

On exchange, monetary credit transactions, barter, time preference, interest rates, and productivity (1)

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ABSTRACT

We attempt in this paper to tie together several basic insights of praxeology, and several that are not at all that basic. These include the following: that gains from exchange are subjective; that this applies to profits and interest; that credit transactions can occur under barter; that interest arises from time preference even under a pure time preference theory of interest; and that productivity can, under disequilibrium conditions, affect the various rates of interest.

1. *Introduction*

It is a common place of economics that all parties to a voluntary exchange expect⁽²⁾ to be made better off or gain thereby.⁽³⁾ Such gains are always subjective. A voluntarily exchanges X with B for Y. That A(B) values Y(X) more than X(Y) is obvious. It is equally true that the gain from exchange for A(B) is the difference between the greater value he places on Y(X) compared to the lesser value he places on X(Y). But as these values are subjective to the individuals involved, they are not measurable or, a fortiori, commensurable. That is, both A and B expect to gain from the exchange, but there is no way to measure these gains, even by the parties themselves. For example, suppose B offers A the choice between Y or Z for X. A would be willing to trade X for either Y or Z, but in actuality chooses Y. Then in A's mind the gain he received from exchanging X for Y was expected to be greater than the gain he thought he would have received had he exchanged the X for Z. However, there is no valid way for A to say that his expected gain from trading for Y is n times greater than, or greater by an amount, m, than his expected gain from trading for Z. And, this is so because his values are subjective and, therefore, non-quantifiable; and, there can be no n times anything, or greater by m than, without quantification. All gains from exchange are, then, necessarily subjective and non-quantifiable (Rothbard, 1997, pp. 225-227). In cases of monetary exchange, these gains may be referred to as buyers' and sellers' gains (from exchange).

However, such gains may cast an (admittedly-necessarily imperfect) image in the objective world. The literature refers to the images in the objective realm of buyers' and sellers' gains as consumers' and producers' surplus, respectively. They are "measured" in monetary terms, and are equal in those terms to the area under the demand curve and above the actual market price, and to the area above the supply curve and below the actual market price. It is interesting to note that in the cases of these two types of exchanges, specific names have been assigned to the producers' surplus; to wit, in sales⁽⁴⁾ by businesses, the producers' gains are known as profits, and in credit transactions involving the loan of money at one point in time in return for the promise of (re)payment of money at some future date, the creditors' gains are known as interest.

In this paper we address several implications of exchange. Section 2 is devoted to an examination of monetary credit transactions. Section 3 addresses credit transactions under barter, section 4 analyses the objectivity of interest rates, section 5 deals with different types of interest rates, and section 6 looks at the relationship between productivity and interest rates. We conclude in section 7.

2. Monetary credit transactions

Let us consider the phenomena of monetary credit transactions in a little more depth. Credit transactions are exchanges that are different from other transactions in that the latter take the form of X, now, for Y, now, whereas the former take the form of \$X, now, for \$Y, later. However, in that all parties expect to gain therefrom, credit transactions are no different from other exchanges. In fact, for Mises (1966, 194), every action is an exchange in the sense of an attempt to exchange a less desired situation for a more desired one. Trades between or among individuals are but a subset of the totality of commercial interactions that also includes every action by every individual that is not an exchange with one or more other individuals. Therefore, all expected and actual gains from exchange arise from time preference.⁽⁵⁾

It is no exaggeration to claim that all macroeconomic issues must pass what is in effect a microeconomic litmus test. This is a necessary condition if macroeconomics is ever to attain a microeconomic foundation. If gains ex ante are a necessary concomitant of microeconomic purchases such as \$1 for a newspaper, then this must be equally true in the macroeconomic sphere. For example, it is a logical contradiction for borrowing and lending not to adhere to these principles. And a similar analysis holds for the ex post situation of exchange, whether at a point in time (microeconomics) or over time (macroeconomics). Phelps (1970) and

Aghion (2003) may be credited with attempting this integration, but it is our contention that only the Austrians have succeeded in it.

Says Rothbard (1981) in this regard of Mises (1912): “Whereas general ‘micro’ theory was founded in analysis of individual action, and constructed market phenomena from these building blocks of individual choice, monetary theory was still ‘holistic,’ dealing in aggregates far removed from real choice. Hence, the total separation of the micro and macro spheres. While all other economic phenomena were explained as emerging from individual action, the supply of money was taken as a given external to the market, and supply was thought to impinge mechanistically on an abstraction called ‘the price level.’ Gone was the analysis of individual choice that illuminated the ‘micro’ area. The two spheres were analyzed totally separately, and on very different foundations. This book performed the mighty feat of integrating monetary with micro theory, of building monetary theory upon the individualistic foundations of general economic analysis.”(6)

Similarly, monetary phenomena must pass the “barter” test. That is, before a phenomenon may be said to be monetary, we must first determine if it could exist in a barter economy. If it could, it is not a monetary phenomenon. If not, then money is of the essence, and it is a monetary phenomenon. For example, Friedman (http://www.britannica.com/nobel/macro/5004_32.html) has famously stated: “It follows that [price] inflation is always and everywhere a monetary phenomenon, in the sense that it cannot occur without a more rapid increase in the quantity of money than in output. There are, of course, many possible reasons for monetary growth—gold discoveries, the manner in which government spending is financed, and even the manner in which private spending is financed.”

One need not agree with Friedman’s entire statement to accept that price “inflation is always and everywhere a monetary phenomenon.” This is easy to understand. Price inflation requires that prices in general rise, but this is impossible in a barter economy. Let there be n goods, A_i , $i = 1, \dots, n$. Then, because there is no money, there can be no money prices, only barter-exchange ratios. Consider an exchange chosen at random, between, say A_j and A_k . Let the current exchange ratio between them be nA_j for one A_k ; then the barter price of one A_k is nA_j : i.e., nA_j/A_k , and the barter price of one A_j is $(1/n)A_k$. Let the barter-exchange ratio change to $(n+\Delta n)A_j$ for one A_k , $\Delta n > 0$. Then the barter price of one A_k is nA_j : i.e., $(n+\Delta n)A_j/A_k$, and the barter price of one A_j is $(1/(n+m))A_k$. And, the increase in the barter price of A_k is $(\Delta n/n)\%$ and the decrease in barter price of A_j is $(-\Delta n/(n+\Delta n))\%$. In other words, in barter exchange, for every barter price increase there is necessarily an offsetting barter price decrease and, therefore, there cannot, as a matter of mathematical necessity, be a general rise in barter prices.

3. Credit transactions under barter

There can be credit transactions under barter as well as in a monetary economy.(7) Therefore, there are creditors' gains from exchange in barter economies.(8) However, save in the case where X today is lent in return for the promise of more (or even less) X at some time in the future, there is no interest and, a fortiori, no interest rate. That is, because interest is the objective image of the creditors' gain, and in the case where X today is lent in return for Y at some time in the future, because X and Y are incommensurable, there can be no measure of the objective gain.(9)

In credit transactions involving money, now, for money, later, the interest is objective and measurable, and interest rates can be calculated. The past master in Austrian economics in terms of tracing out how the merely subjective can engender objective prices is undoubtedly Menger (1950). His analysis is in terms of consumer/producer goods such as horses and bushels of wheat, but, given our determination to apply the same insights to macro as to microeconomics, there is no reason not to extrapolate this to borrowing and lending, and interest rates.

4. Objective interest rates

In credit transactions involving money now for money later, the interest is objective and measurable, and interest rates can be calculated. For example, \$100 now, for \$110 one year from today. The interest is measurable $\$110$ (principal and interest) - $\$100$ (principal) = $\$10$ (interest). And, it is objective in that everyone who is numerate will agree on the matter.(10) Similarly with the interest rate, calculated as $\$10$ (per year)/ $\$100 = 10\%$ (per annum).

5. Types of interest rates

Consider the rate of interest. Mises (1996, 524-550) distinguishes the originary from the market rate of interest, both of which exist in the evenly rotating economy (ERE) and in the real world. Originary interest depends solely on present preference and the originary rate of interest depends solely on time preference,(11) whereas the market rate of interest depends not only on time preference, but also on returns to the lender qua entrepreneur for the risks of default and of price

changes. Because, in the ERE, there are no risks of default or of inflation or deflation: “There prevails in the whole system only one rate of interest. The rate of interest on loans coincides with the rate of ordinary interest as manifested in the ratio of prices of present and of future goods” (Mises, 1996, 538).

However, this is only a first approximation of the truth. Insofar as the market rates of interest are concerned, whether in the ERE or the real world, the quantum of interest and the rate of interest must also take into account the expenses involved in acquiring the other resources (i.e., other than the money lent), of the creditor, qua entrepreneur; e.g., for a bank, the services of loan officers, desks, office space, etc.(12) Additionally, a measure of profit for the creditor qua entrepreneur must be included, though this element is relevant only in the real world and not in the ERE, as of course no profits could exist in the latter.

Moreover, there is no reason to think that “market rates” should include, in addition to ordinary interest, only returns to the lender qua entrepreneur for risk bearing and a measure of profit. Why should they not incorporate, also, returns to the lender qua entrepreneur from these other sources; e.g., specifically, for his contributions to the realization of gains from *increases* in productivity? Of course this element, also, is irrelevant in the ERE, as there would be no changes in productivity. Furthermore, it should be noted that with regard to profits, the other objective image of a gain from exchange that has been assigned its own name, according to Greaves (1990, 40) Mises recognizes uncertainty re future consumer demand, changes in productivity,(13) the time consuming nature of production, and differences in entrepreneurial foresight.

6. *Productivity and interest rates*

As with all other gains, the phenomenon of creditors’ returns arises from exchange. As interest is but the objective image of creditors’ gains from exchange, interest also and necessarily arises because of time preference; that is, without time preference there would be no credit transactions and therefore, no creditors’ gains from exchange or interest.

In the non-ERE situation, one of the factors that can affect the quantum of interest and interest rate of a specific credit transaction is *an increase*(14) *in* productivity. For example, imagine an entrepreneur willing to offer $r\%$ for funds to acquire a set of resources, R , to produce X . He then foresees an opportunity to acquire a set of resources, S , to produce Y , where he expects the use of S to produce Y to be more profitable than the use of R to produce X . In that case he would be willing to offer $s\%$ ($>r\%$) in order to acquire the resources, R , thereby bidding up the “price of

credit;” i.e., the interest rate. Of course, he would also have to offer a higher prices⁽¹⁵⁾ for the resources in S, in order to bid them away from their current uses. That is, the gains from the increased productivity would be manifested by increased prices for the resources *and* a higher interest rate.

However, we stress that this latter would be a transitory phenomenon. As other entrepreneurs attempted to earn greater profits by competing to acquire resources of the type in S, or suitable substitutes, and produce Y, or substitutes therefor, more and more of the gains from the increased productivity would end up redounding to the benefit of the resource owners, in the form of higher prices paid for them, and to the benefit of the purchasers of Y. At the same time, profits would decrease below the level initially earned by the entrepreneur who first perceived and acted on the S/Y opportunity. Consequently, he would not be willing to pay as high an interest rate as he had previously, and, consequently, the interest rate would decrease.

Assuming no change in the other relevant data, preeminently time preference rates, competition over time would bid up the prices of the resources in S, and down the price of Y, so that the entire benefits from the increased productivity were received by the relevant resource owners and purchasers of the good. With all of the gains thus absorbed, there would be none left for the entrepreneur in the form of “above normal” profits, nor any to be paid by the entrepreneur to lenders in the form of higher interest rates. So as profits would fall back to “normal” so also would interest rates fall back to their prior levels. Therefore, as noted above, the effects of productivity increases on interest rates are transitory, lasting only during the adjustment period. Once the market is fully adjusted to such changes the effects on interest rates are eliminated.⁽¹⁶⁾

We see, then, that with an unchanged rate of time preference,⁽¹⁷⁾ an entrepreneur would be willing to offer a higher rate of interest to borrow funds to acquire resources for invest in a project expected to be more productive than one expected to be less productive, until competition bids away the profit opportunity at which time he is no longer willing to pay the higher rate of interest.

Therefore, though time preference is, and productivity is not, essential to, i.e., a necessary condition for, the existence of interest (Bohm Bawerk, 1959, 73-120, 290-308; Mises, 1998, 524-532; Rothbard, 2004, 297-301, 313-332) nevertheless changes in productivity can and do affect market rates of interest.

In sum, the originary rate of interest is a pure time preference phenomenon. Therefore, the theory of interest is a pure time preference theory. Bohm Bawerk, 1959, 73-120, 290-308; Mises, 1998, 524-532; Rothbard, 2004, 297-301, 313-332). However, market rates of interest, whether in the ERE or in the real world are affected by other factors. These include changes in productivity and the expenses

incurred in acquiring collaborating factors necessary to the functioning of the credit business. They affect market interest rates in the ERE as well as the real world, whereas others, risks of default and of (unanticipated) inflation or deflation, and entrepreneurial profits are non-existent in the ERE, but are relevant in the real world.

7. Conclusion

If macroeconomics is to be placed on a microeconomic basis, praxeology must be employed. If so, then the ex ante and ex post analysis commonly applied to spot markets (necessary gains to both parties in the former case) must also be employed in exchanges at different times, namely, borrowing and lending. The pure time preference theory of interest is of course a staple of Austrian economics. However, in non-ERE conditions, e.g., the real world, it is no violation of praxeology to say that other influences impact the rate of interest; certainly, productivity changes can be one of these phenomena.

Appendix

Mises (1996, 483-484) describes the phenomenon known as time preference as: “Satisfaction of a want in the nearer future is, other things being equal, preferred to that in the farther distant future;” and, “The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant.” That is, time preference is the preference for the satisfaction of a *specific* want sooner rather than later, ceteris paribus, or, alternatively stated, time preference is the preference for gratification of a *specific* desire presently rather than later, ceteris paribus. Because it is concerned with specific wants or desires, ceteris paribus, it takes the form of: $A_0 > A_1$, where A, regardless of subscript, stands for the satisfaction of the exact same specific want or the gratification of the exact same specific desire, and the subscript refers to the point in time of such satisfaction or gratification, where 1 is later in time than 0, and $>$ means “is preferred to.”

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Notes

- (1) The authors thank Lew Rockwell, Steve Berger and the Mises Institute for financial support in the aftermath of Hurricane Katrina.
- (2) Whether either or both parties' retrospective evaluation of the exchange will yield a gain will only be known after it has occurred. Moreover, the ex post evaluation of either or both parties may change, and that more than once, and this is particularly likely to happen if the exchange involves durable assets, and the more durable they are the higher is the probability of this occurring. See Barnett and Block, unpublished.
- (3) What is less commonly accepted, though equally true, is that all parties to an involuntary; i.e., coerced, exchange also expect to be made better off thereby. For example, if A threatens to kill B unless B hands over his money to A, which he would not do were there no threat, and B complies, then it is not only A who is made better off by the coerced exchange, but B also is better off according to his, B's, own evaluation of the exchange, else B would not hand over his money. That is, praxeologically speaking, all action consists in preferring (demonstrably through action) X to Y, or vice versa. B, in this case prefers to acquiesce to A's demand; i.e., give up his money in the hope that A will not kill him, then to not hand over his money with the fear that A will carry out his threat and kill B. There are two reasons it is a common place to say that the coerced party is made worse off by a coerced exchange: 1) because the coerced party, himself, thinks so, else he would not have to be coerced; and, 2) because we as a society do not think that the coercing party has the moral or legal right, in contradistinction to the physical power, to confront the other party with the proffered choice. Thus, A has every right to "force" B to choose between the options: give me your money and you will receive, say, Z (which Z A has every right to exchange for B's money) or you will not receive Z. (Note, B is forced to make a choice once A makes the offer.) On the other hand A has no right at all to force B to choose between the options: your money or your life.
- (4) The very use of the term "sales" necessarily implies that the sale is an exchange of goods for money, and not a trade of goods for goods.

(5) Because the term “time preference” is ambiguous, we shall use two terms: “narrow time preference” and “broad time preference.” The difference is explained in the appendix.

(6) See also Hayek, 1945.

(7) Economies are usually classified as barter or monetary. Seemingly, there are three types of economies, at least conceptually: pure barter, pure monetary, and mixed. A pure barter economy is one in which there is *no* indirect exchange, save because of error. That is, all transactions take the form of X for Y, with no intention on the part of either party to then further exchange what was received for anything else. Of course, it might well be that after the initial trade conditions change in such a way that one or both of the parties decides to further exchange that which was received initially. At the opposite end of the spectrum, a pure monetary economy is one in which every exchange is indirect. That is, every exchange takes the form for X for M (the monetary good), or vice versa, M for X. Finally, a “mixed” economy is one in which some exchanges are direct and some indirect. In reality, save for the absolutely most primitive, probably all actual economies are mixed. In such cases, the decision whether to refer to a particular economy as barter or monetary is subjective and depends, undoubtedly, upon the relative share of each type. However, these three alternatives can be reduced, conceptually, to just two: barter and monetary exchange, with the real world mixed system merely an amalgamation of these two more basic categories.

(8) Creditors’ gain is used instead of buyers’ or sellers’ gains because in a barter economy the terms buyers and sellers are ambiguous. In a monetary economy, if one wished to refer to gains of the creditor in terms of buyers’ or sellers’ gains, the term buyers’ gain is the appropriate one, as the creditor is the one who can be said to have purchased, either in the initial sale or in a resale by a prior owner, a promise from the borrower for by paying for it with money, now.

(9) The one conceptual exception to this, which is totally irrelevant to reality, is the case of an ERE with n -goods, in which all $n(n-1)/2$ relative prices are fixed, in which case even though every transaction be indirect, any good may be used as a numéraire, thereby making commensurable that which in reality is not.

(10) We are dealing here with nominal values. Real interest and real interest rates; i.e., inflation adjusted interest and interest rates, are another matter, whether ex ante or ex post. In the former ex ante, case, they are subjective because they depend upon expectations of inflation, and these are subjective for two reasons: 1) the goods that are relevant to the seller of an IOU are virtually certain to differ from those relevant to the buyer of an IOU; and, 2) even if, *mirabile dictu*, they have exactly the same stock of goods, including human capital, and allocate their resources identically, unless they also have indistinguishable expectations

regarding the courses the various prices of these goods and those they intend to demand, their expectations of inflation, and thus their expectations as to the amount of interest and the interest rate involved with any specific IOU, will differ. In the latter ex post, case, the first of these factors, the difference in pertinent goods, also plays its role. However, as expectations are not relevant, the second factor, differing expectations, plays no part. There is, nevertheless, a (different) second factor: unless each party has exactly the same historical data re the relevant prices and computes historical inflation the same way, they will disagree as to the historical rate of inflation re the relevant goods.

(11) In addition to time preference, the other condition necessary for interest – that the credit transaction be in terms of commensurables – would necessarily be met in the ERE as no objective exchange ratio would ever undergo alteration; e.g., there is no risk either of default or of inflation/deflation. Because of the very nature of the ERE, whatever amount of interest pertained to any point in time or time period would pertain at every other point in time or time period of equal duration.

(12) We are indebted to Michael Saliba for this important point concerning the expenses of the creditor.

(13) “The ceaseless changes in the demand for and supply of the various human and physical factors of production, which constantly create new opportunities *for better adjusting production to anticipated future consume wants*” (Greaves, 1990, 40, emphasis added).

(14) What about a *decrease* in productivity? The same analysis would hold, mutatis mutandis, again given the absence of ERE conditions.

(15) This discussion could be in terms of higher rental rates for the services of the resources instead of higher prices for their outright purchase, or some combination thereof. However, it would make no difference as higher rental rates would result in higher prices, and vice versa.

(16) Of course, in the real world productivity is continuously changing so that the market is never fully adjusted, with consequent effects on interest rates.

(17) It could be argued that becoming aware of the opportunity to use S to produce Y decreased the entrepreneurs’ future orientedness; however, to do so would be to trivialize the concept of time preference and, in the process define away the possibility of productivity affecting the rate of time preference.