The Competitive Creation of Money: State-defined Currency and Free Issue of Banknotes*

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The article deals with Hayek's argument, that the only way to find an optimal money is competition between banks of issue and the conter-argument that the process of competition itself means a nonoptimal monetary order because of increased transaction cost.

1. Competition in the Production of Money

What we propose here is a unitary, state-defined currency combined with the private issue of banknotes[1]. That has been the monetary order over centuries. The currency unit has been state - defined as "Dollar", "Pound Sterling", "Franc", "Mark". Private banks did issue notes denominated in the respective unit. ("Ten Pound Sterling of the National Westminster Bank".) Our present system of a government monopoly in the definition of the currency unit and in the production of banknotes has certainly not resulted in an optimal money and it is at least doubtful whether competition in currencies[2] would yield a much better result. The central problem of this monetary order is the appropriate definition of the currency unit.

1.1. Competing Currencies

The proponents of competing currencies argue, that there is no other way to find out what the best currency will be than competition. Whilst this is probably true for goods it is doubtful for currencies. A money is a good money if it fulfills the classical functions simultaneously: means of payment, store of value and unit of account. Money is the better as a means of payment, the more people accept it. Currencies have much in common with languages: As a language is the more

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[1] For a more detailed discussion of several — not all — aspects of this article see *Engels* (1981). Similar conclusion have been reached by *Bilson* (1981) and *Yeager* (1983).

[2] As proposed by *Klein* (1974), *Hayek* (1976 a, 1976 b), *Vaubel* (1976, 1977, 1984).

valuable und useful, the more people master it, a currency is the more useful the more people take it as payment. The victorious advance of the English language has nothing to do with optimality. People learn English because so many people do speak English. If we did succed in creating a language much simpler than English, it nevertheless would have no chance on the "language market".

Let us assume that all barriers to entry into the currency market be abolished. Let us further assume that five competing currencies will be issued in Germany: The "Taler" by the Sparkassen (savings banks), the "Guilder" by the Genossenschaftsbanken (cooperative banks), the "Heller" by Deutsche Bank, the "Grossus" by Dresdner Band an the "Marc Banco" by Commerzbank. The Taler shall be denominated in silver (1 Taler = 1 ounce of silver), the Guilder in gold (1 Guilder = 1 g of gold), the Heller in oil (10 Heller = 1 barrel crude oil, Libyan type cif Rotterdam), whilst Grossus and Marc Banco are promised to be held constant in value by the banks of issue. It is well possible that the majority of the Germans trust more in the predictability of the (relative) oil price than in gold or silver. Nevertheless the Taler will be more successful in the market. The Sparkassen have about ten times the market share, the number of customers and branches than the Deutsche Bank. People will find it complicated and annoying to carry five different types of cash with them. Retailers will mark prices only in one currency, business firms will make up their balance sheets in the dominant currency etc. It will be the initial strength of the bank of issue (or banking group of issue) which decides on the outcome of the competition. That may well be not the currency which is the best in other respects (store of value, unit of account). At least there is a trade-off between the properties as a means of payment and the suitability as a store of value or unit of account. Only in very extreme situations can a market-leader be challenged by other currencies[3].

As every banker can forsee such an outcome, it is improbable that competition really will take place. Either the banks will create a common currency or the leading group of banks — as the Sparkassen in Germany — does issue a currency independently of other banks and all others will fix the exchange rates of their currencies to the market leader. Thus, if all barriers to the creation of money be removed, there will be three possible outcomes:

— There will be no competition from the outset. Consequently there will be no search process for an optimal money.

[3] *Vaubel* (1978, 1985) mentions the case of the German hyperinflation of 1923.

— There will be competition initially. This system of competing currencies is nonoptimal because information and transaction costs in a world of competing currencies are higher than under a unitary currency unit.

— An initial competition will end up in a currency monopoly[4]. As the initial market strength of the banks of issue is a decisive factor for the outcome it is not probable that the resulting money will be optimal with respect to its store-of-value or unit-of-account properties.

1.2. Competitiveness of Currencies

Let us in a second step assume that the initial market strength of the banks of issue is not decisive (p.e. because all banks of issue are equally strong). The outcome of the competition will still be a monopoly money because the transaction-cost-argument is valid. But the prevalence of one currency over the others is now dependant on other qualities than the initial market strength of the banks of issue. A banknote may be a promise of redemption of the note into a predetermined quantity of gold, silver, wheat, bricks etc. The bank may only promise that the note be kept valuable through the bank's business policy. It is highly improbable that the latter bank could find customers for its notes in a world of competing currencies[5]. The money user will now choose according to the perceived quality of the currencies. The quality of a currency now (i.e. disregarding the means-of-payment function) has two aspects: security as perceived by the money user and profitability. The banks of issue on the other hand can only make promises which can be kept. Thus p.e. the obligation to keep the price of an hour of unskilled labour constant in terms of its currency unit could not be secured by the business policy of a bank of issue. Disregarding again the possibility of a definite paper currency (i.e. a currency without any obligation of the bank) because it would not be accepted by the public, two kinds of obligations are conceivable

— redemption of banknotes into a predetermined quantity of commodities or

— redemption of banknotes into a predetermined quantity of real assets (such as stock, land, buildings etc.).

Historical examples for the first kind of obligation are all gold-, silver-, tabacco-currencies. For the second kind — real-asset-money or equity-money — there exists only one historical example — the French

[4] So even *Hayek* (1978 a), 123.
[5] *Vaubel* (1977), 451.

assignats. What has to be compared is the competitiveness of a commodity money and a real-asset-money. As a real-asset-money we choose a currency unit defined by the market portfolio ("one Mark of the Commerzbank equals the one trillionth part of all German real assets").

1.2.1. Security

Security of money has two aspects:

— the perceived security of the obligation itself and

— the probability that the bank of issue will honour its obligation.

In any commodity money the bank will have to hold a store of the respective commodity. The bank is completely safe with a 100 % money, i.e. when the total volume of currency issued is covered by its commodity store. On the other hand the profit of the bank decreases as its commodity reserve increases. It will seek a compromise between security and profitability. A real-asset-bank as well will reach the highest degree of security at a 100 % covering of its notes. But in contrast to commodity banks no compromise between liquidity and profitability is necessary. Real assets are profitable and they have to be a little more profitable than loans. That means that a real asset bank with a sufficiently diversified portfolio will be very trustworthy in the market.

To illustrate the first point: If people think that the relative price of copper is extremely uncertain, they will not accept a copper currency as standard of deferred payments, because they do not know what a promise to deliver one ton of copper really means in terms of other goods. Debtor and creditor are in this case adversely affected by changes in relative copper prices. If the relative price of copper falls unexpectedly the debtor will be enriched at the expense of the creditor and vice versa. A loan denominated in copper is thus a combination of a simple loan and a speculation on the (relative) copper price. The risk of both partners of the contract is higher than if they had chosen a good as standard of deferred payments with a stable (or predictable) relative price. The contract contains an element of a bet. If people are risk averters a standard of deferred payments can only be optimal if the combined risk of debtor and creditor is minimized.

The problem thus is to find out, what people perceive as "risk"[6]. Usually it is assumed that a money is safe, when the consumer price index is constant resp. predictable. As to our knowledge no empirical

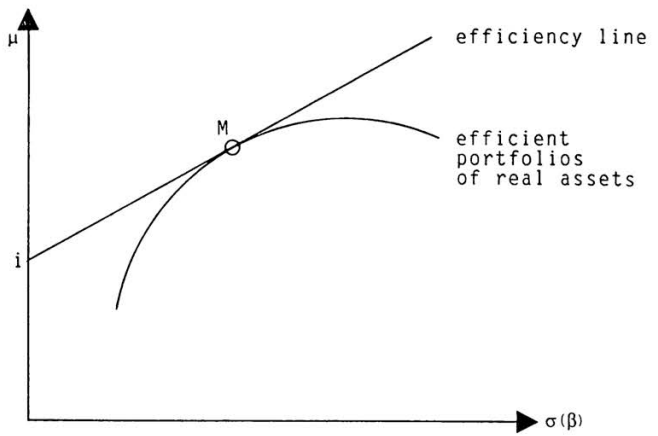
[6] Not only the size but also the sequence of the risks of different prospects may be changed using different measurement units. The problem has — under the name "Onassis problem" — been introduced by *Stützel* (1970). See also *Laux/Schneeweiß* (1972).

evidence has been produced to found the assumption. In contrast to economists sociologists normally argue, that the subjective perception of wealth is dependant on other people's wealth. If so "risk" would be the danger that one's own income will grow less than the average income. That would make the national income per head the best-suited standard of deferred payments.

Unfortunately neither an index-money with guaranteed stability of the consumer price index nor a money with predictable per-capita-income can be realized by a bank of issue under currency competition. That leaves us with only one possibility to minimize the combined risk of creditors and debtors simultaneously. If the owners of money or monetary assets are the savers and if the debtors are the investors, then the distributional risk between debtors and creditors is the danger that the money value of real assets will unpredictably rise or fall. This risk is called "systematic risc" in the capital asset pricing model (CAPM[7]). This risk is apparently minimized if the market portfolio (i.e. the totality of real assets) is itself the basis of money. In the absence of consumer credit the distributional risk between debtors and creditors collectively will be reduced to zero using the market portfolio as a measurement unit. The conclusion is that under the conditions stated above a real-asset bank of issue will be more competitive than a commodity bank of issue, because

— the probability of failure (i.e. the probability that the bank cannot honour its obligations) is lower and

[7] Traditionally the efficiency of investment in the CAPM is depicted as follows



The efficiency line is identical with the abzissa. Consequently the market valuation of any asset is only dependent on its expected yield, i. e. independent of risk.

— the obligation itself — predictability of the price of the market portfolio — is superior as a standard of deferred payments to any commodity money.

1.2.2. Profitability

The profitability of money takes the form of opportunity costs to money holders, i.e of interest forgone by holding liquidity. This cost factor is expressed as the nominal rate of interest. If the nominal rate of interest is high that means high opportunity costs of liquidity and vice versa. The lower boundary is a nominal interest rate of zero. Negative nominal interest rates cannot be achieved by competing banks of issue. A negative nominal interest rate would mean that the assets of the bank yield a lower interest rate (namely a negative one) than its liabilities. The latter consist of banknotes which — by definition — have a nominal interest rate of zero.

The maximum profitability of banknotes (i.e. the minimum opportunity cost of liquidity) which a bank of issue can offer to the bearers of its notes is determined by the profitability of the assets of the bank. Again the real asset bank is superior to the commodity bank. The portfolio of a commodity bank consists partly of the respective commodity. This part does not yield profits. Second it contains loans which under normal conditions yield less surplus than real assets — otherwise nobody would take a credit in order to invest it into real assets. Third it might contain a small proportion of high-yielding real assets. As a rule the profitability of the assets of a commodity bank can only be increased at the expense of the bank's solvency. The real asset bank in contrast reaches the highest degree of solvency with a diversified portfolio of real assets. It thus can outcompete the commodity bank with respect to the profitability of its notes. Under perfect competition of real-asset banks the nominal rate of interest would be depressed close to zero. Liquidity would be costless or — as Samuelson puts it — people would be satiated with liquidity.

1.3. The Institutional Framework of an Optimal Money

As pointed out it is very improbable that a system of competing private currencies will lead to an optimal money. The outcome of such a competition is mainly determined by the initial market strength of the banks of issue. But the outcome of the competition can be simulated, disregarding market strength. This simulation yields a money based on the market portfolio and with a nominal interest rate of zero. Money in this model is an unbeatable investment. It is completely safe, completely liquid, divisible and it has the same yield as the market port-

folio. When people are risk-averse and expectations homogenous, when there are no intermediation costs and sentimental values everybody would hold his total material wealth in the form of money. If that money were to be produced by a central bank, this bank would become the owner of all real assets in the economy. That is incompatible with a market economy. The central bank would become — whether it wanted or not — a central planning agency. That implies that note issuing should be decentralized.

We investigate first the production of a real-asset-money by a central bank and subsequently by a system of competing banks of issue.

The market portfolio consists of land, houses, factories etc. Some of these real assets are incorporated in stocks and other equity paper. When the capital market is efficient the stock price index should be highly correlated with the price of the market portfolio. Take the case where we have land and some real estate companies, which issue stocks. If the valuation of such a company in the stock market is higher than the added values of its land holdings it is profitable to issue new stocks and to buy additional land. If the company is valued lower, the wealth of the stockholders can be increased by selling land at market prices, where the receipts are poured out to the stockholders. The degree of correlation between the stock price index and the price of the market portfolio depends on factors like the easiness to issue or withdraw stocks, on the harmony or disharmony of interest between managers and stockholders, on tax differentials (p.e. between the taxation of land and of real estate companies), on the conditions at which companies can be founded or liquidated etc. If the capital market is sufficiently efficient, the market portfolio can be replaced by the stock-price index (in the form of a performance index). The definition of the monetary unit could under these circumstances be, that a performance index of stock prices be kept constant as measured by the monetary unit. That would make the production of money technically simple. The central bank could intervene every day. The bank would buy stocks and issue notes, if the stockprice index would fall below its target value; it would sell stocks and withdraw notes in the opposite case.

It should be noted, that this were the most elegant solution, but not the only one. The central bank could also buy houses, land or whole companies. The portfolio of the bank would only have to contain a sufficiently large proportion of fungible assets in order to be able to intervene quickly into the market. In this case the price of the market portfolio would have to be monitored by an institution like the bureau of statistics and it could not be assessed daily.

In the case of a central bank a legal obligation to hold the stock price index or the price of the market portfolio within a predetermined range would suffice. That is different under a regime of private and competing banks of issue. The legal framework in this case should be similar to the gold or silver currencies. The banks should have an obligation to redeem these notes. The difficulty is, that there is no such a thing as a market portfolio which can be handed out to the bearer of banknotes like gold could be handed out. In the case of the stockprice index as a substitute for the market portfolio there is again a simple solution. Let the target value of the stock price index be 100 with a range of 2 % to both sides. The stock exchange not only calculates the index daily, it also quotes the prices of all individual stocks. If the index happens to fall on a trading day to 96, then that means that every single stock is undervalued by 2 %. The stockholders in this case should be entitled to sell stocks to the banks of issue at a value of 2 % above its latest price in the stock market. If the index rises to 104 the holders of banknotes should be entitled to buy stocks from the banks of issue at a price 2 % below its latest price. In the first case the selection of stocks would have to be at the choice of the stockholders, in the second case it would have to be at the choice of the banks.

In fact that would never hapen. When the index exceeds the upper boundary of the target range all banks of issue could profitably sell stocks in the market. If on the other hand the index threatens to fall below the lower boundary every holder of stocks would anticipate, that substantial sales of stocks to the banks of issue would sharply increase the quantity of money and decrease the quantity of stocks available in the market. That means, that everybody would anticipate that a low stock price index will be followed by a high stock price index. Under these circumstances the sellers will reduce their sales plans, whilst the buyers will increase their purchasing plans — either because they expect the index to rise again or because they can make a profit by selling stocks to banks of issue.

The state in this model has the task to define the material content of the monetary unit. This is done by the introduction of purchasing and redemption obligations to any bank, which wants to issue notes. There would have to be an authority to supervise the solvency of all banks including the banks of issue. As today the banking legislation and administration cannot guarantee that banks may not go out of business. But that would be no crises of the monetary system. In case of a bank insolvency he bearers of banknotes would present the notes (which are of course identifiable as to the issuing banks) as all other creditors do. They will possibly suffer losses, but the operation of the monetary system will be in no way deteriorated.

2. Economic Consequences

The monetary order outlined here has two aspects in common with our present order:

— there is a unitary currency unit and

— the currency unit is defined by the state.

It has two aspects in common with the models of private creation of (high-powered) money, namely

— ultimate money is created by private banks in a competitive process and

— there is no state produced money and no central bank.

The banknote is an investment certificate, an equity to a share of total national wealth. Competition is — as in Hayek's model — a search process, but the search is not for better currency units but for better investment opportunities. A bank of issue is profitable only if its own investment portfolio is better than the market portfolio.

2.1. Risk Mechanics and Allocation

The capital asset pricing model (CAPM) tells us, that there is only one efficient portfolio of real assets, the market portfolio. Under the restrictive assumptions of the model (homogeneous expectations, no transaction and intermediation costs, no sentimental values) and if there exists a riskless asset, everybody will hold either the market portfolio plus riskless assets or the market portfolio minus reskless assets (i.e. will be indebted in the riskless asset). The riskless asset is thought of as money. From the model a capital market line is derived, indicating the yields at different risk. The slope of the capital market line is the price of risk. The higher the risk the higher must be the yield or, differently expressed, the higher the risk the lower is the market value of an asset at given revenue expectations.

If the capital market line is interpreted as an investment line for the firm it follows that there are investment opportunities which are not undertaken despite an above-average profitability if the risk is too high and on the other hand that investment opportunities with below-average profitability are undertaken, when the risk is low enough. Now if there were a market-portfolio-currency that would make things different. This currency — in the form of banknotes or demand deposits — carries the same yield as the market portfolio itself. It is an investment certificate on the market portfolio. If so, no risk-premium can exist as a market price. Every investor has the opportunity to invest riskless in money at the same yield as the market portfolio.

Allocation would be improved in three ways:

— Investments would exclusively be selected according to profitability, which means — in the absence of external effects, monopoly etc. — according to productivity. The productivity of capital investment would be increased.

— The investor has not to forego profits, if he prefers a safer position. Everybody can choose his preferred risk position without having to pay a price for security.

— Liquidity is costless. Nobody has to pay a liquidity premium in the form of interest foregone, if he prefers to hold a larger part of his fortune in liquid form.

It has long been derived in the theory of allocation that optimal capital allocation means that capital should yield the same rate of profit or interest in all uses and second, that the liquidity premium should be zero if money can be produced at zero cost. Both is realized in a real-asset-currency system.

2.2. Systematic Risk and Business Cycles

The sub-martingale version of the random walk hypothesis proposes that the movements of capital asset prices are randomly distributed over time around a path which is determined by the interest rate. This is not only valid for individual assets, but as well for the market portfolio. The perceived variance of the price of the market portfolio is nothing but the systematic risk of the CAPM.

Starting from an equilibrium of the relative prices of real assets, goods and wages, the equilibrium will be disturbed as the price of the market portfolio falls below the equilibrium line. The equilibrium can be restored in two ways — either the price of the market portfolio rises again or the prices of goods and the wages fall proportionately to the fall in asset prices. If goods prices and wages are sticky the fall in asset prices will result in a fall in Tobin's q-factor. That in turn means that less investment opportunities appear worth undertaking than before. That is the situation of a recession.

Now if the currency unit is defined by the market portfolio there will be no more random walk (for the market portfolio, the prices of individual assets still follow a random walk). As in a gold-currency the gold price is fixed, the price of the market portfolio is fixed in a real-asset-currency. Business cycles are started by (random) movements of the prices of real assets, p.e. because expectations become more optimistic or pessimistic. If all goods prices and wages were completely flexible the relation of asset prices, goods prices and wages would

remain unaltered. There would be only a price-level effect and a shift of wealth from creditors to debtors or vice versa. If goods prices and wages are sticky, there will be an additional employment effect. Business cycles thus are consequences of different degrees of price flexibility — asset prices being much more flexible than wages. This is reversed under a real-asset-currency: the price level of real assets is fixed, i.e. inflexible.

If under a real-asset-currency pessimism spreads among investors, they abstain from investments and hold cash or monetary assets. Demand for goods and services decreases. In a real-asset-currency system the banks in this case increase the volume of banknotes outstanding and they acquire real assets. The quantity of money is increased exactly to that extent to which the demand for money has shifted. There will be no change in real demand but only a portfolio effect: if the public shifts its portfolios from real assets into monetary assets then the banks of issue increase their stocks of real assets against an indebtment in money. There is — in Keynesian terms — an automatized deficit spending. The business cycle will disappear.

3. The World and the Image of the World

If the price of the market portfolio (measured by a performance index) is held constant, it follows that the nominal rate of interest is zero and that capital income is measured as zero. Consequently all incomes are represented as labour incomes. It has to be pointed out that this is no change in reality but only in the presentation of reality in balance sheets, national income statistics etc. The real rate of interest remains unchanged (or changed only to the extent that capital allocation is improved). Whilst in our present world asset prices (including interest and dividend payments) rise faster than goods prices at a difference which we call the real interest rate, in a real-asset-money world asset prices are constant and goods prices fall at the velocity described by the real interest rate. Capitalists get their share not in the form of explicit interest or dividend payments but in the form of an increased purchasing power of a given nominal value. Neither are capitalists worse off nor are workers better off than in our present world.

That raises the question of whether profits and interests do exist really or whether both exist only in our representations of the world. We have dealt with that question elsewhere, with the result that the image of the world, which we get under a real-asset-money is more appropriate than the one we get with our present currencies as measurement units[8].

[8] *Engels* (1984), see also *Alchian/Klein* (1973).

Some remarks on ideology seen interesting. The opposition against the market economy has always basically been founded on profit and interest. That has been the case long before Marx labelled the ratio of profits to wages the "exploitation rate".

The theory of interest was up to Böhm-Bawerk a pure justification of interest. The doctrine of the three production factors labour, capital and land was invented to justify leisure incomes. Profit was for a long time interpreted as sort of an administration fee. When corporations appeared the interpretation was no longer tenable — they paid the management and still had profits. The justification then was taken over by the "risk-premium"-argument, which is at least incomplete.

The founders of the big religions — Moses, Jesus and Mohammed — did judge interest and profit as immoral. The hostility of the churches towards the market economy up to the present day has its roots in the lectures of the founders. In this model of money interest and profit appear as defects or at least imperfections of a market economy. The reason why these imperfections do exist is not the market itself but a state monopoly of the note issue, which empeded an optimal money to develop.

To conclude a little unserious: Maybe Moses, Jesus and Mohammed were the better monetary theorists, but unfortunately none has written his theory down.

Summary

The monetary order suggested here has been in existence over centuries: The state defines a currency unit and private banks issue notes denominated in this unit. Such a monetary unit ought to have a material content, i. e. the bank of issue must have a concrete obligation to the bearer of its notes. It is argued that the best conceivable currency unit is defined by the market portfolio in such a way that nominal rate of interest becomes zero.

Zusammenfassung

Hier wird eine Geldordnung vorgeschlagen, die es über Jahrhunderte hinweg gegeben hat: Der Staat definiert eine Geldeinheit und private Banken geben Noten auf diese Einheit aus. Eine derartige Geldeinheit sollte einen materiellen Gehalt haben, d. h. die Notenbank muß eine konkrete Verpflichtung gegenüber dem Inhaber ihrer Noten eingehen. Es wird behauptet, daß die bestgeeignete Währungseinheit durch das Marktportefeuille definiert sei und zwar so, daß der Nominalzins Null wird.

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