

# Monopoly and Competition in Money

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The inflation which seems to have become endemic to much of the world, along with the perception that the prime culprits are the monopolistic issuers of national currencies, has recently led to a novel and striking proposal known as "currency substitution." The proposal is all the more striking because it bears two of the earmarks of intellectual revolution: simultaneous discovery and similar analytic results.<sup>1</sup>

The basic question asked and (partly) answered is: what would happen if private institutions were allowed to produce and market their own currencies in their own denominations on a competitive basis with freely fluctuating exchange rates? One of the striking things about this question is that it immediately makes one ask why government monopoly of money issuance is necessary in the first place, and why so few good answers are forthcoming.

Perhaps the best answer is given by Milton Friedman. It is based on the standard economic result that each firm maximizes its profits by increasing output to the point that the cost of producing the next unit threatens to exceed its market value. Since the cost of printing money is virtually zero, he argues that competitive supply would force the value of money to zero, at which point money is useless. Preventing this occurrence requires a governmental monopoly.<sup>2</sup> Now making the last part of that statement with a straight face is difficult, and it is odd that Friedman would try, since he, more than anyone else, has demonstrated the lack of restraint central banks have exerted over money issuance. And as F. A. Hayek noted, such a monopoly has the defect of all monopolies, that one must use their product even if it is unsatisfactory.<sup>3</sup> The chief result emerging from the analysis of currency substitution, in contrast to Friedman's assumption, is that the market could produce money of stable and reliable value.

Most of the discussions on this topic have begun with a competitive system already functioning, but Hayek deliberately analyzed its beginnings. In his version, upon removal of the laws prohibiting such activity, various private institutions would issue non-interest-bearing certificates and offer checking accounts in the same denominations. These institutions (banks)

would guarantee redemption in terms of the standard currencies at fixed rates, and announce their intention to preserve the constancy of the value of their currency in terms of a specified "basket" of goods.<sup>4</sup> He later argues that raw materials, agricultural products and possibly some semifinished industrial goods would be the most likely components of the "goods baskets."<sup>5</sup> The depreciation of government money and the guarantees would suffice to induce people to hold the private currencies, and competition would enforce the guarantees *as long as people could substitute between the currencies at market-determined rates of exchange.*

Perhaps the most critical point in the whole analysis is that in order for such substitution to occur the privately issued currencies must be distinguishable by brand names, trademarks, colors, etc., which are protected by law. It might clarify the matter to point out that the concept of substitution implies and requires distinguishability. The notion implies that somewhat different things exist which can yet be used to obtain the same end.<sup>6</sup> They may or may not also be complements, such as labor and capital in production, where both must be used but the proportions may be varied, and will be, if their relative costs change. But no one substitutes between things considered identical, such as dollar bills (though one might imagine an individual with a fetish for new, crisp bills trading old wrinkled ones for them, even at a premium if the fetish were strong enough).

So only when things are *not* indistinguishable, "perfect" substitutes, and preferences exist which can be overcome by relative cost changes, does economic substitution take place. Benjamin Klein shows that if the currencies were indistinguishable there would be motivation for all firms to inflate in order to reap redistributive gains from the depreciation of value.<sup>7</sup> But the advocates of currency substitution argue that competition would force the issuing firms to supply distinguishable currencies since people would prefer them precisely to prevent such loss of value. Firms issuing distinguishable money could be held accountable for its value, but would find some demand precisely because of that fact.

Roper and Girton go on to show that with distinguishable currencies it is the cost of holding money, defined as the difference between the interest on money and the interest on alternative assets, that is forced to zero, not the value of money. The banks get their liabilities held by offering competitive rates of interest on deposits. As long as interest on money is less than the rate of return on their assets (bonds, loans, etc.) the banks will increase money issuance, bidding the interest on money up and lowering the return on bonds until the point is reached at which the two are equal and economic profits are zero. Icing on the cake is that this also satisfies conditions laid down by Friedman for the optimum quantity of money.<sup>8</sup>

The notion then is that, if allowed, people would prefer distinguishable

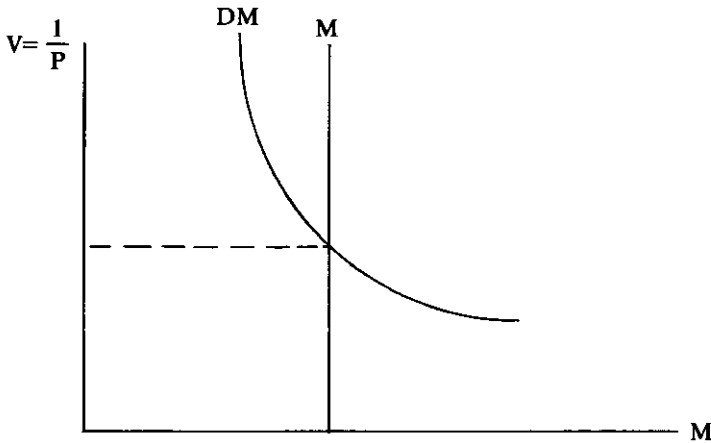
currencies, and would substitute away from those having less of certain qualities they desire towards those having more. But just what characteristics people would prefer is a question of some importance and whose answer is not obvious. The specific functions of money consist of serving as a medium of exchange, a store of value, and a unit of account. Paper money is unique in having no other direct use. Both inflation and deflation affect all of these functions adversely, but there are those who gain as well as those who lose from either.

Hayek points out that all the other functions of money rest on its use as the medium of exchange. Yet in his view the unit-of-account function would be the most critical in people's decisions as to the kind of money they would prefer. Most people would rather have an appreciating currency for their cash balances in his view, and since creditors also prefer deflation (because a condition of falling prices means debtors pay back money of higher value than they borrowed and therefore effectively raises the rate of return on loans), some such currencies might be supplied. But debtors prefer inflation (for the opposite reason), and these forces would likely balance out. Since effective capital maintenance and cost control require a stable unit of account, and risks involved in deferred payments would be minimized if money were used which had a mean value of changes in commodity prices of zero, Hayek concludes that the currencies of most stable value would be preferred.<sup>9</sup>

Graph 1 indicates how the process of currency substitution may be clarified. The quantity of a particular currency is measured on the horizontal axis. The vertical axis measures the value or "purchasing power" of that currency. Now the value of a commodity is given in terms of its money price. Money, however, does not have a single price, but an array of exchange ratios with particular goods. When the money prices of those goods rise, the value of that money has declined, and vice versa. So the value of money that goes on the vertical axis is given by  $\frac{1}{P}$ , where "P" is an index of prices in that currency.<sup>10</sup>

The curves marked "M" and "DM" represent the stock supply of and demand for money to hold in people's cash balances; that is, with people's incomes given, everybody wants to have, on average, a certain amount of money in their possession at any one time. The demand curve slopes down and right because it is not just units of money people want to hold, but a certain amount of purchasing power, or "real balances,"  $M \cdot \frac{1}{P}$  or  $\frac{M}{P}$ . At a lower value *per unit* of money (a higher price index) people must hold more units to have the same amount of purchasing power or real balances. The real balances people desire may not be constant at all purchasing powers of

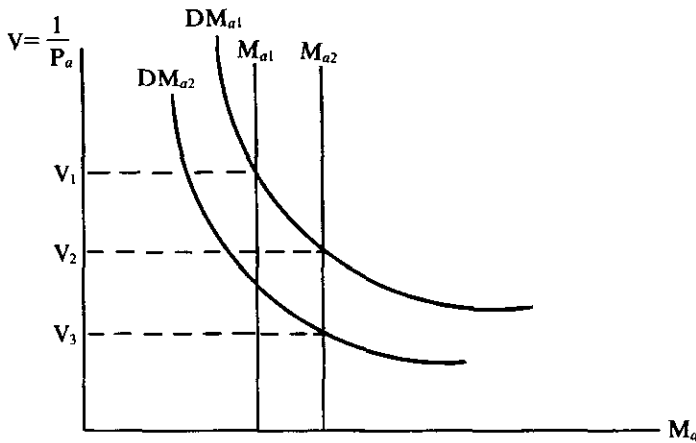
the currency, but there is no a priori reason why they shouldn't be, and if they were, the demand curve would be a rectangular hyperbola as shown.



GRAPH 1

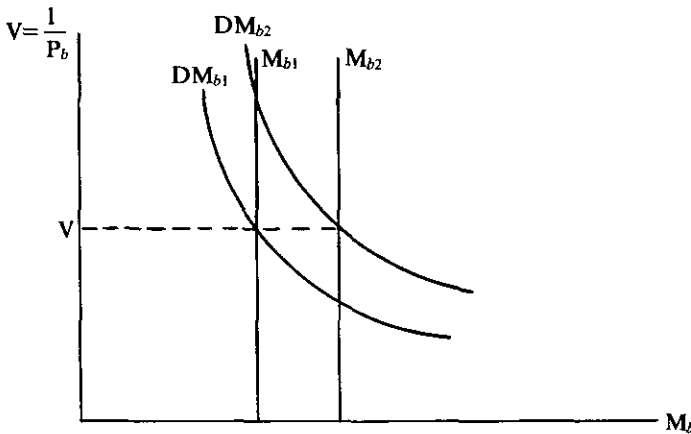
Equilibrium is argued to be reached in the demand for and supply of money by the same basic process as in the market for any other good. At any value of money above the intersection of the two curves, the stock supply will exceed the quantity demanded. That means people will be holding more money, more purchasing power than they desire. They will attempt to reduce their nominal balances through spending, which will bid up prices. But bidding prices up means bidding the value of the monetary unit down, causing the quantity demanded for cash balances to increase until it equals the quantity supplied. In the process the real value of the money stock supplied is brought to equality with the real balances demanded. At any value of the monetary unit below the equilibrium point, quantity demanded will exceed quantity supplied, and as people attempt to *add* to their cash balances the value of money will be driven up to the equilibrium point.

If, as Hayek argued, people prefer currencies of stable value, any excessive money creation by a private institution or by government (say from  $M_{a1}$  to  $M_{a2}$  in Graph 2), which resulted in rising prices in terms of that currency, would cause its depreciation in the exchange market and substitution away from it into alternate currencies. The drop in demand for the offending currency (say from  $DM_{a1}$  to  $DM_{a2}$  in Graph 2) would cause a *further* depreciation in its value, such that it might rapidly cease to circulate unless its issuer were able to contract its supply as rapidly as demand was falling, and thereby stabilize its value.



GRAPH 2

The shift in demand toward alternate currencies (say from  $DM_{b1}$  to  $DM_{b2}$  in Graph 3) would tend to cause them to appreciate in value. Gordon Tullock cogently notes that this provides an immediate incentive to the firms involved to expand their loans (increasing the supply of currency "b" from  $M_{b1}$  to  $M_{b2}$  in Graph 3, for example) and make additional profits without risk of depreciating their currencies.<sup>11</sup>



GRAPH 3

It has often been noted that if inflation affected all wages and prices proportionately nothing "real" would be changed. That is, it would be neutral in its effects. And it has been noted just as often that no inflation has

ever been neutral. There are many institutional and psychological factors which prevent that occurrence. Just the fact that money enters the economy at certain points (through the banking system, or in the form of government subsidies), rather than raining down on everyone like manna from heaven, results in an alteration of the real distribution of income. Some people get the new money early, while the old prices are in effect, while others still have their old incomes when the new prices are in effect.

It seems likely that if currency substitution worked as advertised, however, it would tend to eliminate one of the most harmful nonneutralities from the economic system. Friedman and others have described inflation as a tax on cash balances, and have shown that it may result in a decline in people's desired real balances (a shift inward of the demand curve). This results in an acceleration of inflation such that prices rise faster than the money supply. Indeed, this phenomenon is observed in and may be the proximate cause of hyperinflation. The U.S. has experienced it in a mild form through most of 1979. "Austrian school" theorists such as Mises and Hayek long ago referred to it as the "flight to real values" because it involves an attempt to find substitutes for money when there are none except goods.

Now Hayek has remarked on the difficulty of defining "the" money supply under a system of competing currencies. But if what people really want to hold is purchasing power, in whatever form, there is in some sense "a" quantity of "real balances" in the economy, and the process of currency substitution can be seen as motivated to protect and maintain that quantity at the desired level or rate of growth in the face of disturbances from the supply side. Of course there would still be distributive nonneutralities even if the system worked, because some people's anticipations would be better, and substitutions quicker, than others.

There are, of course, many unresolved issues in the theory of currency substitution. For example, the whole literature ignores Menger's thesis that money must arise from among the most marketable of commodities desired for their direct use, as well as Mises' demonstration of this with his regression theorem. Mises' theorem clarified the apparent circularity involved in attempting to explain the value of money in terms of supply and demand when the demand for money is dependent on money *already* having value, since that is the only reason people want to hold money *as* money. He argued that the demand for money on day D results from people ranking money on their preference scales on the basis of the value it had on day D-1 (the previous day). Of course the same thing must have happened on D-1, but the regression continues back only to the first day money was valued as money. On that day it must have been ranked on the basis of its purely nonmonetary value the day before.<sup>12</sup>

It is true that we now use nonconvertible paper currencies. The process of

removing convertibility took time, however, and could occur only after a trust *based on* that convertibility had been established, exchange ratios between goods and currency were established, and people were habituated to the use of paper money. It might prove impossible to create and have people accept a new and independent currency such as Hayek and others envision, even with distinguishability and guarantees of stable purchasing power. In an article published in 1962 which was almost precognicist in its anticipation of the currency substitution literature, Murray Rothbard denied that such currencies could ever find acceptance.<sup>13</sup>

One might respond that redemption in terms of the standard currencies at fixed rates, along with distinguishability and purchasing power guarantees, would suffice to establish the initial value of such a currency. Hayek clearly thinks so. In line with the regression theorem, however, convertibility would probably be required.<sup>14</sup> Several writers seem aware of this. Tullock mentions the possibility of convertibility as well as stabilizing an index, and remarks that both would require large resource reserves.<sup>15</sup> Klein seems to think firms would invest in stocks to build brand name capital.<sup>16</sup>

Assuming that convertibility were required in order to initiate the system, competition among convertibility options offered might result in certain currencies, say those convertible into gold or silver, being preferred for reasons other than the immediate stability of their purchasing power, with resulting concentration. So the new notion of competing private currencies and the old notion of a gold standard may not be as disparate as they first seem.

*Even if convertibility were not widely desired, there would still be competition in terms of the "goods baskets" in which the values of the competing currencies were stabilized.* Hayek notes that, since people in different areas are concerned with different goods baskets, "currency areas" of dominant money would likely arise.<sup>17</sup> Currencies which had values guaranteed in terms of the same or largely overlapping goods, however, might be more rapidly substituted between and more likely to concentrate than currencies stabilized in terms of disparate goods. A change in value between the currencies might therefore be simply the result of a change in relative values of the goods bundles. So it may not be obvious that currency areas would arise so long as exchange rates were flexible.

One of the biggest problems with the whole notion of currency substitution concerns the transaction costs to the public of multiple currencies and prices. The great advantage of having only one money really lies in the ease of comparison and transaction when everything is denominated in terms of the *same* thing. These advantages might not be completely lost if (1) all of the major currencies were accepted almost everywhere, and (2) almost all goods had prices marked in terms of all of the major currencies. Condition

(2) is necessary in order to lower the transaction costs to the customers, most of whom are not mathematical sophisticates, and rather detest making conversions (though it should be noted that such costs would be lower now than ever before in history due to the inexpensive electronic calculator). Such multiple pricing would necessarily be costly to firms at least until new labeling devices and cash registers could be produced.

Most authors have too quickly passed over these difficulties. Hayek simply says that the convenience of dealing in only one money is less important than the opportunity to use reliable money.<sup>18</sup> No doubt he is right, and Tullock shows how currency substitution would result when the depreciation of a dominant money exceeded the transaction costs of using a formerly minor one.<sup>19</sup> But such costs should not be ignored. Klein treats them most seriously, pointing out that the costs of valuing and money changing increase with the number of currencies.<sup>20</sup> He believes these costs so large, in fact, that a single dominant money would emerge. This seems unlikely, both due to the calculator and because the public would want substitution options. But it also seems unlikely that the public would suffer more than three or four currencies to circulate widely at any one time.

This brings us to another latent problem area in the theory: the nature of competition and market structure in the money industry. Walrasian neoclassicism has for decades relied on a theory of "perfect competition", defined as an atomistic, equilibrium condition. Its prime assumptions are (1) an extremely large number of small, identical firms, none of which can by any change of its output affect the market price, (2) a homogeneous output for all firms, and (3) perfect information on the part of all market participants.

Given these assumptions it is shown that the output will be produced and sold at the minimum average cost with the given technology, and that all categories of inputs will be paid a portion of the value of output fully equal to their relative contribution to the production of that output. In short, absolute allocative efficiency will be obtained. On the other hand it is shown that markets dominated by one or a few large firms, or in which product differentiation exists, cannot achieve such efficiency. All this has led to criticism of real markets, in most of which some concentration is observable.

For many reasons the "perfectly competitive" model seems even less applicable to the money industry than elsewhere. For one, the distinguishability required in competing currencies violates the homogeneous output assumption. For another, the necessity, stressed by Hayek, that the firm be able to control the value of its currency in order to maintain public confidence violates the parametric price assumption. Third, economies of scale in use, mitigated only by the necessity for *some* options, would likely preclude more than a few currencies circulating widely, as discussed above. Hayek, never a fan of "pure competition," is most clearly aware of this. He asserts



that few banks would be able to issue their own money. Most would have to issue "parasite currencies" denominated in one of the major types, and operate on a nearly one-hundred percent reserve basis.

But to say that the industry would be "imperfect" is in fact merely to reveal the defects in a model which defines competition solely in terms of market *structure* and ignores *activity*. With the exception of the Austrian school, few economists have escaped this harmful and mistaken identification of competition with number of competitors.<sup>21</sup> Rapid substitution and a competitive fringe would enforce good behavior in the money industry just as they do in any industry lacking governmental barriers to entry, even if the dominant firms had marginal costs and returns resulting in economic profits and preventing perfect allocative efficiency.

As a final point, it may be mentioned that currency substitution is not just an intellectual abstraction. History is full of examples of competing monies. Indeed, the entire long process during which the precious metals were selected as money over all the other commodities tried, must have been essentially a competitive process in which the better (in terms of not only purchasing power stability, but also such things as divisibility, transportability, durability, scarcity, etc.) were substituted for the worse, with the latter falling into disuse as money.

It was after this spontaneous emergence of precious metals as money and the private invention of such things as minting that governments began moving to gain monopolistic control of monetary systems. The initial motives were, ostensibly, to ameliorate further the confusions and costs involved in using even a few different metals as money, by standardizing weights, stamping state seals on bars and coins to attest to their purity, and fixing exchange rates between the metals. The other motives of state monetary gain and power were also present, of course, and even when the better motives ruled, the results of state monetary intervention seem to have been more often detrimental than beneficial.

There have been examples of states providing good money over significant periods. The Greeks are often credited with inventing coinage, and with the exception of the debasement by Solon in 594 B.C., the city-states maintained the quality of their money until and, in fact, long after their conquest by Rome. The soundness of Hellenic money contributed to the astounding success of their commercial economy. Some authors attribute this to a Greek "tradition" of sound money, but it may be argued that such soundness was attributable to a situation of defacto currency substitution.

The Greek city-states were largely independent, though there was an awareness of Hellenic identity. Each city-state had its own coinage. There was an active trade in these currencies, and probably few laws limiting citizens of a given city-state to the use of their own money. Elgin Groseclose

asserts that not only were there few debasements but there were actual instances of raising the standard of coinage.<sup>22</sup>

By contrast, Roman monetary history is a dismal history of continual currency debasement (usually by literal addition of base metal, until formerly gold or silver coins were simply washed over copper), culminating in the price controls of Diocletian in A.D. 301. Minting of various Roman coins (and sometimes the *same* coins!) was in the hands of a variety of officials, often including provincial governors and military generals. Roman laws specifying the coins people could use, the purposes for which they could be used, and the rates of exchange prevented any effective currency substitution. The Romans could not, of course, require foreigners to accept their debased currency (except by assimilation) and generally used the Greek *Drachma* in international trade. Debasement continued until Roman money completely stopped circulating at about the end of the fourth century, concurrent with the dissolution of other Roman institutions.<sup>23</sup>

Gold coinage reappeared in Europe with the minting of the *Florin* in Florence in 1252. Currency debasement followed immediately and plagued Europe up until modern times. The phenomena described in Gresham's Law (disappearance of undervalued money) assumed large proportions as a result of such debasement and of attempts by various cities and states to fix exchange rates of gold and silver. A few recognized and avoided the problem. While Florence struggled to maintain a bimetallic system by frequent adjustment as market exchange rates changed, Genoa avoided fixing rates at all and simply allowed parallel standards.<sup>24</sup> By the seventeenth century the British government was dissatisfied enough with attempts to maintain bimetallicism that Charles II signed the acts of 1663 and 1666 allowing free (private) coinage and removing fixed ratios. This put Britain on a parallel standard. Traders and merchants found calculating in two kinds of money inconvenient, however, and the system was dropped.<sup>25</sup>

Instances could be multiplied. Foreign gold and silver coins circulated at market-determined exchange rates throughout much of early American history. Gordon Tullock lists examples of concurrent currencies from his own experiences in China 1948-50, and Korea 1952-53.<sup>26</sup> It is clear from both history and analysis that concurrent currencies, in one form or another, constitute a feasible monetary system. As in anything, there would be costs as well as benefits. In the past the costs have frequently led to public pressure for or at least acquiescence to governmental control of money. The costs of such governmental manipulation are, however, almost invariably excessive. A free competitive monetary system would provide a quantity of money closer to the optimum and having a more stable real value than that supplied by any government of recent experience.

## NOTES

1. Benjamin Klein, "The Competitive Supply of Money," *Journal of Money, Credit and Banking* 6 November 1974), was probably the first, but F. A. Hayek, *Denationalization of Money* (London: Institute of Economic Affairs, 1976) developed the theory before reading Klein.
2. Milton Friedman, *A Program for Monetary Stability* (New York: Fordham University Press, 1959), p. 7.
3. Hayek, *Denationalization*, p. 24.
4. *Ibid.*, pp. 42-44.
5. *Ibid.*, pp. 70-71.
6. Don Roper and Lance Girton even use the oddly self-contradictory phrase "identical, but distinguishable" in "The Theory of Currency Substitution and Monetary Unification," *Economie Appliquee* (forthcoming).
7. Klein, "Competitive Supply," p. 430.
8. Don Roper and Lance Girton, "Substitutable Monies and the Monetary Standard," in M. Dooley et al., *The Political Economy of Policy Making* (Beverly Hills, Ca.: Sage Publishing Co., 1979), pp. 240-242.
9. Hayek, *Denationalization*, pp. 65-70.
10. Mises has shown that there are severe problems with the concept of index numbers, and it is used here only for its heuristic, expositional value.
11. Gordon Tullock, "Competing Monies," *Journal of Money, Credit and Banking* (November, 1975):494.
12. Ludwig von Mises, *Theory of Money and Credit* (original ed. 1912) (New Haven: Yale University Press, 1953), pp. 111-114.
13. Murray N. Rothbard, "The Case for a 100 percent Gold Dollar," ed. Leland Yeager, *In Search of a Monetary Constitution* (Cambridge, Mass.: Harvard University Press, 1962), pp. 98-100.
14. There is another possibility. A person born since the days of the gold standard accepts paper dollars without caring whether they originated as commodity claims, because they already have value. If a firm wishing to introduce a private money could induce a large number of firms to mark their goods in terms of and be willing to accept the new currency simultaneously with its issuance, the currency might readily find public acceptance. In essence, "instant purchasing power" would have been created. Each firm might be appealed to on the basis that the money it took in could be used to purchase at least part of its own supplies from other firms that were also in the system. Still, the project seems difficult.
15. Tullock, "Competing Monies," p. 495.
16. Klein, "Competitive Supply," p. 434.
17. Hayek, *Denationalization*, pp. 71-72.
18. *Ibid.*, p. 24.
19. Tullock, "Competing Monies," pp. 492-493.
20. Klein, "Competitive Supply," p. 443.
21. One author who has escaped is Paul J. McNulty. See his "Economic Theory and the Meaning of Competition," *Quarterly Journal of Economics* 82 (1968).
22. Elgin Groseclose, *Money and Man* (original ed. 1934) 4th ed. (Norman, Okla.: University of Oklahoma Press, 1976), p. 146.
23. For details of the Roman experience see Alexander Del Mar, *History of Money in Ancient Countries* (London: 1885).
24. Robert S. Lopez, "Back to Gold, 1252," *Economic History Review* (December, 1956):219-240.
25. Groseclose, *Money and Man*, p. 152.
26. Tullock, "Competing Monies," p. 491.