very fact, however, that two goods exist at different points of time makes them heterogeneous goods. Böhm-Bawerk (1921b, p. 327) himself admitted this implicitly when he emphasized that the value of present and future goods is liable to be different because they "are intended for a service of a different set of wants." And later champions of Misesian time preference theory have routinely stressed the same point in rebutting various criticisms of the doctrine (see, for example, Rothbard 1993, p. 61; Block 1978, pp. 121f.). The point is devastating for the old time preference theory, for one cannot even make claims on behalf of present and future goods "of the same economic quality" without contradicting oneself.[5]

[5]We have already seen that Mises did not quite avoid this fallacy either. In any case, one could argue that two physically equal goods existing at different points of time are also equal from an economic point of view, *except for* their position in time. There are three problems with this argument. First, it does not explain why future goods should not be preferred to present goods. Second, it is not really an argument but a stipulation. It "demonstrates" the existence of time preference by postulating that the relative position in time is the only factor that could prevent two physically equal goods from having the same economic significance. But this is clearly not the case because even two physically equal goods that exist at the same point of time and are owned by the same person also have different values (see Mises 1998, p. 119f.). Third, the argument seems to presume that, except for their different position in time, two physically equal goods would have *equal* values. But this contradicts the standard Austrian case against the existence of indifference in human action (see, for example, Rothbard 1956 and Hülsmann 1999). Pellengahr seemed to have this point in mind when he stated that

> it is left entirely unclear how the evaluating agent is to separate his decision with respect to the equality of the satisfactions from the decision as to which satisfaction he prefers. The task is simply too difficult for anyone to perform: either two satisfactions, one present, one future, are considered equal or not. They cannot, qua satisfactions, be considered equal in one respect and unequal in another. A concept of time preference defined with respect to equal present and future satisfactions, however alluring it may seem to subjectivists at first glance because of its apparent subjectivism, is thus simply a contradiction in terms. (Pellengahr 1996, p. 26–27)

In the hands of Mises's predecessors, then, time preference theory was a mere—and problematic—assertion that a determinate relationship between the values of future and present goods of the same kind existed. None of its champions proposed a tenable explanation for this supposed relationship other than the intuitive reference to the visible facts of the market: that the (future) prices of products were higher than the (present) prices of the corresponding factors of production. But these facts are to be explained by interest theory; they cannot themselves be their own explanation.

So how does Mises solve these problems? We already pointed out that he redefined time preference to such an extent that, properly speaking, he does not deal with the same phenomenon as Böhm-Bawerk and the other advocates of time preference theory, but with a different thing (see Moss 1987, p. 161; Pellengahr 1996, p. 27). When Böhm-Bawerk, Fetter, and Fisher used the expression "time preference," they referred to an observable value differential between two physically similar goods existing at two different points of time. But when Mises uses the expression "time preference," he refers to a *counterfactual* value differential between two alternative uses of one and the same good. Consider again the crucial passage from *Human Action* that we already quoted:

> The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant. He who consumes a nonperishable good instead of postponing consumption for an indefinite later moment thereby reveals a higher valuation of present satisfaction as compared with later satisfaction. (Mises 1998, p. 481)

Time preference thus concerns the value differential between that use of the good that comes to be realized in the present, and an alternative future use of this good that could have been realized if a different choice had been made.[6] When I use a good now rather than later, I demonstrate that I prefer to use the good now rather than later. And this in turn means nothing but that the value of its present use is higher for me than the value of the use I could also have made of it in the future. Emphasizing this fact, Mises elegantly sidesteps the fallacious notion that present and future goods that are physically identical are also of the same kind from an economic point of view. Counterfactual time preference concerns the value differential between two different uses of the same good—the "sooner" use being factual, while the "later" use is counterfactual. This value differential springs from the fact that both uses are compared in one and the same choice. Thus the counterfactual approach gives a realistic and *a priori* explanation of why positive time preference is a universal feature of human action.

Let us reinforce Mises's point by a somewhat more detailed demonstration. Consider three related and undeniable facts. First, all actions are located in specific circumstances of time and place. Second, all human actions bring about effects that occur at specific times and at specific places in the future. This holds true irrespective of whether the acting person intends these effects. *A fortiori*, then, and third, all effects that human beings do intend to bring about (their ends) are also located in specific times in the future. In light of this, the mere fact that one does what one does right now rather than later implies that one *prefers* to have one's end achieved sooner

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[6] As the foregoing quote from Mises shows, he understood time preference in more narrow terms, namely, as the specific value differential between present *consumption* and counterfactual future consumption. In our exposition, we will present time preference as relating to the general value differential between any *use* of any given good and its counterfactual future uses. This generalization is however faithful to the nature of Mises's argument and does not affect the validity of our critique.

rather than later. In Mises's (1998, p. 481) words: "The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant."[7] If I want to eat a sandwich in five minutes I have to prepare it now rather than in two hours or in two years. If I therefore prepare a sandwich now, I demonstrate thereby that I prefer having my sandwich in five minutes rather than in two hours or in two years. That is, I have a time preference for having the sandwich sooner rather than later. Time preference in this sense is given in any single human action. And because it relates the visible part of an action to a counterfactual part of it, it is a truly *a priori* feature of human action.

The argument seems to be impeccable. Mises rightly states that the very fact that one chooses the good A demonstrates that a sooner use of A is preferred to a later one. Time preference in this sense exists (whereas time preference in the older sense does not exist) and is indeed a universal feature of human action. So what is wrong with the theory?

Its great shortcoming is that it does not explain the difference between the price of a product and the sum of the prices of its factors of production, that is, it does not solve the fundamental problem at stake in interest theory. While Mises's time preference theory is valid as far as it goes, it does not explain the origin of money interest, and therefore it can at best be a secondary element of the theory of interest.[8]

Time preference concerns a value differential between an observed present use of a good and its counterfactual future (alternative) uses. The fact that we use a good right now always involves a time preference for this present use as compared to possible—but unrealized!—future uses of the same good. Hence, while time preference is an intertemporal aspect of each observed human action, in each single case it explains only the action under consideration. That is, it explains only *one* action. Money interest, though, as it is observed on the market results from at least two actions: purchase of means of production *and* sale of products; granting of credit *and* payment of principal and interest. The problem of interest theory is therefore to explain a particular relationship between at least two actions. Yet this is something that time preference by its very nature cannot do.

Consider the case of a manufacturer producing car motors. In the present, he buys the pieces that need to be assembled and he rents the labor necessary for the assembling job, say, for 100 ounces of gold. In the future, he sells the finished motors at a price exceeding his previous expenditures, say, for 140 ounces of gold. Referring to time preference, then, we can explain his present behavior by stating that he prefers to have the motors assembled sooner rather than later, and we can explain his future behavior by stating that he prefers to realize his selling proceeds sooner rather than later. These explanations do not however address the problem of interest, namely, why the selling proceeds exceed the expenditures for factors of production. The best evidence for this contention is that we can use time preference to explain the manufacturer's actions irrespective of the prices at which he buys and sells. Thus assume he sells the finished motor for 90 ounces of gold; this would not change anything to the way we apply time preference theory. We would still say that he prefers to realize his selling proceeds rather sooner than later, even though in this case there is no positive spread between buying prices and selling prices. In other words, we have successfully applied Mises's

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[7]See also Block (1978, p. 122), Garrison (1979, pp. 143, 145f.), and Rothbard (1987, p. 646).

[8]Pellengahr (1996, pp. 41, 47) already pointed out that it is unclear to which extent Mises's theory of time preference explains market interest payments. Our following discussion confirms and reinforces this observation by arguing that Misesian time preference is in fact unrelated to market interest.

time preference theory, but we still do not know whether there is anything in human action that, under certain conditions, causes any particular relationship between buying prices and selling prices.

Consider another example. Suppose you lend 100 ounces of gold for one year at an interest rate of 20 percent per annum. What does this mean in regard to time preference? It means that you want to own the sum of 120 ounces of gold sooner (i.e., in a year) rather than later (i.e., in more than a year). But it would also be the case if you lent the money at zero percent. It would even be the case at a rate of –10 percent. When I lend 100 ounces of gold now to receive 90 ounces in one year, I thereby demonstrate my preference for having these 90 ounces from my debtor sooner rather than later. It is true that it seems to be pointless to lend money at –10 percent. Why indeed should a man find it valuable at all to give up 100 ounces of gold now, only to receive a mere 90 ounces back at some point in the future? Why should he not just keep the money rather than make such a contract? These are of course very good questions, but Mises's time preference theory does not answer them.

Time preference, in the sense Mises understood this term, concerns the timing of achieving one's ends; it does not concern the question whether the ends achieved are important enough to justify the means. If I lend money at –10 percent, I achieve the ends that I thereby achieve sooner than if I do not lend the money now at this rate. Thus time preference is certainly at work here. By contrast, it is an entirely different question whether my lending at –10 percent prevents more important goals. This is not to deny that there are forces at work that tend to prevent negative interest rates in credit contracts, and which even tend to prevent interest rates from ever falling to zero. Our point is merely that these forces have nothing to do with time preference in the Misesian sense.

To sum up, Mises's time preference theory of interest does not explain why there should be, under any set of circumstances, a systematic relationship between time preference on the one hand, and the spread between selling receipts and cost expenditure on the other hand. It does not explain why the interest rate should *ever* be positive rather than zero or even negative. It does not even get to the point of explaining why interest does not tend to become eradicated through entrepreneurial competition. And it therefore does not give us any reason to believe that there is a factor that systematically causes interest rates to be positive. By its very nature, Misesian time preference *cannot* account for price spreads. It can only account for the value differential between the actual use of a good and the counterfactual (unrealized) future uses of the same good.

Originary Interest

The Phenomenon of Originary Interest

Before we set out to explain the real cause of the spread between the value of a product and the sum-total of its means of production, let us briefly explain the point at which our approach departs from the time preference theory of our predecessors.

Böhm-Bawerk's great achievement was to formulate interest theory as a problem of value inequality rather than, for example, as a problem of physical production. He argued that interest payments on the market ultimately sprang from a fundamental value spread between two different classes of goods. He called this fundamental value spread, in which all manifestations of interest have their origin, *ursprünglicher Kapitalzins* or originary interest.[9] In light of this approach, then, the problem of

[9]See Böhm-Bawerk (1921a, p. 6). Mises (1940, p. 476) used the terms *Urzins* and originary interest in a slightly different sense, namely, as a ratio rather than as an absolute "surplus." He

interest theory is to come up with such a classification of all goods, into two classes, that originary interest results from *the very nature* of each of the two classes. Otherwise no universal claims about interest could be made. So far, I think, the argument is not objectionable.

Now, Böhm-Bawerk thought the relevant classes were "present goods" and "future goods." Throughout his work he championed the idea that a present good by its very nature is, in general, more valuable than a future good, and all of his successors maintained the same fundamental view that the difference between a "sooner" and a "later" was the source of interest, and they elaborated and refined this view without fundamentally questioning it. By contrast, those who were skeptical about time preference theory tended to throw out the interest-as-a-value-inequality-problem baby with the time-preference-theory bath water, and as a consequence fell back into variants of the untenable productivity theory of interest.

The theory we are going to present now is an attempt to build on Böhm-Bawerk's formulation of the problem of interest, though, without following his lead when it comes to the solution of this problem. Our theory contains no fictitious stipulations or imaginary constructs. Rather, it is a realist description of certain immutable aspects of human action.

The phenomenon we will call originary interest is a particular type of the familiar value spread that exists between different choice alternatives. In making his decisions, man demonstrates his preferences. He prefers what he does to what he could have done instead. This value spread is present in all human actions: the action performed is more valuable, in the eyes of acting man, than the unrealized alternative actions. It is true that it is a value spread *ex ante* and that the acting person might find, *ex post*, that he has erred in his valuation. But this does not affect the truth that there is for the acting person always a spread between the value of what he does and what he could have done.

The general value spread we just described exists in all forms of human action. It is independent of time and place. It even exists independent of any particular social setting since it occurs in Crusoe economies as well as under modern capitalism. Its intertemporal aspect is time preference in the Misesian sense: In choosing, man prefers what he does here and now to performing the same action at a later point of time. As we have seen, however, time preference is not the source of interest. We must therefore turn now to a more particular variant of the general value spread that exists between choice alternatives, namely, a value spread that springs from the fact that man chooses *means* and *ends*, and that he uses the chosen means in the pursuit of his chosen ends.[10] Here it is all-important to stress the somewhat trivial point that the purpose of employing a means can only be to attain the end. The end is what really counts for the

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(1998, p. 523) defined it as "the ratio of the value assigned to want-satisfaction in the immediate future and the value assigned to want-satisfaction in remoter periods of the future."

[10]Past discussions of the relationship between ends and means in the Austrian literature have heavily focused on stressing that the choice of means is an emanation of human subjectivity (here understood in the sense of "arbitrariness"). They point out that a "means" is *any* object that in the mind of the acting person is an economic good. For example, the wooden figure adored in a rainforest cult is, in the eyes of the adherents to the cult, a means to get in touch with their god, even though no such mediation takes place objectively. And most inhabitants of modern civilized countries consider government to be a means to maintain civilization, even though government's objective function is a different one. Yet, irrespective of how ill-founded the belief in the objective properties of a means is, the fact is that when people deal with "imaginary" means they value them just as if they were "real" means. All economic laws apply therefore to the actions of these people; economic science can account for their subjectivity. For early expressions of this point see Bastiat (1851, pp. 125, 129) and Mises (1933, pp. 160ff.). For the distinction between real and imaginary wants, see Menger (1923, pp. 4f.).

acting person, whereas the means is merely the thing or the action that is in between his present state of affairs and the state of affairs in which his end is realized.

Amazingly, this simple and obvious fact has an important implication for the theory of value and interest that has apparently been overlooked in the literature on interest theory. For it follows from this fact that, by their very nature, ends have, in the eyes of the acting person, a higher value than the corresponding means. Clearly, if an acting person could choose between either having his end realized or having the means to attain it, he would choose the end. This is a direct implication of the very nature of ends and means. One cannot even conceive of choice being different without running into contradictions. If a means is ever chosen, then the only purpose of this choice is to attain the end it serves. The very nature of a means implies that it is not sought for its own sake. Its value necessarily ranks below the value of the end, and the means would have no value without the end it serves.

We are thus in a position to give a realist definition of originary interest, which is the phenomenon that lies at the heart of all manifestations of interest on the market and in any other form of social organization. *Originary interest is the fundamental spread between the value of an end and the value of the means that serve to attain this end.*

Below, we will examine in more detail how and under which conditions originary interest gives rise to the spread between the prices of products and the sum-total of the prices of their factors of production; and thus how and under which conditions originary interest also gives rise to money interest paid on financial markets. At this point, let us merely highlight the fact that our theory of originary interest appeals to common sense.[11] Even without taking any closer look at money prices and other particularities of the market, the idea that there is a positive spread between the values of ends and means is intuitively plausible. For example, it is plausible to hold that the unassembled pieces required for the production of a motor, plus the labor necessary to assemble these pieces into a motor, are not as valuable as the motor itself. This holds true irrespective of the prevailing form of social organization; market prices here merely reflect the underlying fundamental value spread. It is because of originary interest, which transcends the market, that the price sum of the labor and of the unassembled pieces is lower than the market price of the motor.[12] Except where gifts or malinvestments are involved, costs of production are therefore always and everywhere lower than the proceeds from production. And workers are never paid "the full value of their product," but the *discounted* value of their product—discounted, that is, because of the ubiquity of originary interest (see Block 1990, pp. 199–207).

In short, in light of our theory of originary interest, it would seem that the market phenomenon of money interest is rooted in the very nature of means and ends.

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[11]It is also reflected in common language, for example, in statements such as "this is an interesting project" or "I am interested in buying this car." Similarly, the French use expressions such as *ça n'a pas d'intérêt* or *je m'interesse pour cette voiture*. In the *Wealth of Nations* we find a revealing passage, in which Adam Smith explains the necessity of a "profit" (that is here: interest) component in price. The capitalist who invests his money to employ workers, Smith says,

> could have no interest to employ them, unless he expected from the sale of their work something more than what was sufficient to replace his stock to him; and he could have no interest to employ a great stock rather than a small one, unless his profits were to bear some proportion to the extent of his stock. (bk. I, chap. VI, p. 54)

[12]This holds true, of course, only for those cases in which the labor and the pieces can *only* be used for the production of motors, and not be enjoyed for their own sake. Still it is true that *that* part of their value or prices, which depends on their usefulness for the production of motors, is inferior to the value or price of the motor.

Because of originary interest, certain investment projects feature a price spread between costs and selling prices that cannot be "arbitraged away." And it is therefore that entrepreneurs *can* pay interest on money credits they receive. They *have* to pay money interest because any credit they receive is but a means for the creditor to obtain a larger quantity of money in the future.

Value Imputation Theory Versus *Originary Interest*

The existence of a value spread between means and ends is such a simple and obvious fact that we have to wonder why it has been overlooked so far. The discussion of this question will serve to further refine our definition of the phenomenon.

One of the main reasons why originary interest, understood in our sense of a value spread between means and ends, has been overlooked is that it did not square with mainstream views on value and value imputation. Unfortunately, the Austrian School until Mises was in this regard part of the mainstream. The weight of tradition prevented even Mises from developing the right theory of interest, even though he provided the foundations of our present work through his value theory, which decisively improved on Carl Menger's approach.

Menger (1871, pp. 141f.; 1976, pp. 164f.) held that the value of any unit of a higher-order good is *equal to* the value of that unit of a lower-order good that would not come into existence without the intervention of the higher-order good:

> the value of a concrete quantity of a good of higher order is equal to the difference in importance between the satisfaction that can be attained when we have command of the given quantity of the good of higher order whose value we wish to determine and the satisfactions that would be attained if we did not have this quantity at our command. (Menger 1976, p. 165)

Thus the value of the lower-order good is fully imputed on the higher-order good. According to Menger, there is therefore a perfect equality between the value of consumers' goods (the goods of the lowest order) and the cumulative value of all higher-order goods needed for the production of the former.

There is no need here to go into a detailed refutation of this view. Suffice it to say that value imputation theory cherishes a cardinal rather than an ordinal notion of value. But value is nothing but the name we give to the relative superiority or relative inferiority of one thing as compared to the relative superiority or relative inferiority of other things, from the point of view of acting man. Human choice by its very nature involves preference for the things that the acting person does—more precisely, it involves preference for certain things over other things that the person also could have done, but did not do because of the very choice he made. We express the same fact in different words when we say that the things he does have a higher value for him than the things he does not do. The value of a thing, understood in this fundamental sense, can therefore never be equal to the value of another thing. It is *either* higher *or* lower than the value of the other thing. It follows that the value of a higher-order good cannot be equal to the value of the lower-order good that the higher-order good helps bring into existence. The two goods must necessarily be unequal in value (see Mises 1933, chaps. 4–7; 1998, passim).

From the point of view of Menger's theory of value imputation, the very question of a value spread between means and ends could not possibly arise. And the authority of his opinion effectively prevented the question from arising from his disciples in subsequent generations—a case of intellectual path-dependency. After Menger, several generations of Austrian economists have elaborated value imputation theory with loving care. The most eminent value imputation theorists were Friedrich von Wieser (1924) and his disciples (Hayek wrote his doctoral dissertation on imputation theory). But traces of this theory seem to subsist even in Ludwig von Mises's *Theory of Money*

and Credit. In a discussion of one of the main tenets of Wieser's theory of the value of money, Mises (1980a, p. 183) brings up the following case:

> Let us suppose that the scale of values of the possessor of an apple, a pear, and a glass of lemonade, is as follows:
>
> 1. An apple
> 2. A piece of cake
> 3. A glass of lemonade
> 4. A pear
>
> If now this man is given the opportunity of exchanging his pear for a piece of cake, this opportunity will increase the significance that he attaches to the pear. He will now value the pear more highly than the lemonade.

It is true that this passage is no clear-cut evidence that Mises championed value imputation theory. Mises does not actually say that the value of the goal of the exchange (the piece of cake) is fully imputed on the means (the pear); he just says that the exchange opportunity will increase the significance of the pear, to the point that the value of the pear will now be higher than the value of the glass of lemonade—but not necessarily equal to the value of the cake.[13]

But since we are not concerned here with the history of ideas, let us simplify the whole question and assume, for the sake of argument, that Mises, at least occasionally, did champion value imputation and that he therefore believed there was no value spread between means and ends. In this case, we would have to make two objections. First, Mises would be wrong because as a matter of fact there is a value spread between means and ends. Second, value imputation theory cannot be reconciled with Mises's own work on the problem of economic calculation, the point of which is precisely that there is no such thing as value calculation; there is only monetary calculation. The reason is, as Mises himself highlighted in the *Theory of Money and Credit*, that values are never equal (and thus potential elements of mathematical equations); rather, one value is always higher or lower than other values. This is in the very nature of value, as Mises emphasizes in the same discussion of Wieser's theory from which the above quote is taken. He says:

> But if one good is placed higher, then—there can be no question of it—some other must be placed lower. This arises simply from the very nature of the scale of values, which constitutes nothing but an arrangement of the subjective valuations in order of the significance of the objects valued. (Mises 1980a, pp. 183f.)[14]

To sum up, one of the main reasons why the phenomenon of originary interest has been overlooked was that economists—even the economists of the Austrian School—have

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[13]Other passages of the *Theory of Money and Credit* seem to provide more clear-cut evidence for Mises's views on value imputation. In particular, Mises asserts that "the subjective use-value of money, which coincides with its subjective exchange value, is nothing but the anticipated use-value of the things that must be bought with it" (1980a, p. 130). Essentially the same statement can be found on p. 119, where Mises approvingly quotes Wieser on this issue. And in *Human Action*, Mises (1998, p. 332) states that it "is permissible to declare that, due allowance being made for time preference, the value attached to a product is equal to the value of the total complex of complementary factors of production."

[14]See also Mises (1980a, pp. 51ff.).

been misled by the chimerical notions of cardinal value and of value calculation (in neoclassical economics: cardinal utility and utility calculation). Mises was least affected by these fallacies and he entirely discarded the notions of cardinal value and of value calculation in his theory of value and in his theory of economic calculation; but he did not realize that his value theory opened a new perspective on the phenomenon of interest.

Originary Interest Distinguished From Gain

Another important reason why originary interest, understood in our sense as a value spread between means and ends, has been overlooked is that it is easily confused with two other phenomena, namely, on the one hand, the phenomenon of gain and, on the other hand, with the twin phenomena of entrepreneurial profit and entrepreneurial loss.

Let us first deal with the phenomenon of gain. This is the value spread that exists, at the moment of choice, between, on the one hand, the *value of the end* of the chosen course of action and, on the other hand, the *value of the end* of the second-best course of action, which has not been put into practice. It should not be controversial that there is such a value spread. Human action involves the use of means to attain ends, and the very reason why an acting person chooses to pursue one end rather than another is that he believes the former end is more valuable than the latter. The point we need to stress here is that the value spread we call "gain" is a value spread between two *alternative ends*. This is what sets it apart from originary interest, which is the value spread that exists between one end and its corresponding means.

Suppose Brown owns a beautiful garden and Black owns a well-equipped kitchen. They agree to exchange the garden for the kitchen. Brown thus uses his garden as a means to buy another means (the kitchen), which will allow him to attain the end he seeks: many nice meals. Similarly, Black uses his kitchen as a means to buy another means (the garden), which will allow him to attain the end he seeks: many nice evenings enjoying the flowers. What prompts each of them to make the exchange is the prospect of gain. Brown expects to gain from it because for him the meals have a higher value as compared to the value of contemplating the flowers; and *vice versa* in the case of Black. After the exchange, and unless they discover they made an error in judging what was really the most important thing for them to do, they will indeed have gained in the sense that each of them is now better off than if Brown had decided to keep the garden and Black to keep the kitchen. But gain is only one of two value spreads that manifest themselves in this situation; the other one is originary interest. For Brown, the garden (the higher-order means) was less valuable than the kitchen (the lower-order means), and the kitchen was less valuable then the meals (the end); again, the same thing holds *mutatis mutandis* for Black.

The difference between gain and originary interest seems to be quite patent, so why do the two tend to be confused? The confusion arises, again, from the fallacious notion of value imputation, which implies there is no value spread between means and ends. If means and ends have the same value, the phenomenon of originary interest so-to-say disappears from the conceptual radar screen. All that remains is a very broad concept of gain. We find a statement of this view in *Human Action*.[15] Mises starts off characterizing action as an exchange:

> Action is an attempt to substitute a more satisfactory state of affairs for a less satisfactory one. We call such a willfully induced alteration an exchange. A less desirable condition is bartered for a more desirable. What gratifies less is abandoned in order to attain something that pleases more.

[15]See also the corresponding passage in Mises (1940, pp. 75f.).

Then he proceeds to a definition of price and costs—a definition that skips the difference between means and ends:

> That which is abandoned is called the price paid for the attainment of the end sought. The value of the price paid is called costs. Costs are equal to the value attached to the satisfaction which one must forego in order to attain the end aimed at. (Mises 1998, p. 97)

Notice in particular the ambiguity of the expression "that which is abandoned." In a Crusoe setting, decision-making involves abandoning certain ends in favor of the end aimed at, but it does not involve abandoning any means of action. The price paid is therefore purely defined in terms of forgone ends, and the costs of the decision are opportunity costs defined as the value of the forgone ends. By contrast, in market exchanges, one does not only abandon ends, but also means, and as a consequence we here pay a price and incur costs *in two senses*. One might take account of this fact by calling the price paid in form of forgone ends "praxeological price" or just "price" while calling the price paid in form of abandoned means "market price." Similarly, we may call the value of the forgone ends "opportunity costs" and the value of the foregone means "costs." The important thing to stress, however, is that opportunity costs are not equal to costs; rather, costs are lower than opportunity costs because of the value spread between means and ends, which also exists between the means and ends of forgone choice alternatives.

Because he does not make these distinctions, Mises ends up with a definition of gain that brushes over the difference between the phenomenon of gain, as we have described it above, and the phenomenon of originary interest. "The difference between the value of the price paid (the costs incurred) and that of the goal attained is called gain or profit or net yield."[16] As a definition, this is of course unobjectionable. But it does not alter the fact that there is a value spread between alternative ends ("gain" in our definition) and another value spread between the means and the end of each choice alternative (originary interest).

The distinction between gain and originary interest is useful because it enables us to understand market interest rates better than we would understand them in the light of other theories. But the difference between originary interest and gain is important even outside the traditional confines of interest theory. In particular, our theory of originary interest also gives a more satisfactory account of market exchanges than the standard economic explanation. According to the latter, market exchanges take place because both parties are likely to gain from them. When Smith exchanges his apple against Jones's tomato, the property title to the tomato is more valuable for Smith than the title to the apple, whereas for Jones it is the other way round. They both expect to gain from the exchange and therefore the exchange takes place. This is the standard account, and it seems to be impeccable. But once we restate the phenomenon again in terms of means and ends, we encounter a question that can only be answered by our theory of originary interest.

Smith seeks to attain his end (tomato) by means of his apple, and Jones uses his tomato as a means to acquire the apple. Why is it that for Jones the tomato is less valuable than the apple, and why is it that for Smith the apple is less valuable then the tomato? From the point of view of value imputation theory, this question cannot be answered. Advocates of this theory would have to hold that for Jones the tomato has

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[16]Mises (1998, p. 97). The quote shows that he uses "profit" and "net yield" as synonyms for "gain." Other synonyms that he uses are "profit in the primary sense" (p. 97), "profit in the broader sense" (p. 286), as well as "profit in the original sense" (p. 287). In *Nationalökonomie*, Mises used the expressions *Gewinn* and *Vorteil* (1940, p. 75).

the *same* value as the apple, because the value of the apple would be fully imputed to the tomato; and *mutatis mutandis* the same consideration would apply to the case of Smith. Thus, the exchange presents us with a paradox. Why would Smith and Jones engage in their barter if they do not value the price they pay less than the good they receive?

Our theory of originary interest delivers the common-sense answer to this question. Smith and Jones do not impute the value of their ends onto their means. Smith values his apple (means) *less* than Jones's tomato (end), and therefore he desires to make the exchange. Thus we see that *market exchanges are mutually beneficial because of originary interest*. The services given up in an exchange, and the exchange itself, are but means to enjoy services that one values more highly than those one surrenders. Again our theory of originary interest leads to a significantly different result than the time preference theory. The latter confines the phenomenon of an *agio* between means and ends to those cases in which the use of means and the attainment of ends do not coincide in time. But there is an *agio* between means and ends also in spot market exchanges—certainly not an ephemeral phenomenon. It follows that, even if time preference in some way determined money interest, it would not be the only determining factor, but merely one out of two causes operating to the same effect.

Originary Interest Distinguished From Entrepreneurial Profit and Loss

Let us now briefly turn to another phenomenon that should not be confused with originary interest, namely, to entrepreneurial profit and entrepreneurial loss, which Mises also calls monetary profit and monetary loss. In distinct contrast to the phenomena of originary interest and of gain, monetary profit and monetary loss are not value spreads, and they do not even result from value spreads. They are no value phenomena at all, but a special income component that results from errors in human decision-making (see Mises 1980b; 1998, pp. 286ff.). Such an error is given, for example, if Mr. Harris invests money in a shoe factory that yields less return than he could obtain with the same investment in a pasta factory. The difference between the return Mr. Harris receives from the shoe factory as compared to the return he could have received from the pasta factory is his entrepreneurial loss. Similarly, those who invest in pasta production realize higher incomes than they would have realized if Mr. Harris had also entered this business, because in this case he would have bid up the prices of the factors needed for pasta production, and his additional sales would have decreased the pasta market prices. The difference between their present incomes and the incomes they would have realized in case Mr. Harris had joined the pasta business is the entrepreneurial profit of these other men.

In light of these definitions we understand that entrepreneurial profit and loss must not only be distinguished from the value phenomenon of originary interest, but also from the price phenomenon of monetary interest. Interest is in fact an income component that cannot be eradicated through the competition of other market participants who successfully seek to improve their state of affairs, whereas profit and loss are income components that can be so eradicated. In other words, profit and loss do exist only due to entrepreneurial error, whereas interest comes into being irrespective of how many errors entrepreneurs make. The former are essentially disequilibrium phenomena while interest exists both in disequilibrium and in equilibrium.

MONEY INTEREST

Originary Interest and Money Interest

Having defined the phenomenon of originary interest as a value spread between ends and means, let us now turn to analyzing the conditions under which originary interest causes money interest.

As a first step, we will review the manifestations that ends and means have in the realms of human psychology and of physical things. Notice from the outset that *only* ends and means have such manifestations. Originary interest itself does not have any manifestations in the realm of the objects of human action; it is not an object of action, but a feature of action itself. This is also why it is categorically different from money interest and must not be confused with it. It would be a grave error to believe that money interest is something like "originary interest become visible." Originary interest is as different from money interest as value differs from money prices.[17]

Money interest appears when ends and means are physically homogeneous to the point that one can calculate a quantitative difference between the two, that is, between monetary proceeds from selling a product and monetary expenditure for the corresponding factors of production. It is certainly tempting to believe that this visible quantitative price spread is some sort of "empirical evidence" for the existence of an underlying value spread between the means and the ends. But this is not the case. One cannot learn anything about originary interest by studying price spreads. The case is exactly the reverse: it is because we know what originary interest is that we understand that certain observable price spreads—or at any rate certain components of these price spreads—do not come into being by accident; but are the premeditated result of entrepreneurial action, and cannot be arbitraged away because no such arbitrage would be in the interest of any other market participant. It was therefore necessary that we first dealt with originary interest before turing, as we now do, to the analysis of money interest.

Originary interest does not merely exist in the actions of businessmen who make certain money expenditures for factors of production (means) to realize monetary selling proceeds for the corresponding products (ends). It also exists in household behavior in a monetary economy, in barter exchanges, and even in Crusoe economies. A closer look at these settings does not only demonstrate the ubiquity of originary interest. It also demonstrates that originary interest does not spring from the passing of time. It can exist in one single point of time, for example, in spot market exchanges. The following observations will therefore reinforce our critique of the time preference theory of interest, which asserts such a dependence of originary interest on the passing of time.

We will first deal with certain limiting cases in which means and ends are manifest in the same event, to the point that they become indistinguishable. Then we will turn to those cases in which means and ends can be distinguished although they coexist at the same point in time, and finally we will study various cases in which ends and means are situated at different points of time. Eventually we will be in a position to adequately deal with the question under which conditions money interest emerges.

Manifestations of Means and Ends at Single Points of Time

Every single human action involves the use of means to attain ends. We will not belabor this point, which has been sufficiently discussed in *Human Action* and other works of Misesian inspiration. But we need to stress that the universal presence of means and ends in human action does not imply an equally universal presence of originary interest. Rather, originary interest is only a universal feature of human *labor*, not of the larger phenomenon of human action.

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[17]The confusion is likely to occur because we use the same word—"interest"—to describe both a value phenomenon and a price phenomenon. We have encountered the same problem above when we discussed the difference between "profit" in the sense of "gain" (a value phenomenon) and "profit" in the sense of "entrepreneurial profit" (a price phenomenon).

To illustrate this point, let us briefly consider those limiting cases of human action in which it is impossible to discern means and ends because both coincide in the *same* event. In these cases an activity is enjoyed for its own sake; human behavior is here not a means to an end different from itself, but its own end. We sometimes experience this coincidence of means and ends in one psycho-physical event when playing, walking, dancing, listening to music, discussing, writing, fighting, etc.[18] It is the experience of doing something for its own sake—playing for the sake of playing, dancing for the sake of dancing, etc. It is true that each of these activities is extended through time. But in each case the action itself does not aim at a future state of affairs—which would thus be distinguishable from the present activity. More than that, the means do not only coincide temporally with their end; rather, the very same activity is both a means and its own end. Ends and means here still exist as categories of human action, but they are bound up in short-circuit of the same material event.

These limiting cases are outside the scope of our theory because they preclude the existence of originary interest. If the means of an action is materially identical with that action's end, then it is not even potentially possible to choose between the means and its end, and thus there can be no value spread between means and ends—nothing can be more (or less) valuable than itself. Our theory of originary interest therefore does not apply in these cases. It only applies to cases in which human action serves to attain ends that are distinguishable from the action itself—*it only applies to cases of labor*.[19]

Turning now to such of labor cases of labor we must first of all point out that the difference between means and ends does not always involve the passing of time. When I fuel my car for a journey, the means and the end are situated at different points in time. But they coincide, for example, when I sing a song for me and for you to hear my voice. Here means and ends are distinguishable—your hearing my voice (the end) is different from my singing (the means)—but they coincide in time. Accordingly, originary interest is here manifest in a value spread between my singing (my means) and your hearing my voice (my end), but it does not spring from the passing of time.

The example shows that originary interest can exist independently of the temporal relationship between ends and means. In particular, it can exist even when an end and the corresponding means coexist at the same point of time—provided only that

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[18]Mises (1998, p. 139) states that the coincidence of means and ends is characteristic of the activities of the genius.

> The activities of these prodigious men cannot be fully subsumed under the praxeological concept of labor. They are not labor because they are for the genius not means, but ends in themselves. . . . His incentive is not the desire to bring about a result, but the act of producing it. The accomplishment gratifies him neither mediately nor immediately.

For a discussion of cases in which ends and means coincide in the same physical object, see also Hazlitt (1972, p. 25, pp. 128f.).

[19]See Mises (1981, pp. 144f.) for the distinction between "immediate satisfaction due to labor" and "indirect labor satisfaction." Later Mises (1998, p. 131; emphasis added) defined labor as follows:

> The employment of the physiological functions and manifestations of human life as a means is called labor. The display of the potentialities of human energy and vital processes which the man whose life they manifest does not use for the attainment of *external ends different from the mere running of these processes* and from the physiological role they play in the biological consummation of his own vital economy, is not labor; it is simply life.

the use of the means can be distinguished from the attainment of the end, that is, that the means are not exclusively used for their own sake. (Notice that this is a decisive consideration against the "waiting" and time preference theories of interest, both of which relate originary interest to the passing of time.)

We find another, and even more crucial, example to substantiate this contention once we leave the realm of the Crusoe economy and turn to examining human action in the most elementary setting of a market economy, namely, in barter exchanges, such as when Smith exchanges his apple against Jones's tomato. What happens in this case is that Smith seeks to attain his end (ownership of Jones's tomato) by *means* of exchanging his title to the apple against the title to the tomato. And similarly Jones employs his title to the tomato as a means to acquire the title to the apple. Now these uses of means to attain ends are not strictly speaking extended through time. Any contractual agreement is made at a *point* of time, namely, at the point of time when both partners have agreed on the terms of the exchange. By its very nature, choice, in the sense this term is used in economic theory, is made at points of time rather than throughout a process. And because a market exchange involves the decisions of at least two people, the exchange becomes effective only when the last partner has made the decision to cede the title to his property in order to acquire title for another piece of property. The preparations of the exchange, and the actual transfer of the physical property might be more or less time consuming. But the exchange itself is just a matter of will, and becomes effective at a point in time. Thus we have identified another example that shows that the passing of time is only one of the (contingent) conditions under which originary interest determines human action. Originary interest is no more bound up with the passing of time than greenness is bound up with grass.

Let us conclude this section by emphasizing that the value-enhancing feature of spot market exchanges–that is, the presence of originary interest–does not have any visible counterpart. What we see in cases such as the above apple-tomato exchange is that, after the exchange, Smith no longer has his apple, but Jones's tomato, and that Jones no longer has his tomato, but Smith's apple. We cannot *see* however that both of them are now better off, for a tomato is not even physically "more" than an apple, or the other way round. Rather, we know about the mutually beneficial nature of the apple-tomato deal from our knowledge about more general features of human action, in particular, from our knowledge (1) that in every action, man uses means to attain ends and (2) that a value spread between means and ends exists wherever an action is not exclusively performed for its own sake.

Manifestations of Means and Ends in Consecutive Actions

So far we have dealt only with those cases in which the use of means and the attainment of the corresponding ends coincide at one point of time. We now turn to examine those cases in which the use of means and the attainment of the corresponding ends are manifest at different points of time.

Notice that the use of means does not in all cases *precede* the attainment of the ends. It is true that Robinson Crusoe is bound by such a strict temporal order. He must first use his means and attains his ends only after such a successful use. But in a social setting things are different, most notably in the case of credit contracts. Suppose Mayer lends Flint 10 pounds of ice cream for a party, and after a year Flint pays him back 11 pounds of ice cream. Mayer then attains his end (future title to 11 pounds) only after using his means (present title to 10 pounds), but Flint attains his end first and only later uses his means. It follows that originary interest, to the extent that it is manifest in the passing of time at all, concerns value spreads between future ends and present means *and* value spreads between present ends and future means. However, the case of the borrower is less important than the other case, because it is just a variant of the latter. The simple fact is that if there were no capitalists, there

could be no borrowers. We will therefore focus on the case of capitalists and talk about borrowers only incidentally.

Even when means and ends are manifest at different points of time, ends are in most cases not physically more numerous than the corresponding means, and as a consequence the value productivity of the action has no counterpart in the material realm. Consider the case of Jones, who pursues his ends through several consecutive exchanges. Suppose he exchanges eight hours of his labor against seven loaves of bread from Brown, and then goes on and exchanges these breads against one bottle of wine of Smith's, the ultimate purpose of his market activities. Jones here realizes his ultimate goal, not through one, but through several consecutive exchanges. The first exchange (and all following intermediate exchanges) therefore depends on the ultimate exchange. All intermediate evaluations are made in light of the overarching evaluation of the final good, and all exchange ratios (prices) are formed in light of the exchange ratio (price) in the final transaction. In other words, there is a hierarchical value-relationship between the ultimate goals and the means to attain them: The wine is more important to Jones than the bread loaves, which in turn are more important than his labor.[20] Hence, the Mengerian order of goods is not merely a technological order but also an order of values, the value of a first-order good ranking higher than the value of a second-order good, and so on.

Yet, as in the case of isolated barter, the physical aspect of things gives us no clue to the layer of reality where we find originary interest. Two heterogeneous goods (tomato and apple) stand at the beginning and the end of this process of consecutive actions, and as a consequence one cannot *see* that the acting person controls in any sense more goods at the end of the whole process. An apple is not physically "more" than a tomato; *for Jones* it is more—more valuable, that is to say. Yet we do not infer the higher value of the apple from Jones's observed behavior but from his observed behavior in conjunction with what we know on *a priori* grounds about originary interest.

Things are no different as far as the market behavior of households in a monetary economy is concerned. In economic theory, households are defined by the fiction that human beings exchange labor for money *in order to*, afterward, exchange this money income for other goods x and y. Here too, then, two heterogeneous goods (labor on the one hand, and x and y on the other hand) stand at the beginning and end of a process of several consecutive exchanges. And as a consequence originary interest does not have a visible fruit in the process of household value production in a monetary economy.

It is only in the context of entrepreneurial market behavior that originary interest generates such a visible fruit. For capitalist-entrepreneurs and labor-entrepreneurs exchange money against factors of production, then combine these factors and let them operate in the production of goods and services, which in turn they exchange against money. Only under these circumstances, two *homogeneous* goods stand at the beginning and end of the production process, namely, money expenditures and money receipts. And only here, therefore, is it possible to compare means and ends in identical physical terms so that originary interest obtains a visible counterpart in the world of material things. It can be seen and counted that 1,000 ounces of gold received as payment for products are physically more numerous than 800 ounces of gold paid for the corresponding factors of production. The capitalist-entrepreneur has physically "more"—namely, more money—at the end of his venture than at its beginning. His production is not only (for him) *value*-productive, but also (physically) *money*-productive.

[20]This is at any rate the case at the point of time when Jones initiates the whole process by exchanging his work for the bread loaves. He might later change his mind about these evaluations, in which case the initial exchange of labor for bread might have been, in retrospect, a wrong decision. But this is not our present concern.

It is sometimes argued that a similar state of affairs obtains when products are physically homogeneous with their factors of production, for example, when 100 pounds of rice are used today to produce 110 pounds of rice in a year from hence. But even if we abstract from the fact that rice *production* requires at least one other factor of production, namely, labor (so that product and means of production are not physically homogeneous even in this case), the rice example does not really touch on the problem of interest.

Consider first that, as in the case of money, 110 future pounds of rice are not by their very nature more *valuable* than 100 present pounds needed to produce them. In other words, from an economic point of view these are heterogeneous goods. Rice production will not be started by virtue of the mere fact that 100 present pounds are liable to generate 110 pounds in the future. Only if people value the latter more highly than the former will they start producing rice, and experience shows that this is not always and everywhere the case.

Second, and more importantly, the relation between 100 present pounds and 110 future pounds of rice is a technological or physical datum. But in the theory of interest we are dealing with human choice and values. There is no technological law according to which 100 ounces of gold invested today will yield 110 ounces in the future. One can invest money in such a way that the expected rate of return will be 10 percent, but it is also possible to invest it in projects that are likely to yield zero percent or –50 percent. What prompts a person to opt for one of these alternatives is not a technological constraint, but his values. And what prevents entrepreneurial competition from eradicating positive rates of return on certain ventures is not any technological constraint, but the values underlying the actions of every single market participant.

Conditions for the Emergence of Money Interest

The visible phenomenon of money interest must not be confused with originary interest. It is true that money interest has prompted the scientific investigation that eventually led to the development of interest theory. But money interest is only a particular *consequence* of human action in the material world, and must be strictly distinguished from its far more pervasive cause. Originary interest is not a manifestation of human action in the world of physical things, but a structural feature of human action itself or, more precisely, of human labor. It constantly generates a great variety of phenomena, only one of which is the use of resources in the context of a market economy, with the purpose of realizing a money surplus. *In these cases*, originary interest prevents the spread between selling proceeds and related cost expenditure from ever being eradicated. But even if there were no money interest, originary interest would still exist in all other cases, in which a resource is used to attain ends different from this resource-use as such. Money interest only comes into being when human action meets with certain other conditions of a more contingent nature. To these we now turn.

Acting man always and everywhere uses means to attain his ends, and he values the ends higher than he values the means. This is so whether the person under consideration acts as an entrepreneur, as the head of a household, or as Robinson Crusoe with or without Friday. But originary interest does not necessarily imply that all ventures in a monetary economy have a positive interest rate. Sometimes acting man does not strive to achieve a physical (money) surplus, but consciously and willingly accepts that his venture will lose money. For example, the philanthropist who invests 100 ounces of gold in a hospital that sells its services for a mere 90 ounces of gold still values the end (medical services delivered for a sum of 90 ounces) more than he values his investment. His originary interest is positive, even though the money interest of his venture is negative.

It is true that one would not usually use the word "interest" to designate a negative interest at all; there is also a good reason why we speak in the above case of a philanthropist rather than of an entrepreneur. The philanthropist does not even attempt to make money out of his investment, while the entrepreneur distinguishes himself precisely through this attempt. But this terminology is irrelevant for our present task because we look at things from the general standpoint of the relationship between ends and means. We have to examine if and under which conditions originary interest produces, in the world of material things, differences between selling proceeds and the related cost expenditure. And here we must notice that there is a continuum of interest. Originary interest produces "negative" money interest in some cases and "positive" money interest in other cases.

Some hospitals are operated on a philanthropic basis, whereas others are run on a commercial basis. The statement of this fact does not reduce the importance of the latter case—economists were certainly justified in concentrating on the case of positive money interest. It is, after all, not difficult to explain how people can willingly invest money into projects that yield less money than the initial investment. Everybody can do this, and most people would in fact love to specialize exclusively in this kind of expenditure. But why do *some* projects yield a money surplus that cannot be entirely eradicated through the competition of other entrepreneurs? This is the crucial question. And the answer is, in a word, that *in these cases* all resources that could possibly be invested in competing ventures are reserved for projects that the owners of these resources consider to be more important.

Consider the case of the production of meals. Here we usually encounter three types of producers: (1) entrepreneurs operating through firms called "restaurants" etc., (2) nonprofit associations, and (3) private households.

The case of the restaurant owner is straightforward. As every other entrepreneur, he proceeds by first estimating the selling receipts for his future products, and in light of these expectations he will bid for factors of production. The sum total of his bids will always be less than the sum total of his expected selling receipts, for the very fact that he strives to realize a spread between selling proceeds and outlays for the corresponding factors of production. He would in fact not even start his venture if he did not expect to realize this spread. In other words, if our restaurant owner realizes a spread between selling proceeds and related expenditure on factors of production, it is not because some anonymous market forces somehow bring this about. If he realizes this spread, it is because he himself, from the very outset, has paid only such factor prices that eventually resulted in the spread (because he had correctly anticipated the proceeds from selling the product).

Now, this spread might contain a profit component and an interest component. Other market participants can eradicate the former by entering the *same* business, thus bidding up the prices of the required factors of production, and bidding down the prices of the product. This competition can come for example from the side of a man who sells his shoe factory and establishes a restaurant, thus bidding up the prices of foodstuff and bidding down the prices of restaurant meals. Yet the characteristic feature of such entrepreneurial competition is that it eliminates profit, but not interest. With the conceivable exception of temporary cutthroat competition, entrepreneurial competition does not result in a complete elimination of the spread between buying and selling prices. The very point of investing resources in an entrepreneurial venture is to achieve a money return on the investment. Other entrepreneurs will therefore shift their resources into a competing restaurant only if (1) they expect a positive money return on investment and if (2) no alternative investment opportunity seems to yield a higher money return. They will not eradicate the return on investment earned by our restaurant owner because they themselves will in their bidding for factors of production strive to provide for such a return. It is true that different

entrepreneurs have different originary interests, so that each of them will strive at a slightly different minimal spread between selling proceeds and cost expenditure. But although these differences can be smoothed out through arbitrage, the spread itself can never be completely eradicated through entrepreneurial competition because each entrepreneur seeks to provide for a positive spread.[21]

The spread between buying prices and selling prices of our restaurant owner could however be eliminated in its entirety through the competition of *other* types of business that use the same factors of production, in particular, labor. These firms might for example bid up the wage rates of cooks and waiters to such an extent that our restaurant owner could no longer realize a money return on his investment.

His return on investment could also be eradicated through the competition of meal producers who from the outset do not seek to realize a money return. If consumers switch from patronizing restaurants to home cooking, then the prices of foodstuff will increase and the prices of restaurant meals will drop. As all other competitors, these people withdraw resources from uses they believe to be *less* important, and invest them in the production of meals. Thus they could for example move from a full-time to a part-time job, or spend less time with their children, in order to work longer hours in their vegetable garden and in their kitchen. *If* they shift enough resources into the production of meals, the money interest earned by our restaurant owner will be eliminated. By contrast, *if* they do not shift enough resources into the production of meals, then it will be impossible to completely eradicate the price spreads of our commercial meal producer. But why should they ever stop short of putting more resources into home cooking, rather than occasionally eating out at a restaurant? The answer is, of course, that they might think there are more important employments for their resources. In this case, a further elimination of the spread between the proceeds from selling meals and the expenditure on the related factors of production of meals would entail personal disadvantages for the arbitrager. The price spread that subsists because its elimination would be disadvantageous for every single market participant is "positive interest" or simply: interest.

Thus we have given a more specific characterization of the conditions under which originary interest causes the phenomenon of money interest in the realm of material things. We ended up with the familiar conclusion that *some* ventures do not earn interest because other entrepreneurs can afford to bid up the prices of the needed factors, and also because people prefer to make the product by themselves rather than pay someone for doing it at their place. In short, only those projects earn interest which do not prevent more important uses of the resources they consume.

This leads us to the question whether market interest could conceivably be eliminated in *all* ventures. The answer would be in the affirmative if every single market

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[21]In light of this, it is not difficult to see that the role of credit markets is a derived one. In granting a credit, a creditor employs a means to attain an end that for him is more valuable than the means. Creditors usually require the payment of money interest because otherwise they could just as well keep their money and not expose themselves to the risks of having other people control their property. It is not difficult to understand this, and neither is it difficult to see that this does not have anything to do with the time preference of creditors, but with the originary value spread between ends and means that gives rise to all forms of money interest. The interest payment is what makes the end of this transaction (the principal and the interest) more valuable for him than the means (the principal) he employs. Hence, value-productivity here takes on the typical form of entrepreneurial activities on the market: it yields a visible physical surplus, the creditor having more money at the end of the credit than at the beginning. The question is merely why the demand for interest payments can be satisfied. Why do creditors obtain these payments? The answer is that these interest payments derive from the price spread that firms realize as part and parcel of their market activities; entrepreneurs can pay interest to their creditors because, from the very outset, they exclusively engage in money-productive ventures.

participant cherished the use of his resources *per se*, to the point that all other effects emanating from this resource use would have no bearing on his decision. Every single action would *ultimately* be performed for its own sake and the use of all his other resources too would *ultimately* be invested for the sake of investing them this way. Under this scenario, market competition would eradicate interest in all ventures, because *no* market participant would take care to limit his expenditure on factors of production to provide for the realization of money interest.

Now there is no need to emphasize in any length that this condition is not given, and has never been given, in human life. It is even difficult to imagine such a state of affairs, be it only for the relatively simple case of a Crusoe economy. Our Crusoe would have to effortlessly shift between the various occupations needed to sustain his living, and at each point in time he would have to find that his present activity is just what he likes to do more than anything else, quite apart from the fact that it is also necessary to keep him alive. Surely this could not possibly happen short of the intervention of divine grace. But even more so would the help of the Most High be required to insure that a great number of individuals engaged in division of labor do what is necessary to keep cooperative production going, merely for the sake of doing what they do. Not only interest, nay, prices in general would disappear in this world, in which the fire of divine inspiration makes exchange and monetary calculation superfluous.

It is true that acting man on a few occasions does things only for their own sake. But in the great majority of all cases the use of a resource in any project P is meant to *also* achieve a result X different from P. In these cases, P does not *per se* occupy the highest rank on the value scale of our agent—P is not ultimately performed for its own sake—but occupies this rank only in conjunction with its result X. And this very fact implies a trade-off between P and X. Acting man will at some point—for example, when he discovers that X can be achieved by a sufficiently low resource input in an alternative project A—choose to pursue A rather than P, which means nothing else than that he chooses A because it earns him interest.

In short, the conditions for the emergence of money interest are as universal as originary interest itself. As soon as man not merely acts, but labors, his actions are determined by originary interest and are therefore likely to bring about money interest, in certain types of production, within the division of labor.

Money interest is that component of observable spreads between selling receipts and cost expenditure that cannot be eradicated without entailing personal disadvantages for those who undertake this eradication. It comes into being as a consequence of the trade-off implied in the relative values of definite (marginal) quantities of means and ends in competing investment projects. And it springs *only* from the values of means and ends in competing projects, not from those marginal quantities *per se*, or from any other physical constraint. We could say in modification of Rothbard's (1993, p. 326) dictum that it is relative values, and relative values alone, here in the form of originary interest, that determine the market result; the explanation does not lie in some sort of "mutually determining process." And let us also emphasize again that relative values, as manifested in the values of means and ends in competing projects, account for the entire spectrum of conceivable money investments. They explain the "positive money interest" realized in entrepreneurial ventures as well as the "negative money interest" resulting from philanthropic undertakings. And they also explain, in broad outline at least, why and when positive money interest emerges and disappears.

Understanding Price Spreads in the Real World

Our analysis confirms the common-sense notion that neither interest nor any particular interest rate is somehow inherent in any given venture. Both can vary, and both can vanish altogether as a consequence of changes in the perceived relative values of

ends and means in alternative investment projects.[22] A 10-percent interest rate obtained by making steel product X, for example, does not mean that 110 ounces of gold obtained through the future sale of X are *inherently* more valuable than the 100 ounces paid now for the corresponding factors of production. And neither does it mean that all current investments yield in fact a 10-percent return. What it means is that there are here and now no men ready to invest 100 ounces into the production of X unless the yield is at least 110 ounces. The combined originary interests of the market participant do not allow for any arbitrage that would eradicate the minimum return of 10 percent on the production of X.

The interpretation of concrete real-world phenomena is, of course, more complicated than this example suggests. For here we knew by hypothesis that the production of X yielded a return of 10 percent and that the entire return was interest. But in any real-world identification of an interest component in the observed return on an observed investment project it would not be sufficient to just look at the observed selling proceeds and to contrast them with the related cost expenditure. These data do not per se reveal which part of the price spread (if any) is interest, and which (if any) is profit. Rather, adequate understanding of any real-world case requires that one take into account the relative values of end and means of all alternative projects as they present themselves to each individual market participant. It goes without saying that this is a very tricky task, but it is the only way to understand *why*, in the case of X, no market participant is willing to invest his money for less.[23]

We here encounter the limits of the praxeological or theoretical analysis of interest. Theory provides us with the *a priori* categories we need for classifying otherwise disconnected bits of reality. But the identification of the category of interest in a concrete phenomenon requires additional information and guesswork that theory cannot possibly provide. In praxeology, we are primarily concerned with the implications of human action; that is, we start from concrete human choices as ultimate matters of fact (ultimate givens) and study the consequences that follow from these facts. In the present case, the (assumed) relevant fact is that nobody *does* invest his money into the production of X for less than 10 percent. But why did nobody do this? There is no praxeological law that would rule out such an event; nothing in the nature of human action prevents such decisions. So what were the causes that prompted these decisions anyway, in the present case? Praxeology alone cannot answer this question; to fully explain the causes of any given human choice one needs to resort to a psychological—or, as Mises would say—to a thymological understanding of the case.[24]

A few (non*aprioristic*) generalizations are nevertheless possible on the basis of our thymological knowledge about human beings. We understand for example why

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[22]A uniform money interest rate would emerge in the market only in the hypothetical case that the market participants do not use their resources, to any extent, for the sake of using them in the way they use them.

[23]For a detailed discussion of the problems involved, see Hülsmann (2000, pp. 18–26).

[24]See Mises (1985, pp. 264ff., 312ff.). It is only because we know about originary interest in the first place that we can apply this theoretical knowledge to identify the repercussions of originary interest in the material world. If we limited our study of human action only to the surface of visible things, we would find that there are more or less frequent spreads between selling receipts and cost expenditure. But we could not tell anything about the heterogeneous cause of these spreads. It is only because we know from praxeological analysis that there is a value spread between means and ends, that we understand one possible cause of the spread between selling receipts and cost expenditure. Not all observed price spreads are therefore accidental—more precisely, it is not necessarily the case that observed price spreads result *exclusively* from accidental factors.

people invest their time and money in the production of steel products only against compensation in the form of interest. The reason is that hardly anyone—at any rate, not enough people—appreciate the steel-making business for its own sake. A more or less great number of other cases are similar. Acting man typically invests in the production of transistor radios, tires, carpets, etc. only if he can expect to gain money interest, because he would not pursue these projects for their own sake. By contrast, people do invest time and money in certain other production processes without requiring compensation through interest, if they cherish these productions for their own sake. This is, for example, the case when resources are invested in the embellishment of one's garden or one's house, or in a private tennis club, or in a private theater. Investments in these projects are compensated through interest payments only to the extent that it is necessary to attract "outside" investors, that is, persons who have no personal stake in the project.

Interest Rates

Interest Ratios and Interest Rates

So far we have seen what originary interest is (the value spread between means and ends), that it exists in all those cases of human action in which means and ends are materially distinguishable, and that, through the actions of capitalistic firms, it generates under certain conditions the phenomenon of money interest. It is only in the case of money interest that originary interest has a visible counterpart in the material realm—the ends here are physically more numerous than the corresponding means—and it is only in this case that one can calculate a money interest rate, that is, a percentage ratio between the proceeds from selling a product and the expenditure on the corresponding factors of production.

Now we have to deal with the question how human choice determines *interest rates* in a given physical context, which in turn is determined by certain purely physical laws.[25] It is expedient to approach this problem by first discussing the more fundamental problem of *interest ratio* determination in nonmonetary economies. Only in the case of money interest is the ratio between means and ends a percentage or rate, whereas in all other cases it is just a ratio between heterogeneous means and ends.

Both interest ratios and interest rates are ratios between quantities that result from human choice in a world determined by the laws of production. These laws involve certain quantitative relationships between products and factors of production, and acting man picks those combinations of physical input and physical output that he seeks to realize.

We will therefore first take a look at the quantitative relationships between means and ends that result from the laws of production, and which exist, as laws of potential reality, independent of human imagination and human choice. Then we will argue that human choice "demonstrates" the interest ratios necessary for the realization of any production alternative, and we will also briefly examine how interest ratios are modified under the impact of market exchange. Third, and finally, we will study how originary interest affects the choice between different production projects in monetary economies; in particular, we will examine how these choices affect the relationship between money proceeds from selling a product and money expenditure on the

[25]Notice that we are not here dealing with the *gross* market rate of interest, but only with one of its components, namely, the so-called *pure* rate of interest. For a discussion of the other two components of the gross rate—the entrepreneurial component and the price premium—see Mises (1998, pp. 538–45).

corresponding factors of production—in other words, how they will affect the interest rate.

Laws of Production: Means of Sustenance, Savings, and Physical Productivity

Human choice is no free-floating, purely spiritual event, detached from all earthly things. It is always a choice about how to use the things that the choosing person controls. In other words, it is always a choice about how to use one's property.[26] Whether we choose to ponder questions of interest theory, to take a walk in the park, or to buy bread—we always make a decision about how to use various parts of our property: brains, body, money, etc.

From the point of view of production, means of sustenance or consumers' goods are particularly important parts of our property. The fundamental and simple fact is that there can be no human action without the consumption of means of sustenance. In a narrow sense this refers to consumption of food to sustain the organic functioning of our limbs and brains. In a somewhat wider sense it refers to the consumption of clothing, housing, and many other forms of protection for our bodies. As consumption of these goods must precede human action, they have to be available before action becomes possible. This is most obviously so in the case of the newborn, who has virtually no control of his body, and needs parents or other people to provide him with food and shelter. But even in the case of an adult, action is possible only if the person can live on previously accumulated means of sustenance that are not yet exhausted ("savings"), for example, on the food in his stomach that gives him the energy to engage in his present activities. In short, any single instance of human action, not just long-term production processes, is possible only through savings.

The quantity of one's saved means of sustenance determines the extent to which it is possible to engage in long-term production processes.[27] This possibility is important because longer production processes—by the very fact that they are longer—can be physically more productive than production processes of a shorter duration. The longer one can live on previously accumulated means of sustenance the more natural forces one can turn into capital goods, which make the production of further means of sustenance ever more abundant. Rather than focusing one's energies only on the proximate factors determining the abundance of a product, one can start influencing the more remote factors. In a great passage from his *Principles*, Carl Menger (1976, pp. 73f.; 1871, pp. 26ff.) explained the relationship between production time and physical productivity:

> In its most primitive form, a collecting economy is confined to gathering those goods of lowest order that happen to be offered by nature. Since economizing individuals exert no influence on the production of these goods, their origin is independent of the wishes and needs of men, and hence, so far as they are concerned, accidental. But if men abandon this most primitive form of economy,

[26]This has been emphasized by Böhm-Bawerk (1881) and especially by Rothbard (1993). See also Hülsmann (1997) and Gaël Campan (1999).

[27]It is true that the expression "means of sustenance" covers a large range of heterogeneous goods. But all means of sustenance make human action possible, and all of them are scarce since they all deliver services that are limited in comparison to human needs. Because of the physical heterogeneity of one's means of sustenance, each person's savings merely have a specific time structure, that is, one's means of sustenance deliver their services at distinct moments in time. For example, the half-digested food in a person's stomach delivers services for a couple of hours or days, whereas the cheese he has produced and the apples and other fruits that he picked can deliver services within a time-span of several months before they perish. In any case, however, since all of these services are limited at *each* point of time and since all of them perish at *some* point of time, they have to be economized.

> investigate the ways in which things may be combined in a causal process for the production of consumption goods, take possession of things capable of being so combined, and treat them as goods of higher order, they will obtain consumption goods that are as truly the results of natural processes as the consumption goods of a primitive collecting economy, but the available quantities of these goods will no longer be independent of the wishes and needs of men. Instead, the quantities of consumption goods will be determined by a process that is in the power of men and is regulated by human purposes within the limits set by natural law. . . . Increasing understanding of the causal connections between things and human welfare, and increasing control of the less proximate conditions responsible for human welfare, have led mankind, therefore, from a stage of barbarism and the deepest misery to its present stage of civilization and well-being. (Menger 1976, pp. 73–74; 1871, pp. 26ff.)

Hence, the sheer quantity of one's saved means of sustenance is an important element of the time structure and physical productivity of one's property. The larger this quantity the longer the possible production processes and thus the higher the potential physical productivity of one's property.

This being said, let us emphasize that there is no mechanism determining the use of saved means of sustenance. A person who owns and consumes many means of sustenance does not necessarily pursue long-term projects to increase his physical productivity. Suppose that Jones owns a barrel of wine and 10 loaves of bread. He could just have a good time without doing any work whatsoever, thus consuming his property "consumptively" and afterward leading a hand-to-mouth existence. Things would be different if he decided to use the energy he derives from his meals to make an axe, a net, or other higher-order goods necessary for an increase in physical productivity. In this case he consumes his foodstuff "productively," that is, his consumption is also instrumental in bringing about a bigger supply of his means of sustenance in the future. In short, while the quantity and physical characteristics of one's means of sustenance determine the physical limits of one's productive ventures, or one's production possibility frontier, human choice alone determines whether and to what extent a person engages in some sort of production at all (see Strigl 2000, pp. 24–35).

Demonstrated Interest Ratios in Crusoe Economies

Each choice alternative involves a particular combination of ends and means. Thus each choice alternative also goes hand in hand with a particular ratio of ends and means. By making his decision in favor of one of these alternatives acting man "demonstrates" the interest ratio necessary to attract him into this venture. We will call this ratio the "personal interest ratio" of this man.

Let us however emphasize again that an interest ratio can only be demonstrated to the extent that means and ends do not coincide in the same physical object. Only to the extent that man pursues some goal different from his action itself, is this action *laborious*, and thus originary interest comes into play. If there is complete coincidence of the ends and means of an action, there cannot even potentially be a choice between ends and means, and thus this action neither contains originary interest nor does it bring about an interest ratio in the realm of physical things. In the extreme opposite case, ends and means are manifested in completely separate objects. Here originary interest comes into play and there is also an interest ratio. Many real-world cases feature some intermediate combination of these two cases. For example, taking a bath can be pleasant quite apart from the fact that it makes us clean, playing theater can be fun quite apart from entertaining an audience, hunting can be satisfying quite apart from providing us with food.

Man labors only if the expected ratio between input and output is high enough for him. When he chooses means and ends he thereby demonstrates the interest ratio

necessary to attract him into an activity that he would not otherwise have chosen. The higher the output of an action in purely quantitative terms, the higher of course the ratio between input and output (in all cases in which marginal physical productivity is positive). Acting man can to some extent steer this ratio through his savings-investment decisions. Here the above-mentioned relationship between savings, length of production, and physical productivity comes into play. But this physical relationship only has indirect bearing on the determination of interest ratios. No level of output (and, accordingly, no ratio between input and output) is *per se* high enough to prompt a human being to perform the action that leads to this output.[28] Rather, it is human choice alone that defines how much physical output of an action A is necessary to compensate the acting person for being deprived of the benefits of an alternative action B that is *per se* more desirable than A. In other words, the acting person demonstrates through his actual choice the height of the interest ratio necessary to attract him to this action. The more he prefers pursuing projects for their own sake, the higher is the output (and thus the interest ratio) of other projects necessary to incite him to abandon his favorite activity. The less he prefers doing things for their own sake, the smaller is the output (and the interest ratio) of other projects necessary to incite him to abandon his favorite activity.

In the context of time-consuming production processes, the preference for activities one enjoys doing for their own sake is a preference for partial gratification in the present as compared to a gratification that lies only in the future. The mere fact that a man engages in some long-term project does not presuppose a low interest ratio. It might just be the case that he very much prefers this project for its own sake, in which case the interest ratios necessary to attract him into other projects would be relatively high too. For analogous reasons, short-term orientation in production does not necessarily go in hand with high interest ratios. We might say, however, that consumption without ensuing productive effort reflects *higher* interest ratios than consumption to sustain productive efforts. When Jones eats and drinks for the sake of eating and drinking, he demonstrates, through his very action, that his consumption is (entirely) focused on itself rather than (also) oriented toward other goals. By contrast, when he eats and drinks in order to work he demonstrates that his consumption is (also) oriented toward other goals rather than (only) toward partying.

Demonstrated Interest Ratios in Barter Economies

Human choice thus determines how many and which kinds of capital goods acting man tries to produce, and it thereby determines the entire structure of production. Even though we have so far only considered the case of a Crusoe economy, cursory reflection shows that things are not fundamentally different in a barter setting. The main difference is that in the latter case production is mediated through exchange. This modifies the determination of interest ratios in two important respects. First, the relationships between means and ends are no longer exclusively determined by the physical laws of production, but also by the barter exchange ratios, which spring from choice. Second, these exchange ratios are subject to the law of decreasing marginal value. It follows, in particular, that higher quantities of product will not lead to a proportional increase of selling proceeds, but to an underproportional increase.

But we can discuss the necessary details in the context that interests us most: the case of a monetary economy.

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[28]We here find a determination of human choice, and thus of the interest ratio, in the form of case probability. See Mises (1998, pp. 110ff.).

Demonstrated Interest Rates

Whereas the interest ratios that we find in Crusoe and barter economies are heterogeneous magnitudes, interest rates have a common unit: they are percentages. All investment projects, whether they are already implemented or merely considered are therefore comparable. A monetary economy is no mere juxtaposition of heterogeneous plans and actions. It is a true division of labor, integrated through monetary calculation. But even in the great social fabric of the capitalist economy, it is ultimately individuals who determine interest rates and the structure of production. Individual choice demonstrates the interest rate necessary to attract the individual to the pursuit of a given project. And by the same token individuals select the firms and projects that make it from planning to implementation. In what follows, we will give a somewhat schematic outline of how individual choice determines the money pricing process, and thus interest rates.

To make the illustration of this process as simple or possible, we will assume that the market participants do not appreciate their productive efforts *per se*, but only the marketable results of these efforts. In other words, we shall assume that the praxeological difference between ends and means is fully reflected in a physical separateness of ends and means. This is also how Murray Rothbard (1993, chap. 6) proceeded in his brilliant explanation of the interest rate, and our argument will therefore parallel his exposition to some extent. In particular, we will show how the pricing process combines and integrates the personal interest rates of all the individual members of society.

One fundamental shortcoming of most analyses of the pricing process is that they focus exclusively on *money expenditure*. Under the nefarious influence of Lord Keynes and his disciples, the great majority of economists have neglected to study the impact of *money acquisition*. But the fact is that market participants determine money prices not only by using money that they already own, but also by acquiring money that they do not yet own. Accordingly, we have to take a look at how using *and* acquiring money reflects originary interest and determines interest rates.

A market participant can *use* his money fundamentally in five ways. He can spend it on factors of production—on labor, land, and capital goods (Case 1), spend it on consumers' goods (Case 2), keep it in his cash balance (Case 3), destroy the money (Case 4), or give it to someone else (Case 5). All other uses are variants of one of these five. For example, keeping one's money in a bank deposit is a variant of Case 3, and buying a stock paper is a variant of Case 2. Market participants *acquire* money most notably by renting out their labor services and by renting or selling other elements of their property. For a proper examination of the impact of human behavior on the interest rate and the time structure of production, we therefore have to analyze the consequences of each combination of money use *and* participation in the division of labor. Let us briefly characterize these consequences in each of the five cases.

Case 1

The decision to spend a sum of money on a producers' good makes the price of this good higher than it otherwise would have been. This decision does not however affect the available supplies of commodities—in particular, the future supply of consumers' goods—but merely increases the price of one producers' good.[29] It follows that the spread between the future prices of consumers' goods and the present prices of producers' goods decreases at the margin—in other words, the interest rate decreases below the level it would otherwise have reached. The individual's decision

[29]The reason is, in short, that if our entrepreneur had not bought this producers' good, it would have been sold—even though at a lower price—to another entrepreneur, who in turn would have used it in production.

to save and invest his money is therefore, as one might expect, reflected in a decrease of the interest rate below the level it would otherwise have reached.

Case 2

Spending a sum of money on a consumers' good makes the price of this good higher than it otherwise would have been, and as a consequence of this patronage the production of this good has been more worthwhile than otherwise.

For the determination of *current* interest rates, however, this backward looking observation is irrelevant. Present expenditure on consumers' goods affects present interest rates only indirectly, namely, to the extent that it provides a basis for estimating future expenditure on consumers' goods. It has a direct impact only on entrepreneurial profits and losses related to *past* investments. If present expenditure on a consumers' good is higher than had been anticipated in the past, its producers will make a profit (or more profit than they expected); if it is lower than anticipated, the producers will incur a loss, or in any case have a smaller profit than they expected.

What determines current interest rates is the way the consumers' good is used. If it were used consumptively—that is, if it is not used to sustain the decision-maker in a process of production for the market—then current wage rates would be higher, and current production lower than otherwise would have been the case. As a consequence, the future output of consumers' goods and the corresponding selling proceeds will also be lower than otherwise. Now we must stress the fact that the future decrease of selling proceeds will be *overproportional* as compared to the present decrease of cost expenditure on wages. This is because capitalist entrepreneurs make only investments that are likely to yield money interest. It follows that any decrease of production involves lower cost expenditure in the present and *even lower* selling proceeds in the future.

A purely consumptive use of the purchased consumers' good will therefore make the spread between selling proceeds and cost expenditure higher than it otherwise would have been. In other words, the interest rate will increase above the level it would otherwise have reached. This is exactly what one would intuitively expect to follow from a purely consumptive use of consumers' goods. For what such a purely consumptive use demonstrates is that the end to be attained through labor (the wage) is not important enough to determine the person in question to work. The interest rate (money wage divided by expenditure on means of sustenance) is not high enough to incite this laborer-entrepreneurer to sell his services on the market. And this high personal interest rate increases, as we have seen, the market interest rates of all entrepreneurial ventures.

By contrast, in case the consumers' good is used productively—to sustain the decision-maker in producing for the market—current wage expenditure will be higher, current production higher, and future output higher too. And thus, for reasons analogous to the ones we mentioned above, future selling proceeds will increase even more than present factor expenditure; thus the interest rate decreases and we get the expected result. Again, it is the personal interest rate of each market participant that determines whether the man who spends the sum of money will proceed to produce for the market, and to which extent he does this. The minimum wage rate for which he offers his services will depend on the available alternatives and, in particular, on the extent to which he cherishes some of them *per se*.

Case 3

The decision *not* to spend one's money, but to keep it in the cash balance (hoarding), does not affect any price in particular. It decreases the overall quantity of money offered on the market, so that the existing supplies of the various goods and services are now sold at lower prices. In other words, the purchasing power of those quantities of money that are offered on the market is now higher than otherwise. But since

this does not affect any good in particular, hoarding does not affect the price structure in any particular direction. It just gives a greater weight to the expenditure of other money units.

There will also be a certain redistribution of income within society as a whole. But this affects interest rates only accidentally, that is, not systematically in the direction of either higher or lower interest rates, so that we can neglect it here.[30]

Let us stress however, an important implication of the decision to hoard one's money. The decision means that the person in question can afford to live on for a while without purchasing consumers' goods from the market. And this fact brings us immediately back to the question of what he does with his time—does he use it consumptively or productively? Depending on his decision, that is, depending on his personal interest rate, he will bring about the consequences we have already traced out in our analysis of Case 2. If he sets out to produce more goods, the interest rate will decrease; if he does not produce, the interest rate will increase.

Case 4

If the owner of a quantity of money decides, for whatever reason, to destroy this entire quantity or a part thereof, the overall quantity of money in the economy will decrease accordingly. It follows that each of the other units of money will have an increased purchasing power, so that the expenditures of the other market participants will have a greater weight than would otherwise have been the case. This in turn implies that we are back at exactly the same constellation as in Case 3. The only difference between the two cases is that the price level in Case 3 is higher than the one in the present case. But the reduced price level has obviously no impact on interest *rates* whatsoever, so that we can neglect it here.

It follows that the same considerations we brought to bear on Case 3 also bear on this case. Again, the interest rate is determined by the degree to which our decision-maker takes action to provide for future consumption, that is, by his personal interest rate.

Case 5

The decision to give one's money to someone else is tantamount to a (voluntary) redistribution of income within society. The new owner is likely to spend the money on other goods and services than the ones the original owner would have bought. Different productions now turn out to be profitable. But this has no systematic impact on current interest rates. Rather, as we have pointed out above, current rates depend entirely on how the money is used. In the present case, we have to observe that the donor of the money can apparently afford to live on without purchasing additional consumers' goods, and that the beneficiary is now in a position to use the additional money in one of the ways we have analyzed above.

Thus, we are back again at our analysis of Case 3, which applies to both the donor and the recipient of the money. The interest rate is determined by the degree to which our two decision-makers take action to provide for future consumption.

CONCLUSION

Originary interest does not spring from the passing of time, but from the value relationship between means and ends. The means of action are inherently less valuable than the ends they serve. Therefore there is a value spread between means and ends—originary interest—in all human actions in which means and ends can be distinguished.

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[30]For a discussion of the impact of redistribution on interest rates see Mises (1998, pp. 545-47).

Originary interest in this sense is an *a priori* feature of human action. It must be distinguished from the phenomena it generates in the realm of material things—in particular, money interest and the interest rate—which lead a somewhat more contingent existence. Acting man does not have any *a priori* inclination to pursue production processes that yield a positive monetary return on investment. And even in those cases in which a man acts with this purpose in mind he does not necessarily achieve his goal. He succeeds only when the combined effect of the originary interests of all other market participants prevents the yield of his project from being arbitraged away. In these cases, his originary interest causes a positive spread between the money proceeds from selling his product and the money expenditure on the related factors of production. This spread is money interest. It cannot be eradicated through competition without entailing disadvantages for the very entrepreneurs doing the eradication—in distinct contrast to entrepreneurial profit, the eradication of which is beneficial to the arbitrager.

Originary interest determines how each market participant chooses between production alternatives of different length and physical productivity. The combined originary interests of all market participants determine the time structure of production of the entire economy, as well as interest rates.

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