

## INTEREST AND DISCOUNT and the continental divide between them

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### Telling apart a bill of exchange and a mortgage

Charles Rist writes in his *History of Money and Credit from John Law to the Present Day* that “identifying the discount rate with the rate of interest, which is frequent among English writers, is an unfortunate source of confusion”. One English writer who is free from that blemish is John Fullarton. In the great debate between the Banking School which he represented, and the Currency School which he opposed, he wrote in 1844:

“It is a great error indeed to imagine that the demand for...a loan of capital is identical with the demand for additional means of circulation, or even that the two are frequently associated. Each demand originates in circumstances peculiarly affecting itself, and very distinct from the other.”

The confusion of which Rist talks about is the thinking that “discount rate” is just another name for short-term rate of interest, and the difference between the two does not go beyond the difference in the manner collecting it, either by charging it at the end of the loan period, or taking it out from the proceeds of the loan in advance. As a matter of fact, the difference goes far deeper than that. The two rates are entirely different conceptually. Their sources are different. Forces formatting them are different.

There are two sources of credit, with a continental divide between them. To recognize this fact is especially important for the banker’s profession. As the old aphorism says, there is no easier profession than that of a banker, as long as he can tell apart a bill of exchange and a mortgage.

### Fixed *versus* circulating capital

According to Adam Smith “there are two different ways in which capital may be employed so as to yield a revenue...to its employer...: circulating capital... and fixed capital.” As a first approximation may we just say that one source of credit has to do with *fixed capital* and its scarcity is measured by the rate of interest, while the other has to do with *circulating capital* and its scarcity is measured by the discount rate. Both rates are a market phenomenon: the former is regulated by the *bond market*, and the latter by the *bill market*. The rate of interest varies inversely with the *propensity to save*, and the discount rate varies inversely with the *propensity to consume*. A common mistake is to assume that the two propensities are antithetical, that is, when people save more they must consume less, and *vice versa*. This simplistic view ignores the *propensity to hoard*. In monetary economics hoarding is not a subset of saving. Hoarding is more like the opposite of saving: it originates in protest against low interest rates. I shall not go into the problem of hoarding here which is a topic for another occasion. Suffice it to say that it is possible for both the propensity to save and the propensity to consume to fall at the same time. The paradox finds its explanation in the simultaneous rise in the propensity to hoard.

## Social Circulating Capital

Recall Adam Smith's concept of *social circulating capital* from *The Wealth of Nations*. It is that mass of finished goods demanded most urgently by the consumer, plus the mass of semi-finished goods that go into their production. Social circulating capital must move through the various stages of production and distribution sufficiently fast so that the end-product will have been sold to the ultimate cash-paying consumer in less than 91 days (or 13 weeks, or 3 months: the length of the seasons of the year).

Social circulating capital does change both as to its volume and its composition. The latter follows the change of seasons. Volume changes with the propensity to consume: it expands or contracts according as the propensity gets higher or lower. The criterion to decide whether an item does or doesn't belong to the social circulating capital is whether the bill of exchange on that item will or will not circulate spontaneously.

## Marginal productivity of circulating capital

Every finished good belonging to the social circulating capital has its own rate of productivity measured by the ratio between the percentage or retail mark-up and the average length of sojourn of that item on the shelf of the shopkeeper. For example, if the markup on \$1 worth of sauerkraut is  $\frac{1}{2}$  cent, and the average length of sojourn of a bottle of sauerkraut on the shelf is

3 months, then the productivity of sauerkraut is  $\frac{1}{2} / \frac{3}{12} = \frac{12}{6} = 2$  percent per annum. The item

with the lowest productivity on the shelf of the marginal shopkeeper is called the *marginal item* of social circulating capital. It is the item that will first disappear from the shelf if the propensity to consume declines, as it will not be reordered. Another item on the shelf with a higher productivity will take its place as the marginal item. The *marginal shopkeeper* is the first among the shopkeepers to change the composition of his stock on display following a change in the propensity to consume.

The *rate of marginal productivity of social circulating capital* is that 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 handling faster-moving merchandise, rather than carrying the marginal item on his shelf. Indeed, the marginal shopkeeper is the arbitrageur who lets his stock of marginal merchandise get sold out without replenishing it, and who buys bills with the proceeds whenever the propensity to consume declines. Conversely, the marginal shopkeeper will sell bills from portfolio and reorder some heretofore submarginal items which he is willing to display on the shelf once the propensity to consume increases. This arbitrage enables him to eliminate variations in his income due to seasonal and other changes in demand. At the same time he can, thanks to his bill portfolio, participate in the earnings of other shopkeepers operating with higher productivity.

## Marginal productivity of fixed capital

My readers will recognize the obvious analogy between the arbitrage of the marginal entrepreneur trading bonds against capital goods deployed in production, and that of the marginal shopkeeper trading bills against consumer goods displayed on his shelf. In my earlier paper *The Paradox of Interest Revisited* I have described the ceiling of the rate of interest as the rate of marginal productivity of fixed capital. It is the rate at which the opportunity cost of carrying capital stock becomes critical to the marginal entrepreneur. The

next increase in the rate of interest will prompt him to sell his capital stock — in view of his opportunity to carry his capital assets in the form of the higher-yielding bond. Thus the rate of interest is regulated by the arbitrage operations of entrepreneurs between the bond market and the market for capital goods. They will not let the rate of interest go through the ceiling. They will stop production, discontinue maintenance of capital stock, abolish depreciation quotas, and with the savings they will keep buying the undervalued bond whenever the rate of interest is too high (the price of bond is too low). They will refrain from buying new capital equipment and refuse to expand production until bond prices recover. At that time they sell their bonds at a profit, re-equip their factories, and join productive enterprise once more. We see that persistent buying of bonds by entrepreneurs will cap the rate of interest at the ceiling. We also see that the marginal entrepreneur can, thanks to his bond portfolio, participate in the earnings of other entrepreneurs operating with higher productivity. This is just the well-known interest-rate cycle demonstrating the damping effect of high interest rates, and the stimulating effect of low interest rates, on production.

### A symbiosis

Changes in the marginal productivity of social circulating capital reflect changes in the propensity to consume. But they also help financing the stockpiling of seasonal merchandise. For example, winter is the season for selling vast quantities of fuel in the temperate zones. Come spring, merchants sell out their inventory of fuel without replenishing stocks. They invest their funds in the bills of other merchants who are just entering their main season, say, those who sell gardening equipment and flower seeds. It is this symbiosis that makes the shopkeeper's job possible in the face of the seasonal nature of the business, and in the face of the proverbial capriciousness of consumers. When in their main season the shopkeepers' income is generated by selling merchandise in high demand. When in their slow season, their income is augmented by the discount earned while holding bills drawn on merchants in their high season. At the same time they help their colleagues finance stockpiles.

It is important to realize that social circulating capital constantly changes its constitution as various items of consumer goods fall in and out of it, due to changes of the seasons of the year, or to changes in the propensity to consume. Classical economics maintains that it is the price mechanism that brings about equilibrium between the supply and demand of consumer goods. The fact, however, is that the price mechanism is too sluggish and cannot keep up with the capriciousness of the propensity to consume. The supply/demand equilibrium theory of price also fails to explain why the cost of fuel in winter does not go sky high. In fact, it is not significantly higher than in summer.

### Second source of credit

In other words, we are looking for an explanation how the market for consumer goods deals with the problem of seasonality of merchandise and capriciousness of consumer demand. The explanation can be found in the nimbleness of the discount rate, and the fact that bills of exchange drawn on goods moving fast enough to the ultimate cash-paying consumer enter monetary circulation spontaneously. As semi-finished goods keep "maturing", and as producers pass them along, one to the next, they accept bills of exchange in payment. This epitomizes a second source of credit namely *clearing*. It is in addition to the first which is *saving*. The maturing consumer good is in sufficient proximity to the ultimate cash-paying consumer so that its removal from the market can hardly be doubted. The usual risks associated with production disappear. At that point the market "monetizes" the bill lending it ephemeral monetary qualities.

## Credit independent of lending and borrowing

Indeed, credit can and does arise independently of lending and borrowing. Take the example of wool and its journey from the sheep-farm to the cloth store, involving the sheep-farmer, the wool merchant, the spinner, the weaver, and the cloth merchant. When the weaver draws a bill on the cloth merchant calling for payment in 91 days, he is certainly extending credit. Yet in spite of appearances the weaver is not a lender and the cloth merchant is not a borrower, and it would be wrong to look at the transaction as a loan. The perception that the drawer of a bill grants a loan to the acceptor which the latter repays at maturity is entirely fallacious and must be resisted. *It is preposterous to suggest that the producer of higher-order goods is lending when he supplies semi-finished goods to the producer of lower-order goods.* The semi-finished good hardly has a marketability, although it will improve greatly in the hands of the producer of the lower-order good. It is always the producer of the lower-order good, by virtue of standing that much closer to the ultimate cash-paying consumer, who is instrumental in the rise of this type of credit arising, as it is, from clearing rather than from lending. The credit is an integral part of the deal to supply producers of lower-order goods with semi-finished products by producers of higher-order goods. By merchant custom the term “91 days net” is part of every such commercial deal. Stated otherwise, prices quoted by the wholesaler to the retailer are discountable prices. The amount of discount depends on the number of days the credit is being used, and on the discount rate prevailing at the time of the commercial transaction.

### “Wagon-way in the air”

The bill drawn on the cloth merchant by the weaver, properly endorsed, is acceptable in payment by the spinner for the yarn. The same bill is further acceptable in payment by the wool merchant for the wool delivered. (Accepting a bill in payment is also called “discounting” it, since the face value is discounted by the number of days remaining to maturity.) In fact the demand for bills is such that they are acceptable even outside of the nexus of the wool and cloth trade. Producers of higher-order goods will accept them when delivering semi-finished products to their customers. With two good signatures and a string of subsequent endorsements on the back, the bill is a potent form of means of exchange. In a “violent metaphor” which looked so outrageous in 1776 that Adam Smith thought he ought to apologize for its use in the *Wealth of Nations*, the bill of exchange is a “wagon-way in the air” freeing up valuable land for growing produce. The meaning is that the use of bills as a circulating medium frees up funds and makes them available for use as fixed capital.

### Achillean heel of monetarism

The foregoing illustrates the contact between interest and the marginal productivity of fixed capital, and the analogous contact between discount and the marginal productivity of circulating capital. The latter is embodied by the marvelous instrument that emerged in the trading Italian city-states of the *Trecento*, the bill of exchange.

The idea that the bill of exchange can circulate on its own wings and under its own steam has been ridiculed by devotees of the Quantity Theory of Money. The vicious attacks on the Real Bills Doctrine expose the Achillean heel of monetarism. It reveals that an increase in the quantity of purchasing media will not always and necessarily cause a rise in prices. If the new purchasing media emerges simultaneously with the new merchandise, and the two disappear together as the merchandise is removed from the market by the ultimate cash-paying consumer (as is the case whenever the production and distribution of consumer goods

is financed through bills of exchange), *there will be no price rises on account of an increase in the volume of bill circulation.*

### **The most liquid earning asset in existence**

After discounting bills has become a universal practice, demand for them increased greatly. Tradesmen found it to their advantage to hold the bills drawn on retail merchants to maturity. They looked at bills as a unique instrument combining two seemingly contradictory features, that of being (1) an earning asset, and (2) a medium of exchange. In fact, bills provided the only way of generating an income on cash holdings temporarily idled by seasonal factors or by an unexpected fall in the propensity to consume. As a rule, earning assets are illiquid. It takes time to liquidate them, to say nothing of possible losses. With the appearance of discounting all this has changed. Now tradesmen could earn an income on that part of their circulating capital which they had to carry in the form of cash temporarily. As most businesses are cyclical in nature, tradesmen have faced great fluctuations in their cash needs. Now they can enjoy an income generated on their idled circulating capital as they are entering their slow season. *The bill of exchange is the most liquid earning asset in existence.*

### **Theorem on the Formation of the Discount Rate**

*The discount rate is equal to the rate of marginal productivity of social circulating capital.* Indeed, if the discount rate rises, the marginal shopkeeper no longer finds it profitable to carry the marginal item on his shelf and will discontinue it. Social circulating capital shrinks and another item with a higher productivity will take over as the marginal item. The rate of marginal productivity of social circulating capital therefore increases along with the discount rate. Conversely, if the discount rate falls, the marginal shopkeeper can afford to display hitherto submarginal items on his shelves. Social circulating capital expands as the marginal item is replaced by another item with a lower productivity. We conclude that the rate of marginal productivity falls together with the discount rate.

Shopkeepers will not let the discount rate deviate from the rate of marginal productivity of social circulating capital. Such a deviation would offer profitable risk-free arbitrage opportunities. If the discount rate exceeded the rate of marginal productivity, then shopkeepers would sell out marginal merchandise and put the proceeds into bills. In the opposite case, when the rate of marginal productivity exceeded the discount rate, shopkeepers would sell bills from portfolio and use the proceeds to display more marginal merchandise on their shelves. In either case the spread between the two rates would close and the opportunity for risk free profits would disappear. It is clear that the discount rate is regulated by the shopkeepers who follow orders issued by the sovereign consumer.

### **Real Bills Doctrine**

The market economy comes equipped with a natural built-in clearing system that will generate all the credit necessary to move goods in high demand from the producers to the retail outlets. These credits do not originate in savings. They originate in clearing. They originate in the very process whereby producers of higher-order goods pass along the maturing semi-finished good to producers of lower-order goods.

A real bill is a bill of exchange drawn by the wholesale merchant (the drawer of the bill) on the retail merchant (the acceptor of the bill) specifying the kind, quality and quantity of merchandise shipped, and specifying the sum (the face value of the bill) and the date on which it falls due (the maturity date of the bill, in any event no longer than 91 days from the

date of billing). In order to be valid, the bill has to be accepted by the retail merchant writing across its face over his signature “I accept”.

The Real Bills Doctrine of Adam Smith states that a real bill can, before its maturity date, circulate as a purchasing medium. Specifically, the wholesale merchant can use the bill he has drawn on the retail merchant to pay his suppliers by endorsing the bill on the back. Everyone who subsequently receives the bill in payment can use it in a similar fashion. Endorsement signifies that one endorser has assigned the proceeds to the next. Upon maturity bearer will mark the bill “paid” over his signature, and will turn it over to the retail merchant against payment of face value.

The real bill is a non-inflationary purchasing medium which the market has endowed with *limited* monetary privileges. Non-inflationary, because the face value of the bill is matched dollar-for-dollar by the value of the emerging merchandise. Limited, because upon maturity the purchasing medium expires while the underlying merchandise is removed from the market by the ultimate cash-paying consumer.

In many ways the spontaneous circulation of real bills is a miraculous process. Nobody has designed this system of clearing that makes goods in demand move along from the producer to the consumer *without outside financing*. Emerging goods finance their own production and distribution without taking one penny out of the piggy-banks of savers, and without legal-tender coercion, as long as they are demanded urgently enough by the consumer.

### **Self-liquidating credit**

For this reason the real bill is said to represent *self-liquidating credit*. The ultimate sale of the underlying merchandise will liquidate all the credits that have been granted in moving it forward to the consumer, whether there are four, fourteen, or forty hands involved in the process. Progress in division of labor, making the journey of goods from producers to consumers ever more “roundabout”, will never cause a shortage of purchasing media (as it would under the so-called 100% gold standard).

### **Gold Standard**

Under the international gold standard there arises a tendency for gold to flow from a country with a lower discount rate to another with a higher one. As a result the discount rate tends to get equalized in all those countries adhering to the gold standard. The gold flows are induced by arbitrage in bills drawn on various foreign centers. Continuing arbitrage would keep up the gold flows until the spread between the various discount rates disappeared. This observation invites the following critique of the classical theory of the international gold standard (due to Cantillon), according to which gold flows across international boundaries induce changes in the relative price levels between countries — purporting to explain the adjustment mechanism of international trade by claiming that the price level is supposed to rise or fall according as the country is gaining or losing gold.

In reality this is not what happens. As our more sophisticated model shows, if the country gains gold, the new gold will first flow to the bill market and bid up the price of bills. The greater relative abundance of gold will lower the discount rate. In response shopkeepers will fill their empty shelf-space with marginal merchandise. The gold inflow will not pump up the price level. By the time the new gold trickles down to the rest of the economy in the form of higher wages and profits, the extra merchandise will be in place waiting for the greater consumer spending to materialize. Conversely, if the country loses gold, the gold is withdrawn from the bill market. There is an immediate increase in the discount rate, causing

shopkeepers to eliminate marginal merchandise from the shelves. The gold outflow or increased gold hoarding will not result in a squeeze on prices. Instead, it will cause social circulating capital to contract. Marginal merchandise will no longer be available in every grocery store. The consumer who still wants it will have to search for it in specialty shops, or order it directly from the producer.

### **International gold flows**

Economists are still wondering how the Bank of England could run the international gold standard on such a paltry gold reserve during the one-hundred-year period between the Napoleonic Wars and World War One, and how the enormous volume of pre-1914 world trade could be financed with such meager gold flows as recorded by statisticians.

The explanation is that it is not the difference in relative prices but the difference in the discount rates that is the real driving force of world trade. You couldn't do better than exporting to a country with the highest discount rate. This particular profit opportunity is ephemeral and will disappear momentarily due to competition. Imports are financed by exports, not by gold flows. Even capital movements from one country to another are financed by trade flows under the gold standard. Just as the discount rate, the rate of interest also tends to get equalized among countries that adhere to the gold standard. Capital flows piggyback trade flows. The capital-importing country has, of necessity, a higher discount rate that will not fall until after the capital import has been completed. Gold flows hardly ever cross international boundaries.

It is hard for the contemporary observer to fathom just how efficient the international gold standard had been, thanks entirely to the spontaneous monetization of real bills, before the Guns of August shot it to pieces in 1914.

### **Fundamental Principle of the Retail Trade**

*The adjustment mechanism which brings into balance the amount of gold in circulation with the supply of goods in retail trade does not operate on the price level, as wrongly suggested by the Quantity Theory of Money. It operates on the marginal productivity of social circulating capital or, what is the same, on the discount rate.* In particular, the law of supply and demand is not applicable to the retail trade. An autonomous increase in demand for consumer goods has no inevitable effect on prices but will, instead, lower the discount rate. This is synonymous with an increase in the volume of social circulating capital. Under the gold standard increased demand automatically brings out an equivalent increase in supply. An autonomous decrease in demand has the opposite effect. There is no such a thing as an autonomous change in supply as far as the retail trade is concerned: supply is strictly regulated by demand through the mechanism of the bill market and the discount rate.

### **Failure of the Quantity Theory**

If a country is stricken with an earthquake or some other calamity destroying property and goods, there will be an immediate increase in the discount rate. Retail prices will not rise inevitably if the country is on the international gold standard. The stricken country, thanks to its higher discount rate, is an attractive place on which to draw bills. This translates into an immediate influx of short-term capital from abroad in the form of the most urgently needed consumer goods.

If the output of gold mines in a country increases by leaps and bounds, or if there is an invasion of foreign gold, there will be no inevitable increase in retail prices as predicted by

the vulgar theory of the gold standard. The discount rate will drop at once, and merchants will start drawing bills on foreign countries with a higher discount rate, thus repelling the invasion of foreign gold and expelling the excess of domestic gold. If they run out of shelf-space, shopkeepers will use the sidewalk. At any rate, the spin-off from higher incomes due to the greater availability of gold will be met by a commensurate expansion of the offering of marginal merchandise which shopkeepers are able to display, thanks to the lower marginal productivity of social circulating capital. The greater availability of gold will, in this case as in every other, call out an appropriate increase in the supply of marginal merchandise. Retail price rises are always and everywhere the result of the scarcity of goods, and never a greater availability of gold.

*The Quantity Theory of Money as it is applied to the retail trade under a gold standard is false.*

## References

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## Abstract

No penetrating new study of the gold standard has been offered for the past 50 years. This article makes a fresh start. It uses the methodology of Carl Menger. It establishes the Fundamental Principle of Retail Trade: the adjustment mechanism that brings into balance the amount of gold in circulation with the supply of goods in retail trade does not operate on the price level, but on the discount rate — invalidating the Quantity Theory of Money as it is applied to the retail trade.