

ECONOMIC ENTROPY

Revisionist Theory and History of Money

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DEDICATED TO THE MEMORY OF FERDINAND LIPS WHO ARDENTLY
ADVOCATED THE PRESERVATION OF KNOWLEDGE HOW TO RUN A
GOLD STANDARD SO THAT IT CAN BE PASSED ON TO FUTURE
GENERATIONS

Abstract

Economists have neglected to study the phenomenon of vanishing uncertainties and risks in the production process as maturing goods approach the final consumer who is eager to buy them at established prices. We fill this gap in resurrecting Adam Smith's long-forgotten notion of social circulating capital. Then the propensity to consume appears as the volume, and the discount rate as the marginal productivity of social circulating capital. It turns out that the rate of interest and the discount rate are entirely different concepts animated by entirely different forces. The fundamental error of Mises and Rothbard in confusing the two was due to insufficient research, in particular, ignorance of economic entropy, the measure of the disappearance of uncertainty and risk. It was also due to their denial of liquidity, the fruit of maximum entropy.

Social Circulating Capital

When does a river cease to be a river? At the moment it gets within sight of the sea. As the river is descending to sea level significant and conspicuous changes occur. The salinity of the water increases sharply and, with it, the ecology changes. Water molecules lose their potential energy and their kinetic energy is converted to entropy.

Similarly, the flow of myriad goods from producer to market also undergoes a remarkable metamorphosis when it gets within sight of the consumer. Adam Smith was the first to notice this interesting phenomenon. He formulated the concept of social circulating capital. By this he meant the mass of finished or semi-finished consumer goods which has reached sufficient proximity and is moving sufficiently fast to the ultimate cash-paying consumer so that its destiny of being consumed presently can no longer be in doubt.

The analogy between the flow of goods to the final consumer and the river emptying into the ocean can be profitably extended to include economic entropy. The risks and uncertainties, so characteristic of processing in the earlier stages of production, all but disappear by the time the maturing goods become part and parcel of social circulating capital and sale at the going price can be taken for granted. Speculation and other forms of risk-taking give way to the highly predictable automatic processes of distribution. In particular, established retail prices do not normally change in response to changes in demand because of the increase in economic entropy, measuring the reduction of uncertainty and risk.

Liquidity

The vanishing of uncertainty and risk, the emergence of social circulating capital, and increase in economic entropy are manifested in a most dramatic fashion through the appearance of liquidity. To Adam Smith liquidity was tantamount to the spontaneous circulation of real bills that he observed in Manchester and Lancashire. It refers to the qualitative difference between goods carried by the trade at virtually no risk in anticipation of sale to the final consumer at established prices, and other goods carried at considerable risk in anticipation of an eventual appreciation in value.

The importance of the market phenomenon that stabilizes values as economic entropy is maximized can hardly be overestimated. It is incumbent on the monetary economist to study it closely. The process of supplying the consumer with urgently needed goods cannot be described in terms of a black-and-white equilibrium model with circulating capital financed out of savings, as is done in textbooks for dummies. It is a transition, a metamorphosis, the description of which calls for the full spectrum of colors involving a wholly new gamut of means of payment which are legitimate substitutes for the ultimate extinguisher of debt, gold. Demand does not operate on prices; it operates on the discount rate. The vanishing of uncertainty and risk, along with the emergence of social circulating capital and the increase in economic entropy must be analyzed independently of any banks or the banking system. It is the disappearance of uncertainty and risks that gives rise to banking, not the other way around. We would never understand bank note circulation without liquidity and spontaneous bill circulation that appear in the wake of increasing economic entropy.

Liquidity can be measured by the spread between the ask and bid price. The smaller the spread, the higher liquidity is. The ultimate in liquidity is epitomized by the gold coin with zero spread. Next in line is the consumer good in urgent demand that sits on the shelf of the shopkeeper waiting to be exchanged for the gold coin of the final consumer. The bill drawn on the retail merchant inherits liquidity from the collateralized merchandise on the shelf. Higher-order goods, while they may also be liquid, are progressively less so as we move farther away from the ultimate consumer and his gold coin.

The evolution of the bill market has made the circulating gold coin in the hand of the consumer extremely efficient, far beyond the limits of its physical mobility. Henceforth only finished consumer goods would be sold against gold coins at the retail counter. Semi-finished goods at various stages of production and distribution would be traded against bills of exchange. At the end of each quarter all transactions are cleared, and all outstanding bills paid from the proceeds of the final sale of first-order goods into which fast-moving higher-order goods have matured. The gold coins of the final consumer liquidate all claims that have arisen during the maturation of goods.

Propensity to Consume

The volume of social circulating capital and changes in its composition are of the highest importance. They change as a result of arbitrage between the consumer goods market and the bill market. The arbitrageur is none other than the shopkeeper who makes the crucial decision which items to carry on his shelves and which ones to discontinue. In these decisions he is guided by one consideration alone: the wishes of the sovereign consumer. For this reason, propensity to consume can be identified with the volume of social circulating capital. If the latter is visualized as a great river emptying into the sea of consumption, then an increase in propensity to consume appears as the merger of some of the tributaries with the main river (tide). Conversely, a decrease appears as the separation of a new tributary from the main flow (ebb). These changes are not merely quantitative but, on a periodic basis, become qualitative following the change of seasons. The composition of social circulating capital is changing along with the change of volume. Above all, it is a change in the variety of its components. Interestingly, the mechanism whereby the wishes of the sovereign consumer are transmuted into changes of stock in the retail

store, to wit, arbitrage of the marginal shopkeeper between the bill market and the consumer goods market, has escaped the attention of the economists. A detailed analysis follows.

Marginal Productivity of Social Circulating Capital

Each merchandise on the shelf of every retail shopkeeper has a productivity of its own that can be measured by the ratio of the percentage of the retail mark-up (with due allowance being made for overhead) to the average length of its sojourn on the shelf. Thus if the retail mark-up on \$1 worth of sauerkraut is $\frac{1}{2}$ cent and the average sojourn on the shelf of one bottle is three months, then the productivity of sauerkraut is $(1/2)/(3/12) = 2\%$ per annum. The merchandise on the shelf of the marginal shopkeeper with the lowest productivity is called the marginal item of social circulating capital. The marginal shopkeeper is the one who is first to change the composition of his stock at the first sign of change in the willingness, buying habits, and taste of the consumer. In other words, the marginal shopkeeper adjusts the volume of social circulating capital to the propensity to consume. The marginal item will disappear from the shelf as propensity to consume declines, because it will not be re-ordered by the marginal shopkeeper, and no more bills will be drawn against its movement from producer to consumer. Another item on the shelf with a higher productivity will take its place as the new marginal item.

The rate of marginal productivity of social circulating capital is the productivity of the marginal item. In more details, it is the rate at which the opportunity cost of carrying the marginal item on the shelf becomes critical to the marginal shopkeeper. The reference is to his opportunity to carry bills drawn on other shopkeepers with faster-moving merchandise, rather than carrying the marginal item on his shelf. Indeed, the marginal shopkeeper is doing arbitrage: he is letting his stock of marginal merchandise run down whenever the rate of marginal productivity of social circulating capital increases. This happens precisely when the propensity to consume declines. The old marginal item with a low productivity gives way to the new with a higher productivity. Through his arbitrage the marginal shopkeeper is able to escape a deep cut in his income due to seasonal and other changes in demand. He can, thanks to his portfolio of real bills, participate in the higher earnings of his colleagues operating with higher productivity. Conversely, the marginal shopkeeper will sell bills from portfolio and re-order some (heretofore submarginal) merchandise which he is now willing to carry in stock, provided that the rate of marginal productivity of social circulating capital decreases. This happens precisely when the propensity to consume rises. Higher consumer spending will promote a submarginal item with a lower productivity to become the new marginal item. Thus we have proved our First Theorem asserting that the rate of marginal productivity of social circulating capital varies inversely with the propensity to consume.

Discount Rate

The arbitrage of the marginal shopkeeper between the bill market and the consumer goods market is the centerpiece of the analysis of the discount rate. We shall now prove our Second Theorem asserting that the discount rate is equal to the rate of marginal productivity of social circulating capital. At every moment the marginal shopkeeper (who may be impersonated by a different shopkeeper from one point in time to the next) is guided by two indicators: (1) the rate of marginal productivity of social circulating capital; (2) the discount rate. If the former is higher, then he will sell real bills from portfolio and order a new marginal item to display on his shelf. As a consequence (1) decreases while (2) increases (since the fall in the price of real bills makes the discount rate rise). Conversely, if the latter is higher, then he will discontinue offering the marginal item and will purchase real bills to put in portfolio instead. As a consequence (1) increases while (2) decreases (since the rise in the price of real bills makes the discount rate fall). In either case the two rates get equalized.

A higher discount rate heralds to all shopkeepers a decline in the propensity to consume. Instead of re-ordering marginal merchandise they will in response buy real bills in order to benefit from the higher discount rate. Social circulating capital shrinks. Conversely, a lower discount rate heralds to all shopkeepers a rise in the propensity to consume. They can now beat the discount rate by offering a greater variety of goods to the consumer, so they will reduce their portfolio of real bills while ordering new merchandise to display on their shelves. Social circulating capital expands.

This arbitrage of the marginal shopkeeper between the consumer goods market and the bill market that regulates the discount rate is analogous to, but conceptually is very different from, the arbitrage of the marginal producer between the producer goods market and the bond market that regulates the (ceiling for the) rate of interest. Comparison of the two reveal that the discount rate is different from the rate of interest. The economic forces changing the two rates are different. The force driving the rate of interest is the propensity to save. As is well-known, the rate of interest varies inversely with the propensity to save. The force driving the discount rate is the propensity to consume. It is immediate from our First and Second Theorems that the discount rate varies inversely with the propensity to consume: rising propensity to consume is tantamount to a falling discount rate and vice versa.

It is important to note that the two propensities are not complementary. A third one, the propensity to hoard, is sandwiched between them. Thus it is possible for the rate of interest and the discount rate to rise together. It simply means that people are hoarding goods. By the same token it is also possible for the two rates to fall together. It means that people are dishoarding previously hoarded goods. The propensity to hoard plays a pivotal role in the genesis of the Kondratiev long-wave cycle. This is a topic for a forthcoming article.

There is only one constraint limiting the relative moves of the two rates. The rate of interest is not at liberty to fall below the discount rate. Having said that, we must admit that illicit interest arbitrage, or financing bond purchases through the sale of bills at the lower discount rate (a.k.a. borrowing short in order to lend long) could engineer such a fall. This has been a lucrative if illegitimate source of profits for banks quick to make a buck by short-changing the public. Illicit interest arbitrage plays a pivotal role in the genesis of the business cycle. Again, this is a topic for another forthcoming article.

Supply/Demand Equilibrium

We conclude that the vulgar supply/demand equilibrium model is inoperative in the consumer goods market. Supply is not an independent variable: it is closely regulated by demand through changes in the discount rate. It is insulated from the "slings and arrows of outrageous fortune" by the paraphernalia of self-liquidating credit. An increase in demand lowers the discount rate, which quickly brings out a greater variety of consumer goods. Conversely, a decrease in demand raises the discount rate, which quickly eliminates marginal merchandise from the shelves of retail stores. Consumers who still want them will have to look for them in specialty shops where they will be available albeit at a higher price, since moving them can no longer be financed through real bills, that is, through self-liquidating credit at the discount rate. It has to be financed through funds borrowed at the higher interest rate. Thus we observe the curious but pleasing fact that the price of goods belonging to the social circulating capital cannot be upset through supply and demand shocks.

Economists who are unable to distinguish between the discount rate and the rate of interest are at a loss to explain why retail prices under the gold standard were stable even in the face of changing demand. Their denial of concepts such as liquidity and economic entropy reduces them to play the role of stooges riding on the coattails of the enemies of freedom, the protagonists of irredeemable currency. The latter know full well that they have nothing to fear from a color-blind

gold standard outlawing the bill market as it is doomed to failure anyway. Only a gold standard recognizing the full spectrum of colors in the light of liquidity and entropy that rehabilitates international trade in real bills will scare them.

References

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