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COMPETING MONIES, EUROPEAN MONETARY UNION, AND THE DOLLAR:
THE CASE AGAINST THE EUROPA

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Since I am going to criticize the All Saints' Day Manifesto [2] and the attempt to achieve European monetary union by the creation of a parallel European currency, I should explicitly state at the outset that I am very sympathetic with the major thrust of the proposal. First of all, it represents an increased understanding and awareness that we must move towards a more predictable monetary framework. In addition, it clearly recognizes the economic forces that exist in favor of the establishment of a single unified currency within an interdependent trade area such as the European community.

Unfortunately, however, much of my previous work on competing monies suggests that large scale voluntary public adoption of a new parallel currency such as the proposed Europa is highly unlikely. Although the intended reliance on market forces rather than government edicts to determine the quantity of this new money is consistent with the spirit of my earlier work, the Manifesto greatly simplifies and thereby misunderstands the nature of the competitive process in the market for monies. In particular, important analytical distinctions between monetary stability and monetary predictability, between interest bearing and non-interest bearing money, between money used as a medium of exchange or unit of account and money used as a store of value, and between a dominant domestic money and an international money are either ignored or blurred. This incomplete theoretical analysis leads to faulty empirical conclusions and policy recommendations.

Advocates of this proposal for a new competitive money believe that because the Europa is to be price indexed and hence inflation-proofed, it will quickly drive the European national currencies out of circulation. Historical evidence suggests this will not be the case. On the contrary, monetary confidence and hence new dominant monies evolve very slowly in the market place and are not easily substitutable once established. The Manifesto basically

confuses the inflation problem and the problem of achieving monetary integration. The benefits of a monetary reform establishing rules of money supply growth which would produce a stable price level are, I believe, enormous. But this does not imply that European monetary union can be readily accomplished by the introduction and market adoption of a new currency with these characteristics.

1. Inflation Competition: Stability vs. Uncertainty

When considering competition between alternative monies it is crucial to distinguish between the mean and the variance of the inflation, or the average level of inflation and the predictability of inflation, in terms of the alternative monies. In the international context in which we are discussing these issues, competition between monies does not occur primarily on the basis of the average inflation rates of the different monies but on the basis of the variance or predictability of these inflation rates.

If it were a low inflation rate rather than a highly predictable inflation rate that was the driving competitive force in this market, we would expect gold, with its significant increase in real purchasing power over the past seven years, to be an important, if not dominant, competing money. This is, of course, far from the reality of the current situation. In fact, the high volatility of the real exchange value of gold over the recent past has demonetized it to such an extent that gold is now essentially just a commodity like any other internationally traded commodity. A fundamental determinant of a money's liquidity services is the predictability of its future exchange value in terms of real goods and services. Gold is now highly illiquid in this regard and therefore not a major competing money¹ / .

The reason the average inflation rate does not appear to be an important competitive force is because much of the money stock, broadly defined, yields a competitive rate of interest. Demand is therefore invariant to the anticipated

inflation rate. This leads us to our second important distinction between interest bearing money and non-interest bearing money. It is only currency and bank reserves, i.e., high-powered money, which do not yield interest and therefore may be expected to possibly be demand sensitive to varying inflation rates.

Recent empirical work indicates that in the United States bank deposits can usefully be assumed to be paying implicit competitive interest (cf [21]), and I would expect this also to be the case for liabilities issued by banking institutions located in the highly competitive financial centers of Europe. Eurodollar deposits, for example, have essentially zero high-powered money backing and yield a market rate of interest^{2/}. We, therefore, should expect such dollar denominated deposit holdings to be totally invariant to the U.S. inflation rate. Dollar price uncertainty and not the level of the dollar inflation rate is what is theoretically relevant as a determinant of demand.

Although short-term dollar liabilities have at times, especially during 1973-74, yielded negative ex post real rates, this was due to an unanticipated dollar inflation, i.e., it was produced not by inflation but by inflation uncertainty^{3/}. The Europa's promise of a zero ex post real return represents a benefit to holders not because it promises no inflation, but because it promises no unanticipated inflation. That is, for the large interest-bearing element of the money stock it is the predictability of the proposed Europa's inflation rate and not the promise that the inflation rate is zero that is important for potential holders.

It is this type of competition between market interest bearing monies on the basis of inflation predictability that I originally outlined in my "Competitive Supply of Money" article [20]. I assumed there that alternative monies paid a competitive interest rate and were therefore completely hedged for the expected inflation rate in terms of the various monies. But the real demand for a particular firm's

money output was assumed to be a positive function of the consumer confidence in the money, measured by the degree of future price predictability in terms of the money. I also assumed that all money producing firms were price takers in a perfectly competitive market for monetary services. In the context of this theoretical framework any increase in price uncertainty, created for example by an unanticipated increase in money, produces an increase in the real implicit price of monetary services and drives the individual firm's demand to zero. This implied a new type of Gresham's law, namely that "high confidence or strong monies will drive out low confidence or weak monies." What it means for a currency to be "strong" in this framework is not a low average inflation rate, but a low degree of uncertainty around that expected mean rate.

The empirical evidence for the existence of this inflation uncertainty competitive mechanism is generally weak. One difficulty in isolating the effect is that the two distinct elements of inflation, its average rate and its predictability, are generally highly positively correlated. This is, however, not always the case, as the recent experience with gold clearly indicates.

The recent international experience with the dollar may also provide some evidence for the price uncertainty competitive effect. The acceleration of the dollar inflation rate in 1965-66 (when dollar price level uncertainty was still low by historical standards) does not appear to have significantly reduced the international demand for dollars. Rather, it appears to be the increase in dollar price uncertainty, especially the increase in long-term price uncertainty in the late 1960s, that influenced the international demand for dollars. The evidence regarding the much greater substitution away from dollars to marks for use in long-term contracts compared to the substitution from dollars to marks as a reserve asset is also evidence for the recent rise in long-term relative to short-term dollar price level uncertainty⁴ / .

Another major difficulty in establishing the existence of the inflation uncertainty competitive effect is theoretical. As indicated above, in a perfectly competitive money supply framework [20], a currency such as the Europa could be expected to drive the demand for other (price uncertain) monies to zero. But in the real world where money supplying firms do not face perfectly elastic demand schedules for monetary services, an increase in price predictability has theoretically ambiguous effects on the demand for money^{5/}. If we assume that the monetary service flow is proportional to the real stock of money held, then the predicted relationship between price uncertainty and money demand is related to the price (interest) elasticity of demand for money. Since the domestic demand for money is generally interest inelastic, the predicted relationship is positive, which is what we, in fact, find to be the case for the U. S. over the last century (when price uncertainty is measured by variability) and for Brazil over the postwar period^{6/}. Only in the German hyperinflation experience has this effect been measured as zero^{7/}.

The competitive (or negative) effect has not, as yet, been systematically measured because we have concentrated our estimates on domestic money demand functions. The international demand for monetary services from alternative monies is likely to be much more interest elastic than the domestic demand and therefore we would expect to find this competitive effect^{8/}. The Europa, however, is intended to compete not only in the international money market, but also to replace monies used domestically. In each separate national market the fact that the Europa supposedly will have zero price uncertainty is not sufficient to drive out of existence the established dominant monies. In fact, because the established monies have interest inelastic demands, theoretical and empirical results suggest that increased price uncertainty will actually increase money demand^{9/}.

2. Competitive Currencies

The fact that the proposed Europa will have a zero inflation rate may appear to be an important competitive factor in dislodging these national monies. Since national currencies, as opposed to deposits, are non-interest bearing and individuals holding them are paying an inflation tax, we would expect this element of monetary demand to be sensitive to alternative inflation rates. We therefore would also expect some switching by individuals in an inflationary environment to an indexed currency such as the proposed Europa. Unfortunately, the degree of competition that is assumed to exist by the signers of the Manifesto is far from an accurate description of the real world.

For example, Fratianni and Peeters in a memo written for this conference state that "It is clear that a national currency that is subject to an inflation tax cannot co-exist with an inflation-proofed Europa." This proposition, however, is not so clear. It depends upon the implicit assumption that alternative monies are perfect substitutes, which must be determined empirically^{10/}. And, on the contrary, the historical evidence I am aware of suggests the exact opposite conclusion.

The switching by the public to a new medium of exchange appears to be highly inelastic to the currency's inflation rate. Even in the extreme cases of the post-World War I hyperinflations or in the moderately rapid but decades long Latin American inflations, individuals ~~did~~ not switch to competing currencies. Although in these cases individuals often drastically reduced their real holdings of the inflating currency, competing currencies were not held as alternative media of exchange.

One might want to argue that in certain cases competing currencies do not develop because of government regulations prohibiting their existence. Yet it is difficult to believe that legal restrictions, including legal tender requirements, are really very effective competitive constraints^{11/}. There is much historical evidence in other

areas that price controls and trade restraints are, in general, evaded at least partially, even if attempts are made to enforce them strictly. In any case, the evidence suggests that there was no significant black market pressure towards substitute media of exchange. Cagan [5. p. 101] notes that of the seven hyperinflations he studies, only for 1923 Germany did substantial amounts of unauthorized currencies issued by local governments and private organizations circulate. But, unbelievable as it may seem, these illegal substitute currencies were denominated in the hyperinflating unit! Also, Barro's [1] estimates of the fraction of transactions conducted without domestic money during hyperinflation, i.e., conducted with a substitute money or by barter, are quite low. For example, at an inflation rate of 10 percent per month this fraction was only $0.05^{12/}$.

A careful distinction must be made between the use of money as a store of value and the use of money as a medium of exchange. It is quite clear that during these hyperinflations large quantities of foreign currencies (e.g., dollars and pounds) were illegally held as stores of values^{13/}. There is also some essentially anecdotal evidence cited by Graham that the foreign monies gradually began to be used as units of account in Germany. I suspect that such large amounts of foreign exchange were held not only because they were a hedge against inflation (any unregulated interest-bearing foreign or domestic asset could have served this function better), but because each of these countries also happened to be politically unstable. In this sort of climate, it is understandable that individuals would wish to be uncharacteristically liquid in a stable country's currency.

In any event, foreign monies were not held in these cases to satisfy a medium of exchange demand for money. The evidence appears to indicate that what is generally used as a medium of exchange is highly inelastic to the inflation rate. Perhaps this is because the decision to change what is used as the commonly accepted medium of

exchange must involve a large subset of the population and hence implies very large transaction costs. Such social agreements and customs are therefore very costly to change rapidly, even if the immediate benefits to each individual separately appear large (cf. Tullock [32]).

To sum up, we have seen that in order to make analytical sense of the argument that competitive substitution towards an alternative money is dependent upon the level of the inflation rate, we must concentrate solely on the currency or non-interest bearing high-powered element of money. In that case, however, the substitution argument becomes empirically trivial. Once a dominant money is established the medium of exchange demand appears to be essentially nonsubstitutable in a very wide number of circumstances. The empirical evidence therefore indicates that there does not appear to be a great deal of pressure, if any at all, towards substitutability of competing monies, either on the basis of price stability or price predictability. Hence the concern that a European parallel currency indexed against inflation will be accepted by the market at such a rapid rate that it will quickly drive out all non-indexed national monies and hence create political difficulties is completely unfounded^{14/}. What is much more likely is that the Europa will not be accepted at all. The existence of any significant amount of competitive switching between dominant monies has not, as yet, been empirically verified, and in fact, there is much evidence to the contrary within a wide band of non-crisis situations. The analysis of the potential attractiveness of a European parallel currency which largely considers differential yields of alternative monies to reach a conclusion of rapid and wide acceptance completely ignores the overwhelming empirical evidence on the degree of rigidity that historically is present in these matters.

3. Monetary Confidence and Seigniorage

One reason for rigidity in accepting new monies is the importance of consumer confidence in a money, i.e., the credibility of the money issuer in fulfilling explicit or implicit promises regarding supply. And monetary confidence cannot be created overnight merely by an announcement of a promise regarding future behavior. It must be built up gradually with successful performance over time.

Although the Europa Manifesto explicitly rejects the unrealistic assumption that a parallel currency and European monetary union can be created by official edict, it does appear to assert that such a goal can be accomplished in the marketplace fairly easily, i.e., by merely issuing a new money of stable purchasing power. Economists, often meeting in very pleasant places, have too frequently believed their textbook assertions that money merely is whatever "society" (operationally defined as the relevant policymaker) wishes it to be. Much of the discussion of international monetary reform, the creation of new monies, and the distribution of seigniorage suffers from this naivete.

While the signers of the Manifesto claim not to rely on legalistic edicts, they make a similar error by assuming that a new fiat currency can evolve quite quickly in the market place as long as the issuer makes the right promise -- in this case a promise to stabilize prices. As I have stated in detail elsewhere (Klein [25]), institutions are not perfectly maleable and a real effective market demand for a money cannot be produced by official proclamations. Demand depends upon the existence of consumer confidence in the money, which is costly to create. A low stated price of the money, either in the form of a low inflation rate or direct interest payments, is not sufficient to assure its acceptance. As the recent New York City experience vividly illustrates, official promises can always be withdrawn and market participants generally want more than governmental assurances at a particular moment.^{15/}

How monetary confidence is created is not a question we now have a precise answer to. It is crucial, however, to recognize in our analysis that the question is important and that reliable information about anticipated performance is costly to produce. Consumer confidence therefore is not a free good that can be created by mere assertion. Commodity money, for example, produces consumer confidence by placing a physical constraint on money production and hence on the possible unanticipated depreciation. "Guaranteed" convertibility of a money into a commodity (or into another more predictable money) is another way to obtain consumer confidence. Any stocks of the commodity (or the high confidence money) held as reserves to increase that assurance should also be considered an investment (or what I have called a "brand name" capital outlay) by the money supplier in building confidence in its "brand name money." And any institutional framework established to make these "guarantees" more credible is also part of the investment in consumer confidence. This is the "monetary constitution" question, largely ignored in the Europa Manifesto.

Most importantly, the major way in which monetary confidence is produced is by successful past performance, i.e., a high confidence money evolves very gradually in the marketplace. Since the Europa has no history we would expect it initially to possess a very low level of consumer confidence, or a very high prior variance on the estimated anticipated rate of price change in terms of this money. Even after a short period of successful performance, i.e., zero price inflation and zero price change variability, it is highly unlikely to expect long-term price change uncertainty for the Europa to be zero.

Once we assume a realistic world of positive information costs, money supplying firms have a reputation of a finite value which I analytically identify as the firm's "brand name capital." And seigniorage is then just a normal rate of return on this brand name capital asset. It is this seigniorage return which makes it

costly for a money supplier to "mess up," i.e., to have an unanticipated inflation. In such a situation the brand name capital would depreciate, producing a downward shift in the demand schedule facing the firm and therefore implying a loss of future seigniorage. This is an operative competitive constraint or firm "cost" on "cheating" behavior for all products where consumer pre-purchase quality determination information costs are positive.

The important theoretical point is that even under so-called fiduciary monetary arrangements, where money is costlessly produced on the margin, confidence creating costs cannot arbitrarily be considered to be zero. To more fully understand the presence of brand name costs within the context of a fiduciary money system, it is necessary to think of these monetary confidence costs as the costs of "selling" rather than "producing" real cash balances. The fact that it is costless to "add a zero," i.e., that the marginal cost of producing nominal money can reasonably be assumed to be zero, implies nothing about the marginal cost of creating real cash balances. Failure to distinguish between these two costs is a general problem present in the optimum quantity of money literature^{16/}

Since real cash balances are not a control variable in a money producing firm's production function, but rather are determined on the demand side, it is difficult to conceptualize "the marginal cost of real cash balances." A useful way to think of this theoretically is to start with the public's demand for "monetary services" which implies a derived demand for "monetary confidence" (similar to the derived demand for entrepreneurial services for any commodity). Given this demand for confidence, the marginal cost of producing confidence (for example, holding gold stocks, maintaining an army and police force, or expending resources on any other inputs, such as a marble edifice or an impressive vault, which create confidence capital) implies

an equilibrium quantity of confidence and thus a demand for real cash balances function.

These confidence creating selling costs are generally overhead or fixed costs with marginal production costs equal to zero. That is, it is generally costless for a fiduciary money supplier to increase the quantity of real cash balances by lowering the price or alternative cost of holding his money. The problems associated with this socially optimal policy are similar to those associated with all regulated natural monopolies -- price equal to marginal cost implies that costs are not covered, i.e., price is less than average cost, and there is no profit incentive for the supplier to do a good job. In fact there is a short-run profit incentive to do a poor job, in this case by overissuing.^{17/}

On the contrary, if the price of the money is set as a positive level so that seigniorage is earned, the money supplier now has something to lose (future seigniorage) if he "messes up." An unanticipated increase in the nominal quantity of a competitive firm's money now implies a cost to that money supplier because of the loss of consumer confidence and resulting fall in his demand. This implies that consumers paying seigniorage are necessarily purchasing some quality assurance. Brand name capital is a form of collateral and seigniorage is equivalent to an insurance premium -- paid not only to pool risks, but to decrease risks.^{18/}

Therefore, more generally, given information costs about future performance, monetary confidence or "brand names" will have value independent of any explicit confidence-creating expenditures. Consumer demand for collateral or "backing" would necessarily imply a positive price or alternative cost of holding money such that a normal rate of return is earned on the residually measured intangible brand name capital. This "profit" stream or seigniorage can also be thought of as a cost to the money supplier of selling the real cash balances at the anticipated price rather than depreciating the monetary brand name. In a dynamic context the money supplier always has the alternative cost of "selling" this real asset by intentional depreciation

i.e., by unanticipated money supply growth, thereby increasing short-run profit in exchange for lower long-run or steady state profit.^{19/}

Failure to explicitly consider these confidence costs results in misleading analysis and policy conclusions. This is especially the case in the international monetary area where monetary confidence remains as a significant problem but where utopian schemes for reform often ignore these costs. For example, Harry Johnson [18] presents an obvious case of such an intellectual experiment which abstracts from these real world information costs and thereby produces misleading conclusions when analyzing the social saving from substituting "credit" for "commodity" money.^{20/}

Johnson implicitly assumes that confidence capital has a zero cost of creation and maintenance. It would, of course, be nice if the world were different and scarcity were eliminated, but given the world in which we live a group of economists and policymakers cannot merely get together and costlessly change informational constraints. These constraints are analytically similar to physical or technological constraints on the production process. In his analysis, for example, commodity money is considered to be merely a deadweight social cost and fiduciary money is merely a costless social invention which someone happens to think of. But if the confidence necessary to sell fiduciary money costs as much or more to produce as the commodity, then the social saving of substituting the credit money for the commodity money would be zero or negative. If, on the contrary, confidence is, as Johnson assumes, costless under a credit money arrangement, the obvious historical question is why credit money did not replace commodity before it did. A reasonable explanation cannot be that someone did not happen to think of the credit money idea. This is clearly untrue since many firms and countries tried unsuccessfully to introduce credit money quite early. Rather, a reasonable explanation is that commodity money was, at the time, the cheapest way to produce confidence. For example, a

forced movement from commodity to pure fiduciary money in the 19th century would have implied a negative social saving.

Grubel [14] using an analysis very similar to Johnson in discussing the distribution of seigniorage from the creation of a fiat money "acceptable to all countries in the settlement of debts" by a supranational agency, makes the crucial implicit assumption somewhat more transparent when he asserts that "money is what society wants it to be: precious metals, stones, coins, paper currency, demand deposits, saving accounts, negotiable paper, etc. Any of these instruments can serve the purposes of money as a medium of exchange and store of wealth if the proper social and economic institutions and conventions exist." (p. 270, emphasis supplied.) The last phrase, of course, begs the important question of whether monetary confidence costs are positive or not. It is common for social reformers to make the assumption that institutions can essentially be altered or new ones developed costlessly, but seldom is it as explicitly stated as by Grubel.

The discussions of international monetary reform and the creation of SDRs (or "paper gold") have also largely assumed that "money is merely what society wants it to be" or, more formally, that the IMF has unlimited monetary confidence or brand name capital. The existence of SDRs is predicated on demand or acceptability, which is based on the real value of IMF brand name capital. That is, given flexible exchange rates, the IMF can make the nominal quantity of SDRs whatever it wishes. However, even if SDRs were a reserve currency, the real quantity outstanding is determined, like all monies, on the demand side. And this real demand is partially determined by the IMF's brand name or monetary confidence capital.

A stationary equilibrium market measure of the IMF's limited real brand name capital can be obtained by multiplying the difference between "the" market interest rate and the rate that is paid on SDRs, by the real value of the SDRs "in circulation."^{21/} This finite value of the brand name of SDRs is largely based not on the confidence and coercion capital possessed by the IMF, but to a large extent on the brand name monetary confidence capital of the U.S. and its willingness to accept SDRs.^{22/} In any event, it is this real, but intangible, brand name asset in the portfolio of the issuing institution that "matches" the outstanding liabilities. Real SDRs cannot be merely "created outright," i.e., net wealth cannot be created out of nothing.

It is this real IMF brand name asset, made visible by official international transactions, which also places a constraint on the real supply of SDRs outstanding. Given the real value of the brand name asset in steady state equilibrium and the market rate of interest, the real value of SDRs can only be increased if the IMF increases the interest it pays on SDRs, i.e., only if it increases real demand. Alternatively, if the real value of SDRs increases in the short run without an increase in the interest paid on SDRs, this implies that the brand name capital is depreciating. Current real profit has increased, but this is not sustainable. Future real profit must decrease to keep the present discounted value of real profit, or the given initial real brand name capital, unchanged. This short-run unsustained increase in real money which represents the depreciation (or "sale") by a money supplier of some of its monetary brand name capital in international exchange, is the only theoretically meaningful definition of a balance of payments "deficit" under fixed exchange rates. Operationally this can only be measured by pressure on the exchange rate and not by any essentially arbitrary measures of financial flows.

But more of this later. For now the major relevant point is both simple and obvious: we should not assume that a money, especially a newly proposed money, possesses unlimited monetary confidence and that its demand and market share will therefore depend solely on its current price or the inflation rate in terms of the money. The Europa proposal is therefore "utopian" and similar to other academic analyses that assume institutional and informational constraints can be altered costlessly.

4. Money as a natural monopoly and "the snake"

The large fixed cost and small or zero marginal cost of creating money suggests that the money industry is essentially a natural monopoly or that it is economically efficient for there to be a single money within a trade area. I therefore agree completely with the Manifesto's presumption that European monetary union has large potential economic benefits. What is unfortunate, however, is that this proposition can only be supported by vague analogies to the gains of a monetary versus a barter economy. The simple fact is that although Mundell lucidly stated the theoretical problem of optimum currency areas more than fifteen years ago, definitive theoretical work has not been done to establish the costs that are present in a flexible multiple money arrangement.^{23/}

Basically the problem is that the theoretical micro-economic (information-transaction cost) foundation for the existence of money is still lacking. Instead of solely relying on the obvious increased computational and money conversion costs of a multiple money system, I think it is more persuasive to examine the historical evidence in this area. The evidence indicates that monetary arrangements have almost always consisted of a single money or of multiple monies convertible into a single dominant money.^{24/} The only important example I am aware of where distinct monies circulated side-by-side domestically at flexible exchange rates for any

significant length of time is the flexible bimetallic (silver and copper) exchange standard that existed in China from about 1650 to 1850.^{25/} The only other multi-currency examples that can be cited are brief, atypical wartime or postwar arrangements such as the simultaneous circulation of gold and greenbacks in the U.S. during the Civil War.^{26/}

This suggests that there are large economic gains from a common money and the growing interdependence among the countries of Western Europe and also the United States and Japan should only increase the economic pressure towards the establishment of a single dominant money. It is the very fact that cases of competing currencies or multiple monies circulating within a trade area are so rare, if not non-existent that is the strongest element in the economic case for a unified money. But it is also this fact which suggests that a new parallel currency such as the Europa is not likely to be successful.

It is also important to recognize that the benefits from a unified money cannot readily be achieved by a fixed exchange rate arrangement among multiple monies unless one of the monies is designated as the dominant money into which all the others are convertible. The "snake", which did not specify such a dominant money in terms of which the other members would have had to maintain convertibility, was therefore destined to fail. Without such an asymmetric relationship, it is necessary for the members of the arrangement to coordinate policies and establish explicit rules regarding whose responsibility it is to adjust.

If a community reserve fund, for example, is established to keep the snake within required bounds then this implies that low inflation or surplus countries would be partially financing the balance of payment deficits of the more inflationary countries. Once surplus countries even partially assume responsibility for adjustment, a competitive incentive is established for each country to inflate more rapidly than the other countries. This produces a deficit in the country's trade

clearing accounts with the other countries, financed at least in part by the increased holdings by the other countries of its money -- or a trade of its costlessly produced money for the real goods and services of the other countries^{27/}.

The European Monetary Co-operation Fund (FECOM) established for multilateral currency intervention to maintain the snake parities had much too small a reserve base to have any significant effect in this regard and surplus countries had to rather quickly temporarily float their currencies or readjust their exchange rates. The fact that Germany has accumulated the major portion of the European Community's international reserve holdings, however, indicates that this competitive force may have been present to some extent.^{28/} In addition, there have been discussions regarding the expansion of the FECOM. Much of this discussion centers on the establishment of explicit bureaucratic rules governing adjustment responsibility. But all of these rules are essentially arbitrary guidelines based on objective but misleading financial flows and not as easily enforceable as a dominant money arrangement. In particular, the movement to a so-called gliding parities arrangement is likely to be less disruptive than the abrupt changes that have occurred in official exchange rates within the snake in the past, but are certainly not fixed exchange rates and represent a movement away from European monetary union.

The disruption that has occurred within the snake and its ultimate failure clearly indicates the difference between fixed exchange rates and rates that are "convincingly" pegged as part of a currency area. Rates may be temporarily "fixed" while the anticipated probability of an exchange rate change be significant, i.e., rates are merely "fixed" between expected readjustments.^{29/} This essential continuum between fixed and flexible exchange rates is obvious, for example, when comparing the dollar exchange rates of the yen and mark to the dollar exchange rates of the pound and French franc over the 1951-71 "fixed" exchange rate period. At the extreme,

a single money, by eliminating even the possibility of an exchange rate change, represents the most predictable "fixed" rate arrangement along this more general continuum of fixed versus flexible systems.^{30/} In any event, the snake, with its many exchange rate changes due to lack of monetary coordination, was very far indeed from a European optimum currency area arrangement.

What remains of the snake is essentially a Deutschmark currency area, with four currencies (the Netherlands guilder, the Belgian franc, the Danish krone and the Norwegian krone) now tied with varying degrees of predictability to a de facto dominant mark. The Deutschmark is, of course, the obvious candidate for a European dominant money and as the center point of an expanded workable snake arrangement. Perhaps if World War II had not occurred and its residual hostility were not present this could even be a distinct possibility for the future. Meanwhile what remains of this experiment in European monetary coordination is this residual Deutschmark area and increased European capital controls, put in place over the last six years in an unsuccessful attempt to maintain uneconomic fixed rates.^{31/}

5. The International Dollar Standard and European "Free-Riding"

A dominant money is necessary if effective European monetary coordination is to exist. And if this money is not to be the mark, the obvious alternative is the dollar. European adoption of a dominant dollar standard is therefore a logical and practical way to effect European monetary union. The essential economic benefits of a monetary union could readily be obtained by fixing convertibility of each of the European national currencies at a given exchange rate into a dominant U. S. dollar and permitting denomination of European bank deposits in dollars. In fact, much of the post-World War II period can be described as a movement towards such an international dollar standard. We would, I think, be continuing to move at a

rapid rate in this direction if the U. S. did not "mess up" in the late 1960s and early 1970s by producing a large unanticipated increase in the dollar money supply. It was this unanticipated money supply increase and the corresponding large "involuntary" holdings of dollar reserves by some European central banks (and Japan) to maintain dollar parity that effectively halted the move to an international dollar standard and produced the political and economic forces for the creation of a substitute, independent European monetary unit such as the Europa.

But it is important to recognize that the dollar standard did, in a sense, give the Europeans the best of both worlds. They had some of the major benefits of a unified currency area without having to give up the seigniorage on the currency stock which the Europa proposal would largely require. The inflation tax on high-powered money, rather than necessarily being socially inefficient, is likely to be part of an optimal tax package. Given real transaction and distortion costs of levying and collecting all taxes, we would expect an excise tax on money holdings to be part of an efficient general equilibrium tax scheme, especially since the demand for high-powered money is price (interest) inelastic.^{32/}

What, then can we learn about the international dollar standard to help us explain U. S. behavior beginning in the late 1960s that destroyed the momentum towards effective world monetary union? Some obvious, but often neglected points, should be made at the outset. First, the dollar gained its dominant international position not by legalistic coercion, but voluntarily in the marketplace. No U. S. governmental authority forces foreign individuals to hold dollar denominated deposits and to use the dollar as an international unit of account, medium of exchange, or store of value. The United States has its current international monetary position not because of artificially imposed government regulations, but primarily because of its past and prospective performance.^{33/}

Secondly, although competitive switching to a new dominant money is costly and will generally proceed very slowly, the U. S. dollar's dominant position is not exogenous but can also be lost in the competitive marketplace. While formal international monetary models assume that the dominant money supplier can make its money supply whatever it wishes and is not subject to a balance of payments constraint, a reserve currency country such as the United States is limited by the same competitive forces outlined above with regard to SDRs. These forces were analytically represented by a given finite value of real brand capital and the possibility of a short-run "deficit" in the sense of depreciation of this capital. If the depreciation proceeds far enough, the country could, in the long-run, lose its valuable reserve currency position. Although the dollar brand name has depreciated over the last decade due to unexpectedly poor inflation performance, the dollar does still remain as the primary international currency. However, as the fortunes of the pound over the last two centuries vividly illustrates, this position is certainly not a perpetual right.

The limited, depreciating value of the dollar brand name capital, evidenced by the recent movement out of dollars as a reserve currency and the implied foregone future profit or seigniorage, essentially is the balance of payments constraint under which the United States is currently operating. Seen in this context, concern by the U. S. for its balance of payments position, correctly defined, is legitimate because it represents a loss of future seigniorage. This is analytically analogous to the concern of a business firm for its credit rating and therefore its future borrowing ability.

While there is no outside authority (e.g., a foreign central bank) willing to maintain the market price (exchange rate) of, for example, General Motors bonds, an unanticipated increase in the supply of these bonds produces a capital loss on previous bond holders similar to the capital loss imposed on dollar holders under

flexible exchange rates. This policy will damage GM's future borrowing ability and at the extreme will lead to a complete destruction of the credit rating or bankruptcy, analytically similar to a policy of hyperinflation by a money supplier. The existence of fixed exchange rates for a dominant money supplier merely creates the possibility of an added short-run wealth gain as foreigners temporarily "involuntarily" accumulate reserves in an attempt to maintain the exchange rate commitment in the face of unanticipated dominant money increases. But under fixed or flexible exchange rates this "deficit" or depreciation of monetary brand name confidence capital is costly. It implies the loss of future seigniorage represented by a greater rate of interest that must be paid on any given level of outstanding financial liabilities issued in the future.

The concern by the U. S. for its balance of payments position is, of course, contrary to most current economic thinking on the matter. It is commonly held that there is no reason why a reserve currency country such as the U. S. should, for example, create transitory unemployment to correct a balance of payments deficit. Such a deficit must be adjusted to by other countries in the form of their increased holdings of dollars, an increase in their money supply and a more rapid inflation rate, or by appreciation of their currency. This "benign neglect" or passive international policy originally stated by Haberler and Willet [15] ignores the possibility of the loss of reserve currency position by the U. S. and the associated costs of the loss of future seigniorage. The United States should especially be concerned with its balance of payments position if international disequilibrium as existed in the late 1960s and early 1970s causes other countries to search for a new dominant money such as the proposed Europa and thereby leads to a substantial reduction in the international demand for dollars.

The United States has, in fact, followed the Haberler and Willet prescription since 1971 and appears to be slowly losing its dominant position, primarily to the Deutschmark and Swiss franc.^{34/} The empirical evidence indicates that the U. S.

balance of payments deficit significantly entered the U. S. money supply reaction function negatively over the 1955-71 period when fixed exchange rates and a dollar reserve currency arrangement supposedly implied that the U. S. should have been unconcerned about its balance of payments position. Since 1971, however, the balance of payments has not entered the U. S. money supply reaction function significantly.^{35/}

This period since 1971 can be thought of as one of disinvestment or consumption by the U. S. of its international monetary confidence capital. And, as we shall see, such a policy may, in fact, have been rational, i.e., wealth-maximizing, for the U. S. The seigniorage earned on foreign holdings of high-powered dollars should be thought of as payment by foreigners for the use of U. S. monetary confidence and as a normal return on the dollar brand name capital. As already indicated, however, this seigniorage was extremely low under the de facto dollar standard because competitive foreign commercial banks and governments essentially obtained a "free ride" on the dollar brand name by denominating bank deposits in dollars and by tying their currency to the dollar without being required to hold non-interest bearing dollar reserves against these liabilities. Foreign official and private holdings of "dollars" consist primarily of U. S. Treasury securities or of interest bearing Eurodollar deposits which are essentially unbacked by high-powered dollar reserves.^{36/}

This "free ride" is, of course, not complete because a foreign currency, even if tied quite convincingly to the dollar still is distinct from the dollar and possesses a non-trivial probability of an exchange rate change.^{37/} And a Eurodollar deposit is not identical to a U. S. dollar deposit since, for one thing, neither the FDIC nor the U. S. Federal Reserve has an obligation nor is likely to protect a foreign banking institution from failure.^{38/} Therefore Europeans did not get all the benefits of a currency area. But the free ride was rather close to being complete and, considering the differential cost of supplying these Eurodollar substitutes, represented a major financial innovation -- from the holders point of view.

From the point of view of the United States, however, this "free ride" represented an attempt by foreigners to evade the seigniorage payment and may rationally explain why the U. S. may have intentionally depreciated the international brand name value of the dollar via an unexpectedly high inflation rate over the last decade. Because the growth in the 1960s of these competitive substitutes for the U. S. dollar such as Eurodollar deposits significantly reduced the per dollar seigniorage earned by the U. S. in supplying the dominant money, it also significantly reduced the incentive on the U. S. to "do a good job" (the fear of the loss of future seigniorage on this dollar base). In fact, these international institutional arrangements created a profit incentive on the U. S. to produce an unexpectedly rapid inflation and thereby make a large short-run profit. Wealth maximization would dictate a short-run policy of deception and intentional depreciation of the dollar brand name since the longer-run reduced profit consequences would be minor. If the expected steady state seigniorage return is small, then little is being given up in the future with such a policy.

While the U. S. engages in short-run unexpected inflation, foreign (surplus country) governments accumulate dollar balances in an attempt to maintain the fixed exchange rate. This foreign sterilization in the face of a balance of trade surplus implies a trade of foreign consumption and investment goods for dollar balances and an implicit transfer of wealth away from foreigners to U. S. consumers. The purchase of the U. S. dollars by foreign central banks at incorrect (non-market) prices is a speculative activity that represents an implicit tax on foreign citizens, collected in part by U. S. citizens.^{39/}

These are, of course, my conjectures. I am not claiming that this wealth transfer is necessarily conscious U. S. policy, but merely that such a short-run policy is likely to be wealth-maximizing for the U. S. under current international seigniorage arrangements. Hence it is a policy that will be more likely to survive

politically, If the insurance premium (seigniorage) is not paid by consumers then the money producer has nothing to lose if he "messes up" and he should therefore sell his collateral (brand name capital) by intentional deception. The "benign neglect" proscription makes some economic sense — from a narrow U. S. point of view, but certainly not from a larger world social welfare point of view. We may expect U. S. monetary authorities to be relatively unconcerned about such "free rides" on the dollar brand name on the part of domestic banking institutions such as non-member commercial banks and other domestic financial institutions not required to hold high powered dollar reserves. Since real cash balances are costless to produce on the margin, it is efficient to let the price of money fall by such domestic innovations. But in the international market there is a much smaller political incentive to forego such returns for the greater (global) social good.

6. Concluding Comments

It is the recent unanticipated, and perhaps intentional, dollar inflation which is the primary economic motivation for the European break with the dollar (i.e., the explicit movement to flexible dollar exchange rates) and for the pressure to create a European substitute for the dollar standard.^{40/} If the dollar inflation rate did not fluctuate unpredictably there would have been little justification and therefore demand for the creation of the Europa. As noted above, the dollar seigniorage return was relatively small under the international dollar standard. In addition, although the European countries (especially Germany) largely gave up the ability to engage in short-run independent macroeconomic stabilization policy, I agree with the Manifesto that such independent monetary policy cannot influence long-run unemployment and, as a practical matter, will only produce a political business cycle and increase the long-run inflation rate. If the Manifesto's arguments are correct that little will be given up by each of the

European countries in adopting the Europa, then they are also correct with regard to adoption of the dollar as the dominant money.

What the Europeans would also give up with adoption of a dollar standard is some "national identity." This may seem to be "merely psychological," but such nationalistic forces are not necessarily irrational and represent perhaps the strongest argument against not the dollar but the Europa. The desire by countries to maintain their individual national currencies is so strong because control of a nation's money supply has important national defense implications. Such control carries with it the ability to quickly gain control of a significant quantity of the country's resources. It represents a very large potential tax that can be levied quickly and collected in a broadbased and efficient way, without short-run market or democratic tests.^{41/} Therefore it is unlikely that national currencies will be given up, as the Europa scheme ultimately requires, until national sovereignty is given up.

Once again the dollar standard potentially gives the Europeans the best of both worlds. By maintaining their individual national currencies they not only continue to collect the seigniorage tax which is likely to be an important element in an efficient national tax package but also to maintain monetary sovereignty and the ability to inflate rapidly and float in times of national crises. All this is preserved while obtaining the major benefits of a unified currency area.

But the international dollar standard is now essentially moribund due to recent U. S. inflationary behavior. As we have seen, it is in the very nature of a dominant money for there to be an enormous profit incentive to inflate. Once the dominant money is established, demand is highly inelastic. For example, Cagan's [5, p. 81] estimates of the constant (and therefore anticipated) rate of change in the quantity of money and prices that would maximize the government's revenue in hyperinflation ranged from 12 to 54 percent per month. This is, of

course, the profit maximizing rate determined where the elasticity of demand for real cash balances is -1 and not necessarily the wealth maximizing rate. Over time we can expect increased substitution towards alternative monies and therefore a decrease in the demand for the money. But, more importantly, if we allow for unanticipated increases in the money supply, wealth maximization could, in principle, imply short-run capture of the entire non-human wealth of the economy if there is a lag in the adjustment of prices and of consumer confidence to current unanticipated money supply increases.^{42/}

Political considerations, rather than purely economic (wealth maximizing) considerations, are the effective constraints in this situation. Because of the extreme rigidity present with regards to social choice of a dominant money and the enormous wealth that can be gained by the dominant money supplier with a short-run policy of deception (i.e., unanticipated money supply increase), the private unregulated contractual solution would imply an extremely high "premium" or seigniorage return. Only in this way would we guarantee by the loss of future demand and therefore future seigniorage that wealth maximization would imply non-cheating behavior by the private dominant money supplier. However, because the unregulated non-cheating price will necessarily be extremely high, i.e., the equilibrium seigniorage return will be extremely high, it is unlikely that the private contractual solution is the most efficient arrangement. In particular, some government intervention in the form of regulation or outright nationalization is likely.^{43/} And under these circumstances some political, i.e., implicit or explicit constitutional, constraints must be placed on the government supply of the dominant money.

It was the absence of such international political constraints that led to the recent unanticipated dollar inflation and wealth transfer to the U. S. and if the international dollar standard is ever to become firmly established some such credible political guarantee will have to exist. In retrospect, the dollar-gold

convertibility arrangement may turn out to have been the cheapest method of creating this international credibility. Without such an institution a very long period of dollar price level predictability will now be necessary to undo the large loss in dollar confidence produced over the last decade.

Similarly, it is this important question of political or constitutional constraints on the money issuer, largely ignored in the All Saints Day Manifesto, that is crucial. If a move towards European political unification occurs which will make the Europa feasible, it will be necessary to write a very explicit monetary constitution which does not give much room for discretionary policy except perhaps to fight (or deter) a war. It is important to recognize that once the European dominant money is established and demand becomes highly inelastic, there will be an enormous profit incentive to inflate and debase the currency like all sovereigns have done in the past, no doubt for a worthy cause. In fact, a single established money in Europe would eliminate whatever amount of competition between monies now exists and greatly increase the inflationary incentives. For the Europa proposal to be successful and actually represent a significant step towards a more predictable monetary framework, it will probably be necessary (as the Manifesto suggests) for the European monetary authorities to be relatively independent of the European Parliament and for the monetary rule to be imbedded quite rigidly in the European constitution. But on these essentially political issues economists now know very little. Hopefully in the near future our research will be able to catch up with our proposed policy reforms.

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1/ The United States has recently passed legislation to repeal the "gold clause" of 1933 which stated that no contract would be enforceable in U. S. courts if it required payment in gold or a dollar equivalent to gold at a fixed gold price. Although it is therefore now legally permissible to index U. S. contracts, both domestic and international, to gold, I would expect very little of such indexing to occur.

2/ A very low high-powered dollar reserve ratio is maintained behind Euro-dollar deposits created by European banks in the form of a small desired U. S. dollar deposit to Eurodollar deposit ratio. These dollar deposits are held by the European banks at U. S. commercial banks (primarily a few New York City institutions) which, in turn, must hold a fraction of this relatively small amount of deposits in non-interest bearing dollar reserves. European branches of U. S. banks, on the other hand, have a four percent reserve requirement set directly on their Eurodollar deposits by Federal Reserve Regulation M and therefore generally pay less interest than European banks on these deposits. Bergston [3] estimates that in 1972 only about ten percent of U. S. short-term liabilities to foreigners were non-interest bearing.

3/ While there appears to be no systematic time series pattern in ex post short-term dollar real rates, ex post long-term (10 - 20 year) dollar real rates have been consistently negative over the past 25 years. This is due to the largely unanticipated and very slowly recognized movement over the postwar period from a dollar-gold standard framework to a new fiduciary U. S. monetary framework (see

Klein [22].) This evidence suggests that one cannot simply look at Box-Jenkins measures, i.e., at autocorrelations of errors, to determine if markets are efficient. The problem appears to be that we do not have enough independent observations of such similar fundamental changes in the underlying monetary framework to test if competitive market rates are unbiased estimates. Milton Friedman has convinced me, however, that the efficient markets theory can never, in principle, be tested in this way if one thinks of probability in the purely subjective (Savage) manner.

4/ The dollar is still clearly the world's major reserve currency, while more new Eurobond issues are now denominated in marks than in dollars (see Klein [22] and [24] for operational measures of short-term and long-term dollar price uncertainty.

5/ The two effects of an increase in price uncertainty (which lowers the "quality" or monetary service stream from money) are (1) an increase in the demand for money necessary to produce any given monetary service flow (the substitution in production effect) and (2) a decrease in the demand for money due to an increase in the implicit price of monetary services (the competitive complementarity in consumption effect). See Klein [23] for the complete theoretical framework.

6/ See Klein [23] and Klein and Teixeira [26].

7/ See Frenkel [12]. Frenkel's observations on price uncertainty are in a different range from my observations in [23]. Since I do state that we should eventually expect the relationship to go from positive to zero and finally to negative as a function of interest elasticity, Frenkel's evidence is not inconsistent with my theory. If the money demand curve is linear we would expect to be in a more elastic region during hyperinflations and therefore for the measured relationship to be reduced.

8/ The existence of this competitive effect implies that a country increasing its money supply in an unanticipated manner will, under flexible exchange rates, export deflation. Such a policy will increase the demand for alternative monies. This is somewhat contrary to the common proposition that under fixed exchange rates such a country would be exporting inflation, while under flexible exchange rates other countries are fully insulated.

9/ In the U. S., for example, the results indicate that an unanticipated inflation, besides producing a once-and-for-all tax transfer to the government, will also increase future price uncertainty and thereby increase the demand for money (see Klein [23]). What places a limit on this possibility of increasing the tax base in the short-run by intentionally creating price uncertainty is the degree of competition, in the sense of the implied elasticity of demand for monetary services. The more important limits on this process are the domestic political constraints, rather than the competitive economic constraints, that are placed on money issuers.

10/ This is an implicit assumption that is often made in international trade, often stated as the law of one price applied to assets and formulated as the equality of interest rates across assets adjusting for exchange rate risks. If, however, assets are less than perfect substitutes, this interest parity condition will not necessarily hold in portfolio (stock) equilibrium. For example, even two very similar domestic financial assets, say savings and loan shares and commercial bank time deposits, can exist side by side yielding unequal interest rates because of imperfect substitutability. Certainly the importance of differing non-pecuniary factors will be greater across countries. Equations estimating capital flows between countries therefore perform better when assumed to be related to changes in interest differentials rather than the interest differentials themselves.

11/The designation "legal tender" means that creditors cannot legally refuse the money as payment for a claim, i.e., they cannot use the courts and police to force discharge of a contract in an alternative money. However, there is much evidence that relatively informal legally unenforceable contractual practices predominate in business and that reliance on explicit legal sanctions is extremely rare. See Klein [20 p. 448] and Hayek [16] for further discussion and references to the historical evidence on the existence of nonlegal tender circulating monies. Perhaps the most spectacular example is the Maria Theresa thaler which for more than a century circulated as the principal medium of exchange in the Red Sea area, particularly along the southern coast of the Arabian Peninsula and the Horn of Africa. The thaler was introduced in the Arabian Peninsula through commercial relations in the early nineteenth century and remained the dominant unit of account and medium of exchange even though in 1858 it ceased to be legal tender in Austria.

12/On the contrary, the post-World War II German inflation, which was significantly milder than these hyperinflations was unique in terms of the relative amount of domestic currency that apparently was replaced as a medium of exchange. For a period of time cognac and cigarettes were substituted for the dominant money in almost all transactions. This was, of course, due to the presence of extraordinary price controls that were very rigidly enforced by the occupying armies, not because of a high inflation rate in terms of the money.

13/Graham [13] and Bresciani-Turroni [4] estimate the ratio of foreign to domestic real money holdings in October 1923 Germany to be between five and thirteen. Although reported estimates vary a great deal from month to month and are rather unreliable, these figures should give us some general idea of the large magnitude of foreign currencies held. See Statistisches Reichsamt (1924, pp. 69-70) for an account of the German legislation attempting to regulate this large amount of foreign exchange.

14/ See, for example, OPTICA Report 1976 [9].

15/ During the fixed rate exchange crises of the 1960s and early 1970s it was generally believed that the probability of a change in the official parity was positively related to the number of explicit assurances by the monetary officials that the exchange rate would be maintained.

16/ See for example, Friedman [11].

17/ If the demand for money function is linear we would expect the price elasticity to be highly inelastic in the range near the "optimum" zero price and therefore for the money supplier to have an especially large short-run profit incentive to overissue his money because price uncertainty will increase real demand (see discussion above, p. 5). The increase in the real monetary base and decrease in price, elasticity increases the short-run profit from overissuing. The "optimum quantity of money" may therefore not necessarily be socially optimal if there are added real costs of creating institutions to prevent this short-run monetary deception from occurring. See section 5 below for further discussion of these issues.

18/ See Klein [25] for a fuller discussion of these and related issues.

19/ An obvious and possibly rational example of this type of intentional depreciation was involved in the decision by England after World War II to adopt a policy of inflation and devaluation, with a resulting loss of pound brand name capital, rather than a policy of a reduced rate of growth of money to "repay" the borrowings it made against its monetary brand name capital during the war when it credited foreign accounts at the Bank of England in exchange for real resources.

20/ Also see Johnson [17].

21/ Since SDRs cannot be freely used in transactions, even official international transactions, like dollars or gold, the quantity of SDRs effectively demanded, or voluntarily held, is difficult to measure. (In fact the IMF has explicit rules and penalties against "excessive" use.) Aggregate IMF "allocations" are clearly an overestimate of effective money demand. Even some SDRs voluntarily taken by a country after negotiation as payment for a balance of payments surplus may only be a new way to supply foreign aid credits and therefore also represent an upwardly biased measure of real money demand.

22/ One possible explanation of U.S. policy is that it is based on a failure to fully understand the international position of the dollar. To a large extent the post World War II increase in foreign holdings of dollar assets has resulted from the relative rise of the dollar brand name. It represents the export of monetary services and therefore should be thought of as a surplus item in complete balance of trade accounts, rather than accumulating "deficits," and hence does not imply the existence of a "dollar overhang" problem which must be solved by the creation of a new international asset. See, for example, McKinnon [28].

An alternative explanation may be that it represents a strategic competitive move to discourage the development of gold or a European monetary unit as a international money substitute for the dollar.

23/ See Mundell [29] and McKinnon [27] for the original statements of the problem. Mundell's assertion that if the number of currencies equaled the number of commodities trade might just as well be conducted in terms of pure barter because the usefulness of money as a unit of account and medium of exchange would disappear is incorrect. We would have the same number of prices, i.e., exchange rates, as

in a pure barter economy, but transactions costs such as storage, valuation (weighting, etc.) may be saved. McKinnon's attempt to specify the exact nature of the monetary service flow from money and therefore make more than an intuitive argument in favor of an optimum currency area is also not successful. First, he incorrectly identifies the monetary service (or liquidity) flow from a money with price level stability, rather than price level predictability. He then claims that this will imply fixed exchange rates of a small country with a large country. But this will only be the case if the large country is also maintaining a stable price level. And, in any event, these arbitrary assumptions will only imply constant exchange rates and not necessarily a currency area -- which is essentially a single money or perfect confidence that the monies are convertible into one another at fixed exchange rates. As noted below with regard to the European "snake" arrangement the crucial analytical criteria for a currency area is a small probability of an anticipated exchange rate change. The theoretical work done in extending the original analysis (see, for example, Johnson and Swoboda [19]) has not been very convincing. Hence the strong policy statements with weak analytical foundation present in the Manifesto.

^{24/} Cipolla [7, ch. 2] documents the fact that dominant monies existed over large areas and long time periods as early as the fifth century when the Byzantine gold solidus had a dominant position throughout the Mediterranean.

^{25/} Even this Chinese experience may be an example of a market-induced optimum currency arrangement along industrial and hence regional groupings. See Chen [6].

^{26/} The classic U.S. example of competitive domestic monies circulating at flexible exchange rates is often considered to be the pre-Civil war "free banking" experience when many different bank notes circulated side by side

with one another and with gold at various market determined discounts. A closer examination of this period, however, indicates a monetary arrangement much closer to a single dominant money standard, with bank notes denominated in gold and generally circulating at par. See Klein [20, pp. 439-441].

27/ U. S. colonial experience in the first half of the eighteenth century is illustrative of this force. Separate paper money issues of each of the New England colonies were agreed to be acceptable at par in each of the other New England colonies in payment of taxes and in general exchange. This attempt to create a currency area led to rapid inflation via competitive issuance of increased money by each of the colonies and, finally, the abandonment of the arrangement.

28/ Germany possessed about 47 percent of the EEC's official reserves in July, 1975 (See DeGrauwe, et. al. [10], p. 31), while at that time it produced only about 30 percent of the EEC's gross domestic product.

29/ For example, forward exchange rates, which are highly significant for international trade, were frequently outside the "guaranteed" band of the spot rate during the period of "fixed" exchange rates in the late 1960s.

30/ A single money also reduces the monetary calculation costs by setting the fixed rate at one to one. All fixed exchange rates systems are not equivalent in terms of reducing transaction costs.

31/ See, for example, DeGrauwe [10], Annexure II.

32/ Because of different transaction costs, the efficient inflation tax may vary across countries. (For example, a larger percentage of taxes may be efficiently collected by inflation in Italy than in the U.S.) In such a case, policy makers must trade-off the economic gains of increased monetary union with the increased costs of collecting taxes by alternative means if inflation is limited to the U. S. rate.

^{33/}See McKinnon [28] for a persuasive statement of the proposition that development of the dollar standard was largely a market solution to the problem of the need for an international money. It should be noted, however, that economists do not have a very good understanding of how and why a particular money becomes a dominant money. Research on the fundamental unanswered questions regarding the nature of the monetary service stream and the production function for monetary confidence is necessary to throw light on this issue.

^{34/}Why the Germans and the Swiss have been resisting this movement towards use of their monies as international substitutes for the dollar, e.g., by imposing capital inflow controls, is somewhat of a mystery. Part of the answer is probably the short-run unemployment effects produced by the import surplus represented by this capital movement. In addition, these international movements potentially increase the short-run volatility of their domestic money supplies. And, finally, the long-run seigniorage returns are not all that great, as the experience with the dollar indicates.

^{35/}See Price [30] for these empirical results. The balance of payments measure that enters significantly is the deflated (by the high-powered money stock) official reserve settlements measure, rather than the balance of trade or the liquidity concept. This is the result one would expect on theoretical grounds since private holdings of dollar liabilities are certainly not "involuntary" holdings accumulated to maintain the dollar exchange rate. Therefore the official settlements measure is a more appropriate economic measure of pressure on the exchange rate.

^{36/}The Federal Reserve has eliminated part of this private "free ride" by requiring reserves be held against dollar deposits in foreign branches of U. S. banks but, of course, are unable to regulate foreign dollar deposits in foreign banks. We should also note that some foreign holdings of dollars yielding less than a

market rate may merely be an indirect payment for other services rendered. Germany, for example, may decide to "voluntarily" hold additional dollar reserves as payment for the stationing of U. S. troops in Germany. This political transaction was, in fact, made quite explicit at times during the 1960s. The increased foreign holdings of dollars in such a situation should obviously not be considered as an official settlements deficit in the balance of payments, but rather merely as official payment to the U. S. for export of protection services.

37/ An obvious example is the yen which did not fluctuate in value relative to the dollar for 25 years. With Japan maintaining a rigidly fixed exchange rate with the dollar until 1971, long-term Japanese monetary policy was essentially determined by the Federal Reserve Board in Washington, D. C. and a blurring of some of the distinction between the dollar and the yen in the minds of international transactors must have been produced. But, judging from the existence of a forward exchange market, the country was not considered as just another Federal Reserve District.

38/ Since U. S. and foreign dollar assets are not equivalent, we would not expect the interest rates on the different assets to be identical and, in particular, we would expect the Eurodollar rate to be higher than the U. S. rate in times of financial crisis. More generally, assets possess many characteristics and are not necessarily perfect substitutes because they are denominated in the same units and are of the same maturity (see fn. 10 above).

39/ To get some idea of the magnitude of losses involved, during the first quarter of 1973 the Bank of Japan purchased about \$10 billion at about 300 yen/dollar in an unsuccessful attempt to keep the yen from appreciating. The yen market exchange rate rose to about 265 yen/dollars when the Bank of Japan finally gave up, implying a "loss" of about \$1.2 billion over a period of a couple of months.

^{40/}McKinnon's [28] assertion that flexibility would increase the private demand for dollars seems to be incorrect. Actually, a break in a convertibility arrangement, say of the mark with the dollar, has two contrary effects on the demand for dollars. It eliminates the "free ride" by the mark on the dollar brand name, but it also creates a fully independent international competitor for the dollar. While the first effect clearly dominated in the case of the break in the gold-dollar tie, the second effect appears to have dominated in the case of the mark-dollar break. Part of the difficulty for the dollar is that flexible exchange rates were adopted in response to an extremely poor (i.e., unpredictable) dollar performance.

^{41/}The mercantilistic doctrine of hoarding gold bullion similarly makes some sense because gold represented national defense security or advertising to potential enemies of the ability to quickly raise an army (e.g., hire mercenaries). Gold was an extremely liquid form in which to hold part of a nation's wealth similar to strategic reserves of soldiers or oil held by countries presently.

^{42/}It is only the costs of increasing the money supply and buying up all the assets in the economy which places an economic limit on this process. See Klein [20, p. 437].

^{43/}See Klein [20, p. 450] and Klein, Alchian and Crawford [25A] for a more complete discussion of these issues.