

## *A BRIEF DEFENSE OF MISES'S CONCEPTION OF TIME PREFERENCE AND HIS PURE TIME PREFERENCE THEORY OF INTEREST*

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*ABSTRACT:* In his recent book, *Money, Interest and the Structure of Production* (Machaj, 2017), Mateusz Machaj advances two significant criticisms of Mises's theory of time preference and his pure time preference theory of interest (PTPT). First, he claims that time preference only exists under certain unrealistic conditions, and second, that the PTPT, as presented by Mises, is unable to provide a coherent explanation for the spread between the prices of inputs and output that characterizes production processes in a monetary economy. In this paper I present a brief defense of Mises's conception of time preference and of his PTPT from both of these criticisms. I argue that, contrary to Machaj's claims, the existence of time preference does not require any unrealistic assumptions and also provide an analysis of how the PTPT can provide a satisfactory explanation of the monetary surplus that permeates the production structure.

*KEYWORDS:* time preference, interest, production, Austrian economics

*JEL CLASSIFICATION:* B53, E14, E23, E43

## I. INTRODUCTION

**M**ateusz Machaj's *Money, Interest and the Structure of Production* (Machaj, 2017) is a welcome addition to the recent groundswell of works on Austrian macroeconomics. In this book Machaj covers a broad range of topics, some of them theoretical, such as the theory of interest, the inter-temporal structure of production, and the relationship between the rate of interest and the length of the production structure, along with others that are more policy-oriented, including an analysis of the cogency and practical relevance of popular macroeconomic concepts such as potential output and full employment, and the implications of the non-neutrality of money for monetary policy. The entire range of topics is covered in a manner that is intellectually courageous, provocative and thought provoking.

In part I of the book, which comprises two chapters on the theory of interest (Machaj, 2017, pp. 3–36) and on the inter-temporal structure of production (Machaj, 2017, pp. 37–86), Machaj advances a number of criticisms of traditional Austrian macroeconomics. In the first chapter, in addition to presenting an original theory of interest, Machaj focuses his critical ire on the theory of time preference as presented by Bohm Bawerk (Bohm Bawerk, 1930, pp. 237–281) and Mises (1998 [1949], pp. 476–487), and on the pure time preference theory of interest (PTPT) as advanced by the latter (Mises, 1998 [1949], pp. 521–534).<sup>1</sup> And in the second chapter, he presents a detailed and highly critical analysis of a proposition that has long been of great importance to the Austrian of economic growth and business cycles: the inverse relationship between the rate of interest and the length of the structure of production.<sup>2</sup>

In this paper I present a brief defense of Mises's theory of time preference and the PTPT from the criticisms advanced by Machaj. In doing so, I do not explicitly address his criticisms of

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<sup>1</sup> It should be noted that Machaj is not alone in doing so. Prominent recent critics of the theory of time preference and of the PTPT also include Lewin (1997), Hülsmann (2002) and Gunning (2005).

<sup>2</sup> In doing so Machaj builds on the critical analysis of this proposition advanced by Fillieule (2007) and Hülsmann (2008; 2010).

the relationship between the rate of interest and the length of the structure of production.<sup>3</sup> Nevertheless, I do so implicitly, since the PTPT, especially as advanced in its most refined form by Mises, is critical to understanding the nature of this relationship. In fact, it is the PTPT that provides the microeconomic, price theoretic foundation to the traditional Austrian position that these two variables share a negative relationship.<sup>4</sup> Thus, it is no surprise that Machaj, having rejected the PTPT, is also highly critical of the traditional Austrian position on the relationship between the rate of interest and the length of the structure of production.

## II. MISES AND THE PURE TIME PREFERENCE THEORY OF INTEREST: THE TWO IMPORTANT CRITICISMS OF MACHAJ

There are two main charges that Machaj levels against Mises's pure time preference theory of interest (PTPT). First, he claims that the theory of time preference, including the one advanced by Mises, can only be worked out under certain unrealistic and unrealizable conditions. "With typical time preference theory," Machaj notes, "one has to assume very sophisticated and quite unrealistic clauses about the other things being held equal [...]" (Machaj, 2017, p. 27). Along with the assumption that "people compare two identical goods that are non-perishable and do not change," he argues that the theory also makes two patently unrealistic assumptions: first, that "the circumstances surrounding them [the people: GPM] also stay the same, except for the passage of time," and second, that there is "full certainty and predictability of future states of affairs" (Machaj, 2017, p. 27).<sup>5</sup>

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<sup>3</sup> See Newman (2014) for a recent defense of the traditional Austrian position of this subject.

<sup>4</sup> This, for example, is the position advanced by Hayek (2008 [1931]), Mises (1998), Rothbard (2009) and Garrison (2001).

<sup>5</sup> To support these claims, Machaj, immediately after the passage cited here, provides a reference to a paper by Peter Lewin (Lewin, 1997). In order to avoid any potential misunderstandings, I would like to clarify that the criticisms offered in this paper only address the claims made by Machaj and not those made by Lewin in the paper that is referenced.

Two important implications follow from the unrealistic assumption of perfect certainty. First, time preference can only explain the rate of ordinary interest, or the rate of interest as it appears within the confines of the evenly rotating economy (ERE), where there is a uniform rate of return in every production process. And since the imaginary construct of the ERE is built on the assumption of perfect certainty and predictability of the future,<sup>6</sup> it follows that the theory of time preference can only explain the rate of return that appears within the production structure under these artificial conditions, and is unable to explain the price spread between input and output that permeates the production structure in the real world characterized by uncertainty.

Second, adherents of the PTPT cannot explain how the rate of ordinary interest comes to be what it is. As Machaj notes, if the theorist is confined to explaining interest only in the ERE and has no explanation of the interest rate that appears within the production structure in the dynamic and uncertain world of reality, there is no way for him (or her) to provide any coherent and meaningful explanation of why the rate of ordinary interest is what it is. In such a scenario, the theorist is forced to acknowledge that the rate of interest within the ERE “is equalized not by the mechanisms of the model but merely by the assumptions of the model: everything is the same because everything is the same” (Machaj, 2017, p. 25).<sup>7</sup>

Now, this first charge that Machaj levels against the PTPT, while restricting its scope to the imaginary world of the ERE, at least assumes, albeit implicitly, that the theory can actually explain the rate of ordinary interest that characterizes such an economy. The second and stronger charge that Machaj levels against the PTPT, however, denies even this possibility. The PTPT, he claims, cannot even explain the rate of ordinary interest. And why is it unable to do this? Because the concept of time preference simply cannot explain why there should be a monetary surplus that characterizes any production process, even in the ERE.

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<sup>6</sup> For a detailed explanation of the assumptions underlying this imaginary construct see Mises (1998 [1949], pp. 247–251) and Rothbard (2009, pp. 320–329).

<sup>7</sup> Mises advances a similar criticism of economists who focus purely on an analysis of the ERE, thereby assuming uncertainty away from their analysis. See Mises (1998 [1949], pp. 352–354).

While Machaj accepts that time preference is indeed “an element of a pure theory of action,” he argues that there is “a gap” between accepting this proposition and “making it a prerequisite for physical monetary surplus” (Machaj, 2017, p. 25). In fact, as he goes on to note, “there is no clear bridge between a preference for sooner rather than later and a physical surplus of money in interest payments” (Machaj, 2017, p. 26). Thus, consider a production process where a capitalist-entrepreneur pays out 100 units of money today to hire various factors of production. An acceptance that his actions are guided by the concept of time preference does not in any way imply that he will sell his output tomorrow for a sum that is greater than 100 units, thereby earning some positive rate of return. Instead, “the transaction could well be 100 units of money today in exchange for 100 units tomorrow, such that monetary interest is zero.” Or, in fact, “interest could even be negative: 100 units today for 95 units tomorrow” (Machaj, 2017, p. 26).

Thus, Machaj throws a one-two punch at Mises's PTPT. The first attacks the conditions under which the concept of time preference holds true, and the second focuses on the implications that can be derived from the concept itself. In the following two sections I will try to defend Mises's exposition of time preference and the PTPT from both of Machaj's criticisms. In doing so, I will begin with a defense against the initial blow, regarding the realism or lack thereof of the conditions under which the concept of time preference itself holds true, and will then deal with the second criticism, which focuses on whether the existence of time preference can explain a monetary surplus within a process of production.

### III. HUMAN ACTION, VALUE JUDGMENTS AND VALUE IMPUTATION

Before dealing with the specific criticisms that Machaj advances against the Misesian PTPT, I think it is important to mention and explain some important implications that follow from the existence of human action. These propositions, although they belong, first and foremost, to the realm of praxeology, and thus take us beyond the realm of catallactics, are still worth laying down in some detail since they are essential to my defense of Mises's exposition of the theory of time preference and the PTPT.

Human action, as Mises defines it (Mises, 1998 [1949], p. 10), is purposeful behavior. It is the purposeful reaction of an individual to his (or her) environment and involves an attempt, on the part of this individual, to alter this given environment and to replace it with a different state or situation.

Such purposeful behavior, as Mises goes on to note (Mises, 1998 [1949], pp. 13–14), implies the existence of certain conditions. Action, to begin with, requires an individual to be less than fully satisfied. He must, in a given situation, be aware of certain unfulfilled wants, and must experience “some uneasiness” (Mises, 1998 [1949], p. 13). Given this lack or insufficiency in the conditions that define his existence, the individual must be aware of alternate states of the world that will enable him to satisfy one or more of these unfulfilled wants. Moreover, these alternate states must, in his eyes, be realizable and worth striving towards.

The ultimate goal or the ultimate purpose of all action, it follows, is the satisfaction of some unfulfilled wants, or the removal of the uneasiness that the actor experiences. Action, however, also requires the actor to choose between alternate states of satisfaction. It forces him to prefer and strive after one possible state of the world and the satisfaction that it opens up, and to renounce another realizable state of the world and the satisfactions that it has to offer.

These preferences, first and foremost, rank the ultimate goals of action: the alternate states of satisfaction that the actor has to choose between in any given situation. One or more unfulfilled wants that offer greater satisfaction are deemed to be of more importance to the actor’s well-being, and of greater value to him, and are ranked above other unfulfilled wants that offer less satisfaction and are valued less. These valuations then guide the conduct of the actor. Of two possible paths of conduct open to him at any given moment, he chooses the one that allows him to satisfy the wants that he values more, while renouncing the path that promises less value.

Now, although the actor attributes value to the possible states of satisfaction that he can bring about, he also necessarily imputes and attributes this value to the means that he uses to attain these states of the world. For, although the attainment of a state of satisfaction is the ultimate goal for an actor, he finds himself in

a situation where these states of satisfaction are unattained or unfulfilled. And, it is in this current, given scenario that he plans to employ certain scarce elements in his environment, or means, to try and attain these ultimate ends. As a result, the value that he attributes to these states of satisfaction is also imputed to the means that enter into his action.

This holds true both for actions involving consumer goods, or first order goods, and for actions that involve producer goods, or higher order goods.<sup>8</sup> Thus, consider the case of Crusoe, all alone on his island, using a fish in his possession to satisfy a want. Since the fish, by assumption, is a first order good, the value that Crusoe attributes to it will be a reflection of the value that he attributes to the marginal utility that he expects to attain with it. The want that he will use it to satisfy has some importance to his well-being, and this importance is directly imputed to the fish at hand.

Now, consider a situation where Crusoe employs an hour of his labor-time to start producing a raft. When completed, he will use this raft to catch some fish. On what will the value of this first hour of labor devoted to raft production depend? The value of the services of the raft that it helps produce will be imputed to it. Thus, the value of the third order good, the hour of labor-time, reflects the importance that the second order good, the services of the raft, has for Crusoe's well-being. And on what does the value of this second order good depend? It, in turn, reflects the value of the fish, or the first order good that can be produced with it, and therefore the value of the states of satisfaction that the fish will help Crusoe attain.

#### **IV. CHANGE, UNCERTAINTY AND TIME PREFERENCE**

Just as action requires the actor to make value judgments, it also implies the existence of time preference. Since the actor strives towards the gratification of an unfulfilled want, it follows that he prefers to satisfy this want in the nearer as compared to the more distant future. And since the attempt to gratify an unfulfilled want is essentially an attempt to attain a state of satisfaction, it follows

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<sup>8</sup> For a detailed analysis of the valuation of first and higher order goods in a scenario of economic self-sufficiency, see especially Menger (2007 [1871], pp. 114–174), Böhm-Bawerk (1930, Bk. III) and Rothbard (2009, pp. 17–46).

that, in the eyes of the actor, “other things being equal, satisfaction in a nearer period of the future is preferred to satisfaction in a more distant period” (Mises, 1998 [1949], p. 480). An individual’s actions necessarily reflect time preference: at any given moment, he attributes greater importance and more value to satisfaction that lies relatively close at hand, and less value to satisfaction that lies further away in time.<sup>9</sup>

Given that time preference is implied in every act, the conditions under which it exists or manifests itself will necessarily be identical to the conditions that necessitate action. Keeping this firmly in mind, let us now analyze Machaj’s first criticism of Mises’s PTPT, i.e., that time preference only exists under the unrealistic conditions that “circumstances...stay the same except for the passage of time” and that there is “full certainty and predictability of future states of affairs” (Machaj, 2017, p. 27).

Let us begin by clarifying the meaning of the first assumption. When Machaj states that “the circumstances surrounding them [the people: GPM] stay the same except for the passage of time” (Machaj, 2017, p. 27), I am going to assume that he means the following: the theory of time preference assumes that, when an individual acts, no changes in circumstances or conditions that are exogenous to the action itself can take place. To be sure, every action itself is an agent of change and implies an alteration in the conditions surrounding the actor. In fact, to effect such changes is the overarching goal of action. But no changes in an actor’s environment that are unrelated to the specific act that he undertakes are allowed.

Now, given that time preference is implied in human action, the veracity of Machaj’s claim can be assessed by answering the following question: does action require such an assumption? Does the existence of action require one to assume that only changes endogenous to action can take place and no changes that are exogenous to it can impact the environment of the actor? For, if

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<sup>9</sup> As Mises argues, individuals “value fractions of time of the same length in a different way according as they are nearer or remoter from the instant of the actor’s decision.... If any role at all is played by the time element in human life, there cannot be any question of equal valuation of nearer and remoter periods of the same length” (Mises, 1998 [1949], p. 480).



this condition is not necessary for the existence of action, it is also not implied in Mises's theory of time preference.

Turning now to the conditions necessary for the existence of action that I have mentioned earlier (Section III), one finds that action only assumes that there are unfulfilled wants. It does not, however, require any assumption regarding the lack of changes exogenous to action. Indeed, such changes can and indeed necessarily do buffet the world of the actor. But all that action assumes is that, despite such changes, the actor perceives and believes that there will still be certain unfulfilled wants. And it is only the existence of these ungratified wants that are necessary for him to act.

Now, what about the second unrealistic assumption? Does the theory of time preference assume away the endemic uncertainty that characterizes the real world? Once again, given that time preference is implied in the fact that human beings act, we can determine the validity of Machaj's claim by answering the following question: does action imply perfect certainty? For, if this is not a necessary assumption for the existence of action, then it is also not a necessary assumption for the existence of time preference.

The answer to this question has been given, and given quite emphatically, by Mises in *Human Action* (Mises, 1998 [1949], pp. 105–106). Far from action requiring full certainty and predictability of the future, it is, in fact, impossible for any action to take place in a world characterized by perfect certainty and predictability of the future. Indeed, as Mises notes, "if man knew the future, he would not have to choose and would not act" (Mises, 1998 [1949], p. 105). Far from being a striving, purposeful creature, man, under these conditions, "would be like an automaton, reacting to stimuli without any will of his own" (Mises, 1998 [1949], p. 105).

Thus, far from perfect certainty being a necessary condition for action, it is the uncertainty of the future that is "implied in the very notion of action" (Mises, 1998 [1949], p. 105). And since the conditions necessary for the existence of action are also those that are necessary for the existence of time preference, it follows that Machaj's claim that the latter exists only under the unrealistic conditions of "full certainty and predictability of the future state of affairs" is not true. Time preference exists and influences the actions and choices of individuals in the dynamic, real world of change and uncertainty.

Two important implications follow from this. First, since time preference does not appear only in the artificial and unrealistic thought construct of the ERE and does manifest itself in the real world that confronts acting man, it does, assuming that it can explain the price spreads that permeate the production structure, help explain the phenomenon of interest as it appears in the real world. And second, since it does influence the actions undertaken in the real world, and thus does influence the allocation of resources within the production structure, it does play a role in analyzing the step-by-step process by which the ERE would emerge and interest rates in the various processes of production would be equalized, if tastes, techniques and the stock of the original factors of production (land and labor) were assumed to be given.

Thus, the theorist who espouses the Misesian version of the PTPT does not, contrary to what Machaj claims, conclude that price spreads within the production structure are equalized in the ERE “merely by the assumptions of the model,” and “not by the mechanisms of the model.” And he is certainly not forced to conclude “that everything is the same because everything is the same” (Machaj, 2017, p. 25).

## **V. TIME PREFERENCE AND MONETARY SURPLUS WITHIN THE PRODUCTION STRUCTURE**

### **1. Time Preference and the Value Spread Between Input and Output: The Case of a Crusoe Economy**

The existence of time preference has important implications for the process of value imputation. Let us reconsider the case of Crusoe devoting an hour of labor to the production of a raft. As discussed above, both the value of the labor-time as well as the value of the services of the raft produced with it depend, proximately, on the value of the fish, and ultimately, on the value of the unfulfilled wants that these fish will help satisfy.

Nevertheless, although the services of the raft and the hour of labor-time both ultimately derive their value from the same states of satisfaction, their values will not be equal. The hour of labor that Crusoe plans to devote, right now, to the production of the raft is of less importance to his well-being, and therefore of less value to

him, than the services of the raft that it helps produce. The cause of this spread or difference between the value of the input, the hour of labor, and the value of the output, the services of the raft, lies in how far away each of them is, in time, to the ultimate goal of Crusoe's action: the attainment of satisfaction.<sup>10</sup>

Assume that it takes two days of labor-time for Crusoe to produce the raft. It follows, therefore, that when he is about to devote an hour to start its production his ultimate goal lies more than two days away. But when he has finished producing the raft, the services of it that this first hour helped produce are a few hours, or maybe just a few minutes away from the attainment of some satisfaction.

Now, as mentioned above, time preference implies that Crusoe, when embarking on a course of action, attributes greater importance and value to states of satisfaction that lie in the nearer future and less importance to those that lie further away in time. In this instance, the hour of labor-time contributes, ultimately, to the gratification of some unfulfilled wants that lie in the more distant future, whereas, the services of the raft, once it has been completed, help him to attain satisfaction in the nearer future. It follows, therefore, that at the moment when he is about to start producing the raft, he values the services of the raft more than the services of the hour of labor-time that help produce them; to the former he attributes the greater value of satisfaction that lies in the nearer future, and to the latter he imputes the lower value of satisfaction that lies in the more distant future.

## **2. Time Preference and the Price Spread between Input and Output: The Case of a Monetary Economy**

Turning our attention now to a monetary economy, consider the case of a capitalist-entrepreneur and his actions in the market for a producer good. Just as in the case of Crusoe, the value that the capitalist attributes to a unit of the good in question is ultimately determined by the contribution that it can make to the ultimate goal of his (or her) actions: the gratification of unfulfilled wants

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<sup>10</sup> For a more detailed discussion of this point see Böhm-Bawerk (1930, pp. 179–185).

and the attainment of states of satisfaction. However, given the existence of the division of labor and specialization, the path that the capitalist takes to achieve this ultimate goal is very different from the one taken by Crusoe.

In Crusoe's self-sufficient world, a unit of a producer good is utilized by him to produce a first order good either directly or indirectly, and then attain some satisfaction. As a result, the value of the producer good depends, proximately, on the consumer good that he produces with it, and ultimately, on the satisfaction that he can attain with the latter. The capitalist, acting in a different institutional scenario, uses a unit of the producer good to produce a product that he sells for a sum of money. He then proceeds to use this money to purchase consumer goods produced by other capitalists. These consumer goods, in turn, are used by him to gratify unfulfilled wants and to attain states of satisfaction.

The value of a unit of the producer good to the capitalist, it follows, depends proximately on the value of the sum of money that it helps him attain, and ultimately on the value of the states of satisfaction that it enables him to bring about. The value of the satisfaction that he can ultimately attain is imputed, via the consumer goods, to the sum of money, and finally to the unit of the producer good in question.

Now, the existence of time preference has significant implications for this process of value imputation. Assume that the capitalist, in his estimation, can earn 100 units of money by hiring and employing a unit of the producer good in a process of production. Thus, both the unit of the producer good and the 100 units of money derive their value from the satisfaction that they enable the capitalist to ultimately attain. Nevertheless, due to the existence of time preference, there is a difference in the value that he attributes to these two things. The 100 units of money that he expects to earn at the end of the production process, which is the marginal value product that he expects the unit of the producer good to contribute to his possessions, is of greater importance to his well-being than the unit of the producer good that helps him acquire this sum of money.

As in the case of the labor-time and the services of the raft considered above, there is a difference in how far away in time the 100 units of money and the unit of the producer good is to

the capitalist's ultimate goal of attaining satisfaction. Thus, assume that the production process takes a year to complete. The unit of the producer good, it follows, will take a year to yield the expected marginal value product of 100 units of money. At the moment when the capitalist hires this unit, the attainment of satisfaction lies more than a year away. However, once the product has been produced and the 100 units of money is in the hands of the capitalist, satisfaction lies merely a few days, or only a few hours away.

Thus, at the moment when the unit of the producer good is hired by the capitalist, it contributes to satisfaction in the more distant future, whereas the sum of money that it is expected to yield, once it is in hand, helps the capitalist attain satisfaction in the relatively near future. Given that he attributes greater importance and value to satisfaction that lies in the near future and less value to satisfaction that lies in the more distant future, it follows that he values its services less than he values the 100 units of money that he expects it to yield: at the moment when he hires the unit of the producer good, he attributes to the former the lower value of satisfaction that lies in the more distant future, whereas he imputes to the latter the greater value of satisfaction that lies closer at hand. As a result, the capitalist would only be willing to part with less than 100 units of money to hire the unit of the producer good.

Other capitalists competing to hire the unit of the producer good will be in a similar position. Due to the existence of time preference, they too would only be willing to offer the discounted marginal value product of the unit in question. Each of them would only be prepared to offer a sum that is less than the revenue that the unit of the producer good is expected to yield in the various production processes that they wish to embark upon.

Thus, contrary to the claim made by Machaj, time preference does provide an explanation for the existence for the spread between revenues and costs, or for a monetary surplus, within a production process. Specifically, it explains the *ex ante* existence of such a surplus or spread when the capitalist-entrepreneurs enter the markets for producer goods and bid for their services. *Ex post*, or after the product has been produced and sold, however, such a surplus may or may not characterize a production process due to the uncertainty that characterizes the real world. The actual, *ex post* rate of return consists of a mix of the rate of interest, owing

to the influence of time preference, and profit (or loss), owing to the influence of the uncertainty that plagues the estimates of the marginal value products of the various producer goods.<sup>11</sup>

It is only in the imaginary world of the ERE, where there is no uncertainty, that the *ex ante* and the *ex post* align, and where the surplus due to time preference appears in its pure form, distinct from profit and loss.<sup>12</sup> Nevertheless, time preference does influence the actions of the capitalists in the markets for producer goods even in the real world and does influence the bids that they are willing to make for their services, even in the presence of uncertainty regarding their estimations of the marginal value products involved.

## VI. CONCLUSION

In his recent book, *Money, Interest and the Structure of Production* (Machaj, 2017), Mateusz Machaj advances two significant criticisms of Mises's theory of time preference and his pure time preference theory of interest (PTPT). First, he claims that time preference only exists under certain unrealistic conditions, and second, that the PTPT, as presented by Mises, is unable to provide a coherent explanation for the spread between the prices of inputs and output that characterizes production processes in a monetary economy.

In this paper I present a brief defense of Mises's conception of time preference and of his PTPT from both of these criticisms. I argue that, contrary to Machaj's claims, the existence of time preference does not require any unrealistic assumptions and also provide an analysis of how the PTPT can provide a satisfactory explanation of the monetary surplus that permeates the production structure.

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<sup>11</sup> See Rothbard (2009, pp. 509–516) for an insightful discussion of this point.

<sup>12</sup> See Rothbard (2009, pp. 367–410) for a detailed analysis of how the interaction of the valuations of the various participants in the time market that permeates the production structure gives rise to the rate of originary interest within each production process in the ERE.

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