ECONOMIC EDUCATION BULLETIN

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# MONEY, BANKING AND INFLATING

## A Useful Description

by

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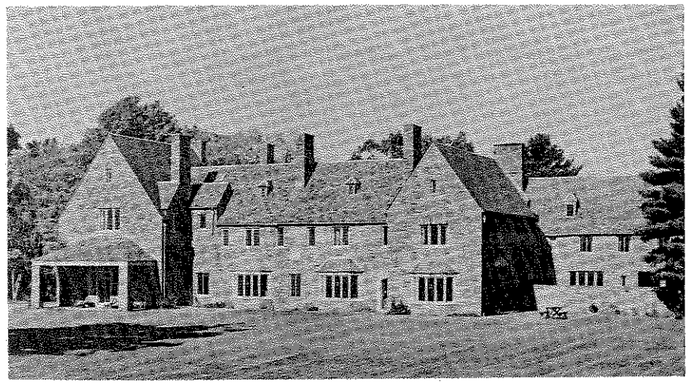

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# FOREWORD

THE results of decades of inflating in this country are becoming increasingly unpleasant and much more apparent. That the economic distortions created are disrupting social order hardly will be unnoticed by anyone who has even a glimmer of the news.

Andrew Dickson White, who reported on inflating in France in the late 1700's, commented that all the worst characteristics found in human nature, avaricious embezzling, reckless speculation, betrayal of trust, and the like, grew like "fungus on a muck heap." When one observes what has gone on in high corporate finance, in banking, in government during recent years, one is impressed with the fertility of the Western civilization "muck heap."

Most prominent today are not the characteristics of a lasting social order; at least one hopes that these characteristics will not last. Unfortunately, however, present indications are that developments will be worse, much worse, before there is a lasting turn for the better.

Why do we believe that worse conditions await Americans in spite of their now-high sensitivity to the issue of inflating? A chief reason is the widespread evidence we see that, although the symptoms of inflating have caught the attention of the popular press and the public, there is more misunderstanding of the root of the problem than there is a clear understanding. Even among advocates of so-called hard money there are noticeable significant gaps in their descriptions of the problem, its probable implications, and its cure.

For more than 45 years, AIER has focused special attention on the study of "money," developing during those years a rigorous specification of inflating and a procedure for estimating it. As long ago as in the November 1934 *Research Reports*, Col. E. C. Harwood, founder of AIER, wrote, "It may be safely asserted that the most important threat to the economic future of this country is inflation." Nowhere else has our work been closely approximated, as far as we know. "Inflation," or a chronic rise in the general level of prices, is measured regularly through various price indexes. But general price increases, or "inflation," are only a symptom of inflating, much as a high body temperature is a symptom of some illness, not the illness itself. Other economists studying inflating have focused on changes in money over time in relation to changes in some measure of actual transactions over the same period, but they have not attempted to measure the absolute level of inflating.

Uniqueness is not a sufficient reason for having confidence in our descriptions of the relationships that we name "inflating." As we describe later, our basic views have been tested by predictions based on them, and the results have proven to be useful. Enough individuals were aided by our analyses, based largely on these views, that we have survived financially as a nonprofit organization dependent entirely on the voluntary support of a large number of small contributor-members. This also helps ensure impartial research, unhindered by pressure from special interests.

In this booklet we present a summary description of our latest findings concerning the age-old, pernicious problem now beleaguering Americans – inflating. Nowhere else will you find this helpful description.

# I.

# WHAT A DOLLAR WAS

IN Colonial times many items circulated as purchasing media. Even the monetary specie that was available comprised a wide variety of coins in various conditions of wear and tear. Among these was the Spanish milled dollar. This silver coin was also known as the "pillar dollar" (because of its design), or a "piece of eight" (because its denomination was 8 *reales*). When the Continental Congress considered problems of raising and disbursing funds, its resolutions usually specified these dollars. The rejection of English monetary units presumably reflected the fact that the Spanish coin then was the most widely circulated and trusted coin in America.

Plans for minting Continental currency never progressed past the making of patterns, and the "Continental" was entirely a paper currency promising payment in Spanish milled dollars. Large issues by Congress, and counterfeiting of them by the British, quickly drove the Continental to a discount. At one point, as many as 500 or even 1,000 Continentals may have exchanged for one Spanish milled dollar. The U.S. Government eventually offered to redeem the Continental currency at the rate of one dollar for 100 of the old issue, but only a small fraction was so redeemed. Presumably, most of the remainder had been discarded by its owners as virtually worthless. This episode henceforth made Americans suspicious of banks in general and of currency not linked to gold or silver.

The effects of the collapse of the Continental currency are easily overrated. No doubt many holders of Continentals suffered losses, but apparently there were few debts denominated in Continentals other than the issues themselves. The colonists were used to near-chaos in currency matters, and for the most part they were able to put the Continental in perspective alongside paper money issued by the states, wampum, pelts, strange coins, etc. During the time of the Continental dollar, much business continued to be transacted in specie, and legal tender laws proved to be unenforceable. General Washington himself instructed the manager of his estates to accept rents only at "intrinsic worth," and he later noted that the law could never "have been intended to make a man take a shilling or six-pence in the pound for a just debt."

Quite clearly, the Spanish milled dollar, not the Continental, was the ancestor of the present U.S. dollar. The Spanish coin remained in circulation in the United States until well into the 19th century, and it was legal tender until 1857. Today its footprints are still visible in the practice of trading securities in fractions of eighths instead of decimals and in the popular reference: "two bits," "four bits," etc.

The U.S. dollar was established in 1792 when the Congress authorized the minting of coins, whose specifications are shown in Table 1. The weight of the "dollar or unit,"

Table 1

UNITED STATES COINAGE AUTHORIZED BY THE MINT ACT OF APRIL 2, 1792

| | *Face Value* | *Metal Content (in grains)* |
|---|---|---|
| *Gold Coins* | | |
| Eagle | $10.00 | 247.5000 |
| Half eagle | 5.00 | 123.7500 |
| Quarter eagle | 2.50 | 61.8750 |
| *Silver Coins* | | |
| Dollar or unit | 1.00 | 371.2500 |
| Half dollar | .50 | 185.0250 |
| Quarter dollar | .25 | 92.8125 |
| Disme (dime) | .10 | 37.1250 |
| Half disme (nickel) | .05 | 18.5025 |
| *Copper Coins* | | |
| Cent | .01 | 264.0000* |
| Half cent | .005 | 132.0000* |

Note: Gold coins were an alloy eleven parts fine to one part silver-copper alloy and silver coins were an alloy 1,485 parts fine to 179 parts copper. The weights shown in the table are fine weight only. * Reduced to 208 grains for the copper cent and 104 grains for the half cent by Act of January 14, 1793.

371.25 grains of pure silver, was determined from an estimate of the approximate average silver content of the "pillar dollar" then in circulation in the United States. (The silver content of individual coins varied considerably because of wear and differences in mintings at Seville, Mexico City, Peru, etc., but apparently most circulated at par with one another.) The new fractional silver coins were exactly proportional in silver content to the dollar, or unit, and the gold content of the gold coins also was exactly proportional at a ratio of 15:1 silver to gold. For example, the gold weight of the $10 eagle was exactly two-thirds (10/15) the silver weight of the one dollar, or unit. This 15:1 ratio was presumed to be the market rate of exchange between silver and gold.

The copper weights of the cent and half-cent also were originally designed to reflect intrinsic value, but this proposed "trimetalism" was never implemented. The copper coins' weights were reduced before any were issued, with the result that the mint could purchase copper to be made into coins having a face value larger than the cost of the metal. The "profit" accrued to the Treasury as seigniorage. In recognition of their lack of intrinsic value, copper coins were legal tender only for relatively small debts (for those less than $5), and purchases of copper by the mint were limited to specifically authorized amounts. In contrast, the mint was not authorized to buy any specific amount of gold or silver. Gold and silver coins were minted only upon receipt of bullion or foreign coins brought to the mint for that purpose by private citizens.

Thus, dollars originally were coins with a specific weight of gold or silver in them. However, this "bimetalism" soon encountered the problem that the market exchange ratio differed from the silver-gold ratio fixed in coins. However accurate may have been the founding fathers' estimate of the market ratio in 1792, it soon developed that gold eagles could be exchanged for more, say, pounds sterling in London than for the equivalent face value of U.S. silver coins. Therefore, U.S. gold coins were exported in large numbers and few remained in circulation in the United States. Interestingly, U.S. silver dollars also were exported, apparently because they were somewhat lighter than the "pillar dollars" then circulating in Spanish areas where the U.S. issue was accepted at par. Only fractional silver U.S. coins stayed in the country, and, as noted earlier, the Spanish coin remained the principal dollar coin in use here for many years.

## DEBASEMENT

This situation prevailed until the 1830's. In 1834 the gold content of the eagle was decreased by Congress to 232 grains of "pure" gold. The new mint price was $20.67 per troy ounce, reflecting a 6.18 percent devaluation from the $19.34 set in 1792. This change resulted in a slight overvaluation of gold in relation to silver, and the former flows were reversed. The resulting gold imports, combined with increased domestic gold production, brought gold coins into general circulation in the United States during the 1840's and 1850's.

In 1853, after many fractional coins had been exported, their silver content was decreased by Congress to the rate of 345.6 grains per dollar, but the silver dollar remained 371.25 grains. The U.S. Mint was authorized to purchase limited amounts of silver bullion for the fractional silver coins and to issue such coins at a profit, as with the copper cents. "Free coinage" remained in effect for the silver dollar at 371.25 grains, but few silver dollars were issued and the coin fell into disuse.

By design or oversight, the Coinage Act of 1873 made no provision for the minting of the silver dollar. Without the guarantee of free coinage, the price of silver fell below the "mint price" of $1.29 per ounce. Subsequent legislation authorized resumed mintings of silver dollars, but it did not authorize resumption of their free coinage. Consequently, the silver dollar became a subsidiary coin whose intrinsic value was less than its purchasing power.

Through 1873, the difficulties of "bimetalism" were resolved by reducing the metal content of the undervalued coins – gold or silver. After 1873, gold became the premier monetary commodity, and there were no further devaluations until President Franklin D. Roosevelt's "New Deal."

Shortly after taking office, President Roosevelt suspended specie payments (all other bank-related payments too, for a brief period) and raised the "price" of gold to $35 per ounce. This new price was paid only to domestic miners and foreigners who sold gold to the Treasury. Other U.S. citizens and entities could not legally hold gold bullion or non-numismatic coins in the United States. One of the last acts of President Eisenhower was to proscribe gold ownership overseas. No new U.S. gold coins were minted after 1933.

In 1964 the silver content of newly minted U.S. subsidiary coins was eliminated and replaced by a cupronickel "sandwich" (except for the half-dollar, which contained a reduced amount of silver until 1970). In 1967 the U.S. Government discontinued sales of silver at the mint price, and the price of silver subsequently rose above $1.29 per ounce. In 1968 the Treasury refused to redeem dollar claims (sell gold) at $35 per ounce to anyone except foreign official institutions. As a result, miners, licensed users, and private foreigners paid and received a higher, market-determined price. Finally, in August 1971, the United States closed the "gold window" even to foreign official institutions. The official "price" was increased to $38 per ounce in 1972 and to $42.22 per ounce in 1973; but, as some droll commentators have noted, the official "price" today is the price at which the *United States refuses to redeem paper dollars.* Since 1971 the U.S. Government has sold only limited amounts of gold at various Treasury "auctions." The paper dollar price received by the U.S. Treasury for the gold was markedly above the official "price," which has no economic significance.



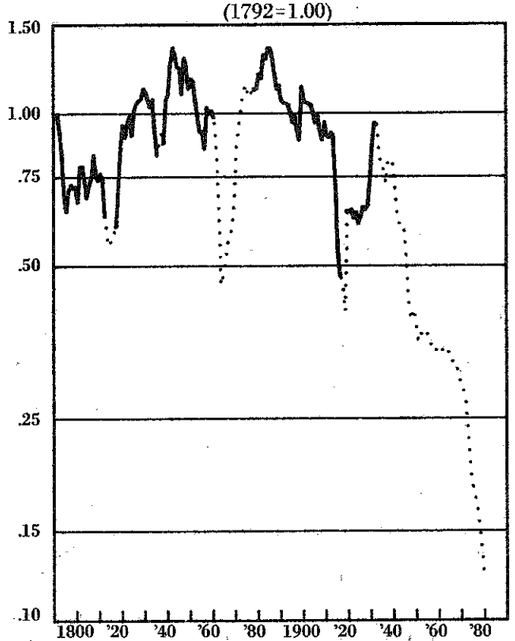
## A UNIQUE EPISODE

Clearly, the U.S. dollar was a specified amount of gold or silver in minted coins. For most of the Nation's history, a dollar claim could be exchanged for *at least* 371.25 grains of silver. Sometimes a dollar could be exchanged for a much larger weight of silver, but only during the past *14 years* of the 189 years since U.S. currency was first issued, has a dollar been exchangeable for markedly less than 371.25 grains of silver. Currently a paper dollar can buy about 37 grains of silver.

Similarly, the dollar also has been a specific weight of gold.* Before 1971, when a dollar *was* such, paper claims on dollars were explicit or implicit promises to deliver specific amounts of gold. But now, as during other periods when specie payments were suspended, irredeemable paper dollar claims exchange at a discount to their stated gold value. Today, a paper dollar can be exchanged for only about one-twelfth of its stated gold weight. Furthermore, since 1971 we have seen nothing suggesting the remotest possibility that dollar claims will ever be redeemed in gold at the official "price" of $42.22 per ounce. Far from being consistent with historical experience in this country, the current paper currency period is a unique episode in U.S. monetary history.

* A dollar was 24.75 grains of "pure" gold from 1792 to 1834, 23.22 grains from 1834 to 1933, 13.71 grains from 1934 to 1971, 12.63 grains from 1972 to 1973, and 11.37 grains since then. The equivalent gold "prices" per ounce were, respectively, $19.39, $20.67, $35.00, $38.00 and $42.22.

Chart 1
PURCHASING POWER OF THE DOLLAR
(1792=1.00)




Note: Purchasing power was calculated from the Wholesale Price Index (Source: U.S. Department of Labor). The dotted portions of the curve are periods when redeemability of the dollar into the monetary commodities at fixed rates was suspended.

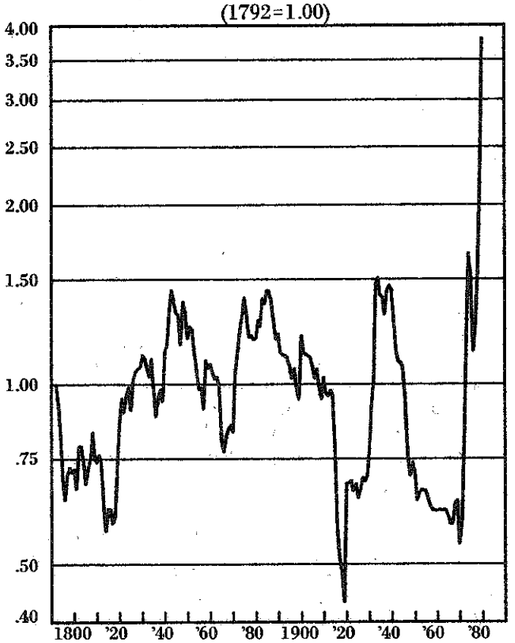
## WHAT A DOLLAR CAN BUY

Currently, *the only thing for which a dollar is guaranteed exchangeable is another dollar.* Obviously, to say that a dollar is worth another dollar is not at all useful, although that assertion is accurate. Another approach to the question of what is a dollar is to examine what a dollar can be exchanged for in the market, or what a dollar can buy.

Chart 1 shows the purchasing power of the U.S. dollar from 1792 to 1980. These purchasing power figures reflect changes in the Producer Price Index (formerly called the Wholesale Price Index), which is only one possible measure of purchasing power. Another is the Consumer Price Index. As the chart shows, what a dollar can buy has fluctuated throughout its history – down during some periods and up during others. But during the past 5 decades, the change in the dollar's buying power has been almost invariably downward, and the downward trend has been sharp.

If the purchasing power of the dollar is decreasing over time at varying rates, a description of what a dollar buys based on a price index will apply only to one point in time, and it will apply only to the items in the index, which perforce are only a portion of the innumerable things for which a dollar might be exchanged. The chart is, in effect, a summary set of such descriptions. It shows the volume of a set bundle of items that could be obtained with one dollar in a given year in relation to that obtainable in other years.

Chart 2
PURCHASING POWER OF GOLD
(1792=1.00)




Note: The changes in purchasing power shown in the chart were calculated from annual averages of the Wholesale Price Index (Source: U.S. Department of Labor) and the annual averages of the exchange ratio of dollars for gold.

For some purposes, an estimate of what a dollar will buy now or what a dollar formerly bought is highly useful. But such estimates do not reveal *why* the general purchasing power of a dollar has fluctuated, and particularly why it has trended sharply downward for nearly 5 decades.

When the dollar was legally specified as a certain amount of specie and paper currency was convertible into specie, the chief factor that determined the general buying power of a dollar was, of course, the array of exchange ratios of the monetary commodities for other things. These exchange ratios, in turn, reflected countless factors affecting the supply of and demand for gold and silver (the monetary commodities) and for all the things for which they could be exchanged. A price expressed in dollars, or other currencies, was simply the exchange ratio of the monetary commodities for the other thing.

The fact that, for much of history, prices were the exchange ratios between the monetary commodity and other things needs emphasis because many analysts suggest by their writings that prices in general have increased since time immemorial. That notion simply is fallacious. When money was a commodity and prices rose over a prolonged period, the trend usually reflected a decrease in the metal content of money. For example, the British pound was once just that: 12 troy ounces (a troy pound), or 5,760 grains of silver, but today the pound can be exchanged for only about 85 grains of silver. The exchange ratio of the currency has changed drastically, not that of silver. Just as Miami Beach is not any colder when its temperature is given in Celsius instead of Fahrenheit, a change in the amount of monetary commodity in a unit of currency does not affect the exchange value of the monetary commodity. In 1934 the price of gold was $35 per ounce; recently it has been about $500 per ounce. The fourteen-fold increase in the dollar price of gold does not reflect a commensurate increase in the general exchange value of gold over the period; it mainly reflects a marked decrease in the general exchange value of the now-paper dollar.

As Chart 2 shows, the purchasing power of gold recently has exceeded even its 1934 level and is at the highest level of purchasing power shown in the chart. By way of explanation, for literally hundreds of years prior to 1971, an inconvertible currency was perceived as a temporary aberration (if not a national disgrace) to be corrected as soon as possible. Since 1971, however, monetary officials have shown little or no inclination to provide a currency convertible into specie at a fixed rate. Instead, they have flaunted their intention to "demonetize" gold. Governments no longer can be counted on to protect the value of their currencies.

Moreover, in recent years much doubt has arisen concerning the ability and willingness of governments to protect individual rights to other forms of wealth or to foster the growth of real wealth. All over the world governments have increasingly viewed assets as items to be taxed, regulated, redistributed, and seized. The spread of such doubts has probably been particularly brisk in the Middle East recently; in the wake of the unpleasantness in Iran, the "freezing" of certain Iranian assets by the U.S. Government and U.S. banks, and what may have been an attempted *coup d'etat* in Saudi Arabia.

In other regions of the world, an increasing awareness that the growing military capability of the Soviet Union has not been adequately countered by the West no doubt has fostered heightened doubt about governments' ability to protect their citizens and citizens' assets. It is not just in the Middle East that people have found new reasons to hold gold. The present high exchange ratio of gold for other things reflects extreme distrust of currency as a store of value.

Two basic determinants of what the commodity dollar would buy were: (1) the exchange ratio of the monetary commodity for other things and (2) the amount of the monetary commodity designated as one unit of currency. However, when currency is not officially convertible into the monetary commodity at a fixed rate, the determinant of what the currency will buy is the amount of claims circulating as purchasing media in relation to the total value of things available for purchase, as we describe in the next chapter.

# II.

# SOUND VS. UNSOUND MONEY

MONEY in the form of promises to pay units of a commodity apparently has been used nearly as long as has commodity money itself.* The origin of this use of promises to deliver specified units of the monetary commodity as a substitute for the monetary commodity in transactions is lost in the mists of antiquity. In the United States, early experiments by the several colonies with paper currency (as well as those with other substitutes for specie) foundered because limits on their creation were ineffectual, too much money was issued, and the "money" tended to worthlessness when it no longer was generally accepted in transactions. The framers of the Constitution specified gold and silver coinage as the money of the United States in a deliberate attempt to prevent the further issue of paper currencies that had so disrupted the several colonies at various times and had threatened the existence of the fledgling republic during the Revolution and in the years following it.

During the early decades of this country's history, there was no money-credit system capable of fostering the greatly-to-be-multiplied number of transactions associated with the growth of the United States from the status of an economic pygmy to that of an economic giant. No theory of money and credit then developed offered a solution to the problem; no economists had published books describing how the task could be accomplished; no government planners were prepared to provide the increase in purchasing media that would be needed in the decades to follow; and bankers generally were as ignorant of the broader consequences of their actions as they are today.

Nevertheless, the problem was solved. Unplanned evolutionary development in free markets accomplished a task that might well have seemed impossible to anyone who could have foreseen the need. By the latter 1800's, increasing output no longer threatened to outrun the capacity of the money-credit system to efficiently effect the transactions that were an integral part of industrialization and mass marketing.

To illustrate the magnitude of the task to be done by money, during the decades following the U.S. Civil War, production of the things men desired increased at an unprecedented rate. In only a man's lifetime, about 70 years, the volume and exchange value of things passing through markets in the United States multiplied more than 50 times although population increased only 4 times. Gold in circulation (including coins and, later, gold certificates) multiplied only 8 times from 1865 to 1930 (the peak year), but total purchasing media (checking accounts plus currency) in use multiplied about 20 times from 1867 to 1934.

## SOUND COMMERCIAL BANKING

Aiding this growth was the evolution of sound commercial banking. (See Appendix A for a more complete description of sound commercial banking.) It tended to foster a dynamic balance between the purchasing media available to prospective buyers for use in the markets and the gold-exchange value of newly-produced things available for purchase. The expansion of purchasing media in excess of the available monetary commodities was based on the discovery by bankers that some of the claims they issued were not presented for redemption in the monetary commodity but were themselves exchanged for other things in the markets. The sellers of those other things then returned claims to the bankers in payment of loans that originally involved the creation of claims. Thus, when gold was the premier monetary commodity, only a portion of the purchasing media in use represented the monetary commodity offered in the markets, which included the gold in the bankers' vaults used to redeem claims. Most purchasing media, although used for exchange purposes as though they were gold, actually represented the gold-exchange values of other things offered in the markets.

The dynamic balance fostered by sound commercial banking was not, to repeat, the result of the deliberations of official committees, economists, or planners. Indeed, the bankers, borrowers, and lenders who participated in the process probably gave little thought to the monetary implications of their actions, which were determined by market conditions. Because the claims issued by bankers to represent the gold-exchange value of things offered in the market could be redeemed in gold, misjudgments and changes in market conditions were quickly reflected in shipments of gold. This principle applied among industries as well as among geographical areas, whether they were nearby towns, states, regions, or even countries. The outflows of gold ensured that bankers who could not or would not adapt to market conditions soon found themselves bankrupt and out of the market. Bank runs, adverse clearing balances, gold losses, etc., also kept banks "honest," or they simply ceased being banks (that is, they went broke).

This is not to say that the dynamic balance fostered by the evolution of sound commercial banking eliminated fluctuations. Economic growth involved change, and change involved risk. New products, processes, and markets did not arise as self-fulfilling prophesies of planning boards but rather from ventures into the unknown and unfamiliar. Mistakes probably were the rule rather than the exception, but errors and distortions could cumulate to catastrophic levels only when intervention by Government prevented early correction of the errors. In absence of Government intervention, those early corrections would affect chiefly those persons local to the misguided ventures, not the entire country or perhaps several countries.

## PROMISES TO PAY DOLLARS vs. PURCHASING MEDIA

Promises to pay money probably have been made for nearly as long as money has been used to effect exchanges. In the United States, economic growth and the stability of political and legal institutions has fostered a tremendous increase in the borrowing and lending of dollars. As Table 2 reveals, dollar claims in the United States recently totaled about $7.5 *trillion*. In addition, there are now hundreds of millions of "Eurodollar" and other dollar claims among foreigners. Although all of these claims ultimately call for payment in dollars, only a fraction circulate as purchasing media, that is, as financial claims generally used domestically in final payment (to third parties) of purchases and debts.

Never has the gross amount of dollar claims determined the purchasing power of a dollar. The portion of gross dollar claims *used specifically as purchasing media* is the pertinent figure. Only purchasing media are generally used to bid for and buy things in the market and, therefore, only purchasing media can disrupt the dynamic balance between claims on things offered in the markets and the value of the things in the markets to be claimed.

An illustration might clarify the difference between claims that are purchasing media and claims that are not. If you, the reader, were to write an IOU (which would be a claim against you when held by someone else) and then went to buy something with it, you probably would not find many sellers willing to take your IOU in payment. However, if you went to a bank and gave the bank your IOU (that is, you signed a promissory note), the bank could credit your checking account balance (effectively writing its IOU) and you generally would be able to use the bank's IOU for making a purchase (or paying a debt). The origination of your own IOU could not add to purchasing media (because, again, it is not generally accepted as means of final payment), but the bank's origination of its IOU could. (See Appendix B for our explanation of why some financial claims are or are not classified as purchasing media, and see Appendix C for a description of how the banking system creates purchasing media.)

Table 2

DOLLAR CLAIMS IN THE UNITED STATES
December 31, 1980

| | *Billions* |
|---|---|
| Currency | $ 117 |
| Demand deposits | 317 |
| Time & savings deposits | 1,493 |
| Consumer credit | 385 |
| Trade credit | 419 |
| Security credit | 59 |
| Home mortgages | 949 |
| Other mortgages | 510 |
| Other bank loans | 458 |
| Open market paper | 178 |
| U.S. & agency securities | 1,044 |
| State & local government securities | 335 |
| Corporate & foreign bonds | 491 |
| All other | 696 |
| | $7,451 |

Source: Federal Reserve Board, flow of funds tables.

* By "money" we here refer to things (commodities or financial claims) generally used in final payment of purchases and debts. Usually we use the words "purchasing media" instead of "money," for reasons described later.

Table 3
NEW MEASURES OF MONEY AND LIQUID ASSETS[1]
Billions of dollars, not seasonally adjusted, December 1980

| *Aggregate and component* | *Amount* |
|---|---|
| M-1A | 394.7 |
| Currency outside banks | 118.5 |
| Demand deposits[2] | 276.2 |
| M-1B | 421.8 |
| M-1A | 394.7 |
| Other checkable deposits[3] | 27.1 |
| M-2 | 1,674.8 |
| M-1B | 421.8 |
| Overnight RPs issued by commercial banks | 27.6 |
| Overnight Eurodollar deposits held by U.S. nonbank residents at Caribbean branches of U.S. banks | 4.6 |
| Money market mutual fund shares | 75.8 |
| Savings deposits at all depositary institutions | 390.9 |
| Small time deposits at all depositary institutions[4] | 757.4 |
| M-2 consolidation component[5] | −3.3 |
| M-3 | 1,962.8 |
| M-2 | 1,674.8 |
| Large time deposits at all depositary institutions[6] | 251.5 |
| Term RPs issued by commercial banks | 28.9 |
| Term RPs issued by savings and loan associations | 7.6 |
| L | 2,373.5 |
| M-3 | 1,962.8 |
| Other Eurodollar deposits of U.S. residents other than banks | 48.4 |
| Bankers acceptances | 31.4 |
| Commercial paper | 100.0 |
| Savings bonds | 72.7 |
| Liquid Treasury obligations | 158.1 |

1 Components of M-2, M-3, and L measures generally exclude amounts held by domestic depositary institutions, foreign commercial banks and official institutions, the U.S. government (including the Federal Reserve), and money market mutual funds. Exceptions are bankers acceptances and commercial paper for which data sources permit the removal only of amounts held by money market mutual funds and, in the case of bankers acceptances, amounts held by accepting banks, the Federal Reserve, and the Federal Home Loan Bank System.

2 Net of demand deposits due to foreign commercial banks and official institutions, and of domestic interbank and Treasury deposits.

3 Includes NOW, ATS, and credit union share draft balances and demand deposits at mutual savings banks.

4 Time deposits issued in denominations of less than $100,000.

5 In order to avoid double counting of some deposits in M-2, those demand deposits owned by thrift institutions (a component of M-1B), which are estimated to be used for servicing their savings and small time deposit liabilities in M-2, are removed.

6 Time deposits issued in denominations of $100,000 or more.

When the banking system creates purchasing media in excess of the value of newly-produced things offered in markets, inflating occurs. Probably the most noticeable consequence (symptom) of prolonged inflating is an upward trend in the general level of prices, or a downward trend in the buying power of purchasing media. Other consequences of prolonged inflating include: generally rising wages and interest rates, increased speculation, misallocation of productive economic resources, inadequate savings and excessive debt creation, increased volatility in markets, chronic international deficits, lower foreign-exchange value of the currency, imposition of controls to suppress the symptoms, increased labor strikes and social unrest, and a general loss of economic efficiency.

## THE SUPPLY OF PURCHASING MEDIA

Economists of nearly every persuasion believe that the amount of purchasing media in circulation is a significant variable in economic analysis, and much attention has been devoted to studying the money supply. The estimate of purchasing media used by many analysts is the "monetary aggregate" called M-1B, which comprises checkable deposits at all depository institutions and currency held by the public. (See the M-1B section in Table 3.) This aggregate is not an adequate estimate of purchasing media in use. One deficiency of M-1B is its failure to account for differences between the records of issuers of purchasing media (which are used to calculate M-1B) and the behavior of holders of purchasing media. For example, the currency component of M-1B is taken from the records of the Federal Reserve banks and the U.S. Treasury (the two issuers of currency), adjusted for that reported held by the commercial banks and other depository institutions, but that the currency is outstanding does not ensure that it is in use (at least in the continental U.S.). Much currency might be hoarded in mattresses and cookie jars, as was the situation during and after World War II. Also, unknown amounts of U.S. currency and coin (counted in M-1B) constitute by far the major portions of hand-to-hand currency in both Panama and Liberia. U.S. greenbacks also seem to "crawl out of the woodwork" in trouble spots around the world, such as in Cambodia and Vietnam. Substantially U.S. currency is in use in countries such as Bolivia as an outcome of illegal dollar-denominated drug exports. Only a dearth of reliable data prevents exclusion from M-1B of these funds now counted therein but clearly not in use in the U.S. economy. A second deficiency of M-1B is its failure to include some claims that are used as purchasing media, which will be discussed shortly. Recently the Federal Reserve Board revised the official monetary aggregates. Those aggregates are shown in Table 3. Although these reflect improvement, still none of them is an accurate measure of purchasing media in use. Nevertheless, the Fed's specification of M-1B is the closest of the official monetary aggregates to AIER's purchasing media in use. See Table 4 for our estimate of purchasing media in use ($432.6 billion as of end-1980) and Table 3 for M-1B ($421.8 billion).

The "higher" aggregates (M2, M3, etc.) have been included in Table 3 for the reader's reference only. We are not convinced that the particular combinations comprising each higher aggregate have any special economic significance, aside from their increases perhaps being *encouraged* by inflating, along with the credit cycle in general. Many "monetarists" focus on the M2 aggregate in their study of such changes because it best conforms to changes in National Income. In brief, we hold that none of the "M's" adequately measures purchasing media in use and, in the absence of sound commercial banking, there is little reason to expect such conformity anyway. Monetarist Milton Friedman recently said he now likes M-1B best, however. Aggregates could be developed from any combination of the types of dollar claims shown in Table 2, but they would not necessarily be useful.

Table 4
RELATION BETWEEN M-1A AND PURCHASING MEDIA IN USE
Billions of dollars, not seasonally adjusted, December 1980

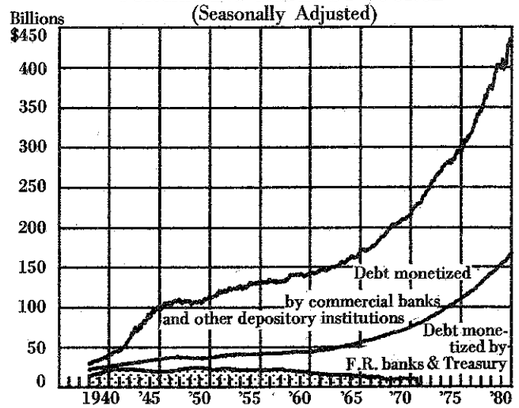
| *Aggregate and Component* | *Amount* |
|---|---|
| M-1A | 394.7 |
| *Plus* overnight RPs issued by commercial banks | 27.6 |
| *Plus* overnight Eurodollar deposits held by U.S. nonbank residents at Caribbean branches of U.S. banks | 4.6 |
| *Plus* one-third of "other checkable deposits"[1] | 9.0 |
| *Less* inactive purchasing media[2] | 3.3 |
| EQUALS: Purchasing media in use | 432.6 |

1 Includes NOW, ATS and credit union share draft balances and demand deposits at mutual savings banks.

2 AIER estimate of obsolete currency outstanding (mainly silver coins).



Chart 3
PURCHASING MEDIA BY SOURCE
(Seasonally Adjusted)

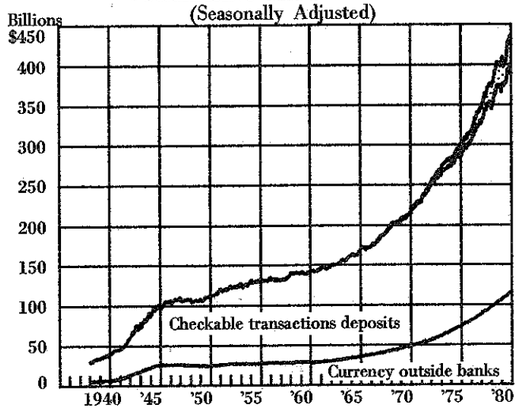



Shaded area is Monetary Gold.

The total liabilities of Federal Reserve banks to U.S. depository institutions and the U.S. Treasury-issued currency held by the public constitute the "monetary base." In the United States today, the upper limit to the supply of purchasing media ultimately rests on the monetary base. (See Appendix C.) Our purchasing media estimates are shown in Charts 3, 4, and 5. Chart 3 shows the sources of purchasing media. The bottom curve shows the official U.S. stock of monetary gold whenever it was offered at a fixed price ($35 per ounce during the period shown). The middle curve is roughly equivalent to the monetary base, and the top curve (which is the same in all three charts) is roughly equivalent to M-1B except for the addition, shown in Chart 4, of "Other (Repo's and Euro-dollars)." See Appendix B for a description of these forms of "purchasing media."

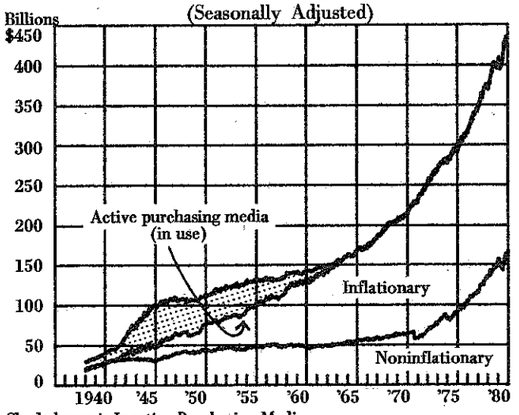
In Chart 5 we show our estimates of the uses of purchasing media. The inactive component during recent years includes only obsolete currency issues (such as silver coins) that still are included in M-1B but clearly are not in active use. During earlier periods (before 1965) the inactive component included an estimate of hoarded, or idle, purchasing media, particularly that accumulated by individuals and businesses during World War II when goods were unavailable and interest rates were so low that it did not "pay" to put one's funds into bank accounts. The next component, inflationary purchasing media in use, is simply a residual, the difference between active purchasing media (second curve from top) and noninflationary purchasing media (bottom curve).

Chart 4
PURCHASING MEDIA BY TYPE
(Seasonally Adjusted)




Shaded area is certain "Repo" and Eurodollar accounts.

Chart 5
PURCHASING MEDIA BY USE
(Seasonally Adjusted)




Shaded area is Inactive Purchasing Media.

## NONINFLATIONARY PURCHASING MEDIA

Noninflationary purchasing media, in turn, is our estimate of the sum-total dollar value of things offered for sale in the Nation's markets (including monetary gold whenever it was fully available on demand at a fixed price, that is, goods actually intended for sale during the usual marketing period. Prior to around 1965, this amount was roughly equal to short-term, "self liquidating" commercial, industrial, and agricultural (CIA) loans on the books of the commercial banking system.

Around 1965, however, major *institutional* changes began in the banking system and in the practices of producers. *Reported* CIA loans of the banking system by then included "term" loans, which are employed not for short-term working capital needs associated with the bringing of newly-produced goods to markets, but for long-term investment in plant and equipment or for corporate mergers. Although subsequent banking data shows these two categories separately, many loans classified as short-term CIA loans are unrelated to goods being offered in markets. They are simply loans made initially for less than 1 year.

After much experimentation, we empirically discovered that, prior to 1965, monthly *bona fide* CIA loans closely matched one-half of monthly manufacturing and trade sales; therefore, we now use this series for our estimate of things offered for sale in markets (and for noninflationary purchasing media). Near equality between these two series corroborates plausible theoretical expectations. Inventories are a *stock* (the amount of something on hand at one

point in time) and sales are a *flow* (the volume of something occurring during a period of time). Since the amount of purchasing media outstanding at some point in time is a stock, in order to estimate the portion representing inventories of things brought to markets (a stock) from the sales series (a flow), the latter must be converted from a flow to a stock. It turns out that if, over the accounting period, inventories are drawn down by a *uniform* rate of sales, the *average* level of inventories equals one-half of sales over the period. Although nonuniform sales rates, overlapping of incomes, and discontinuous inventory replenishments occur in the "real world," the "law of large numbers" guarantees that sufficiently numerous participants (as in the modern U.S. economy) will result in *some average*, possibly that in our mathematical example. (Our observations of what in fact occurred bear this out, or at least are consistent with our conjecture.)

There is no guarantee, of course, that the 1939-65 historical basis for our estimate of noninflationary purchasing media did not itself undergo since 1965 a marked institutional change along with the other aforementioned changes in the practices of producers and in the behavior of the banking system. Even if such had occurred, however, the *major trends* of noninflationary purchasing media (and of the Index of Inflating discussed below, which includes it as a component) almost surely would remain as shown. Our *constant* conversion factor of one-half from the sales flow to the inventory stock implies that *on average* sellers find that about 2 weeks' amount of monthly sales volume constitutes the optimal practicable level of inventories.

Note also that this estimate of noninflationary purchasing media does *not* rely on Gross National Product data. That series comprises the dollar value of goods (and services) in their *final* stages of processing. Not only is it unsound for this purpose to include *services* in our estimate (see our "Cause and Control of the Business Cycle," *Economic Education Bulletin* for September 1974, pp. 24-25), but our estimate must include *all* stages of processing for which *money payments* are made. Manufacturing and trade sales comprises sales of all stages of production (and not services), and recently was more than 40 percent larger than Gross National Product.

Our estimates are tentative and subject to a considerable margin of error. Nevertheless, we believe that they provide an adequate basis for ascertaining the *trends* of inflating in the United States during the past 40 years.

# III.

# THE HARWOOD INDEX OF INFLATING

THE bottom curve in Chart 5 shows our estimates of the amount of purchasing media equal to the dollar value of things offered in the markets, including the U.S. stock of monetary gold valued at $35 per ounce until August 1971. The middle curve in Chart 5 is our estimate of the amount of purchasing media in use. The Index of Inflating, developed by E. C. Harwood during the 1920's, is the ratio of purchasing media in use to noninflationary purchasing media, and it is shown as the solid line in Chart 6. The Harwood Index suggests probable levels of distortions in the economy fostered by unsound banking.

The extent of distortions revealed by the Index appears to have been related to the phenomena collectively known as the business cycle. The relationship between changes in the level of the Harwood Index and changes in price indexes is more tenuous. One reason is that the Harwood Index does not reflect changes in the exchange ratio of the monetary commodity for other things (caused, for example, by changing productivity) or devaluations of the currency unit. Another reason is that inflationary (excess) purchasing media might be used primarily to finance transactions in items, such as real estate or securities, that are not included in the widely followed price indexes and thus whose rising prices would not be reflected in those indexes. Inflating also can affect output distribution, the balance of payments, the allocation of productive resources, and relationships among individual relative prices which would distort the all-important market information function of the price system, but possibly leave the *average* of all prices intact. Nevertheless, we have no doubt that, other things being equal, inflating eventually affects the general price level, or what a dollar will buy.

The Harwood Index and the analysis it involves have been useful for assessing major economic trends. In the late 1920's, the recognition of extensive inflating led E. C. Harwood to forecast an impending major contraction. Most economists then were asserting that the United States had reached a "permanent plateau" of prosperity. After World War II, in combination with the large amounts of purchasing media "returned" to corporations and private individuals in the form of reduced Federal taxation previously associated with the war effort, the understanding that comparable large amounts of idle purchasing media had been accumulated enabled the Institute to forecast a postwar boom; many analysts expected a postwar depression. During the 1950's, the Harwood Index suggested that economic distortions were increasing, as the idle purchasing media accumulated during World War II were put to use. The Fed, apparently unaware of this trend, increased purchasing media as if the return of idle funds to circulation was not occurring. Because the widely followed price indexes were increasing only slowly during the 1950's and economic growth was rapid, the general view was that perpetual prosperity was within reach.

In the 1960's, evidence of continued inflating suggested that a major business correction was probable and that a major devaluation of the dollar (an increase in the price of gold) was virtually inevitable. At the time, "mainstream" economists asserted that the price of gold would drop sharply if the official price of $35 per ounce were ended.

## A PEAK IN RELATIVE INFLATING

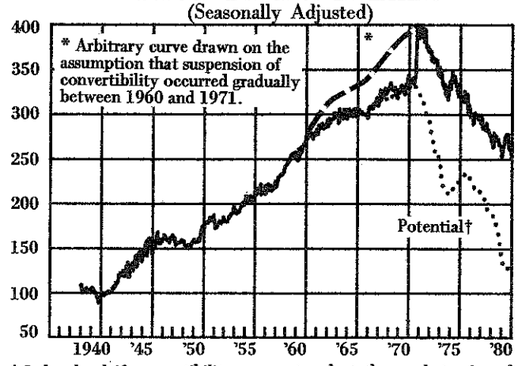
As Chart 6 shows, the prolonged period of *relative* inflating began around 1940 and continued to a peak in 1971. (Again we emphasize that our estimates are only tentative; the levels and timing shown might change somewhat with better estimates.) That the Index crossed 100 during 1939-41, indicating no inflating, reflected a fortuitous hoarding of currency and holding of idle balances by businesses and individuals that offset (in the aggregate) inflationary policies of the Government. As a result, the amount of purchasing media *in use* on average was noninflationary, although the M-1B-type figures increased markedly.

The timing of the peak in 1971 reflected the removal of the U.S. official stock of monetary gold from our calculation of noninflationary purchasing media in August of that year, when the "gold window" was officially closed. One might reasonably argue that earlier Government constraints limited the amounts of gold continuously offered to foreigners and thus the closing of the "gold window" was not a sudden event. If that was the situation, the increase of the Harwood Index to its peak would have been more continuous and the peak might have occurred slightly earlier. (See "arbitrary curve" on Chart 6.)

In spite of the possibility that the level, timing, and peak of the Harwood Index might not be totally accurate, the end of convertibility of the dollar clearly is closely related to the accelerated decline in the purchasing power of the dollar during the 1970's, which is so evident in Chart 1. The end of convertibility also had implications for calculation of the Harwood Index.

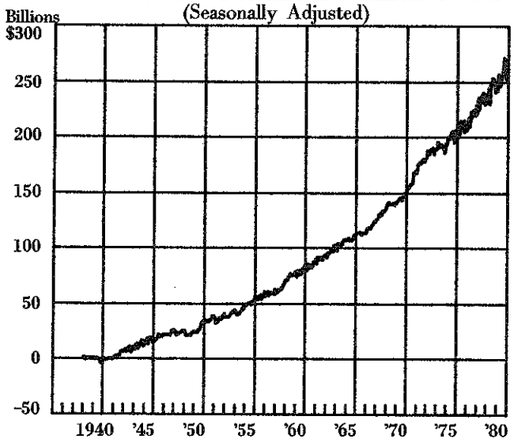
In the absence of a functional official "price" for gold – that is, a price at which transactions occur – viewing the noninflationary dollar value of things offered in markets as their long-term gold-exchange value became meaningless. Instead, the sum-total amount of things offered in markets had to be valued at current (and changing) paper-dollar prices. The result is that the amount of noninflationary purchasing media now changes with the volume of things offered *and* with the level of prices of the things offered. In effect, as inflating has fostered higher price levels, some purchasing media that previously was "inflationary" has become "noninflationary," thus "validating" the higher price level. The 10-year downward trend in relative inflating is attributable not to a reduction in the amount of inflationary purchasing media, as was the situation historically in *every* other instance of a significant decline in the Index, but rather to the dollar value of current production (dominated by rapidly rising prices) increasing faster than the amount of purchasing media in use. In other words, at each point in time of the downward trend, prices were "catching up" to previous injections of inflationary purchasing media at a greater rate than increases of then-present injections. With current monetary arrangements, the complete removal of inflationary purchasing media *would not* imply that some earlier, lower price level would be achieved.

Chart 6
HARWOOD INDEX OF INFLATING
(Seasonally Adjusted)




† Index level if convertibility was restored at the market price of gold at the time shown and if the "profit" from the assumed devaluation were used to retire Treasury securities held as investment-type assets by the banking system.

Chart 7
INFLATIONARY PURCHASING MEDIA IN USE
(Seasonally Adjusted)




Although the end of convertibility of the dollar into gold resulted in a sharp drop in the amount of noninflationary purchasing media (and a marked increase in the Index of Inflating) in August 1971, the amount of noninflationary purchasing media has increased rapidly since then, as Chart 5 shows. This upward trend in noninflationary purchasing media is attributable primarily to the "validation" of successively higher and higher price levels, and it is reflected in the downward trend in the Harwood Index of Inflating, or in *relative* deflating. (We remind readers that the Index of Inflating is the *ratio* of active purchasing media to noninflationary purchasing media.) *Absolute* inflating, or the creation of excess purchasing media (*not* a ratio), has continued virtually unabated since 1971, as Chart 7 reveals.

## IMPLICATIONS AND OUTLOOK

What is the significance of the downward trend in the Harwood Index? Does it portend smaller price increases in the future? Inasmuch as the "dollar" now is only a deteriorating paper currency (and apparently will remain so until its convertibility into gold is restored, if ever), the downward trend of the Index does *not* suggest that price increases in terms of paper dollars will become smaller. Instead, continuation of the downward trend in the Harwood Index attributable to rapid growth of the noninflationary component of purchasing media in use in relation to total purchasing media in use probably signals a lessening of the economic distortions ultimately to be corrected. This interpretation is consistent with widespread recognition that the public has learned from bitter experience to adjust for the effects of "inflation." For example, businessmen reportedly are much more cautious with their inventory and capital expenditure plans, in spite of expectations that prices for inventory items and capital goods will be higher later.

In saying that a downward trend in the Harwood Index

of the type now apparent suggests that fewer distortions remain to be corrected, we are not implying that peak economic efficiency is being more nearly achieved. The downward trend reflects ongoing adjustments to previous inflating, but the adjustments themselves foster less economic efficiency and growth. Among such adjustments are the inefficient use of resources to adjust misleading dollar amounts for "inflating"; the diversion of savings into "sterile" investments such as gold rather than productive investments that could improve economic well-being; a reduction in savings and an increase in debt, as debtors anticipate being able to "pay off" later with depreciated paper dollars; a "buy now" attitude that eventually leads to busts; more volatility as market participants gamble on expected price changes; and so forth.

If, moreover, the downward trend of the Harwood Index near the astonishingly linear rate prevailing since 1971 were to continue for the next 10 years, if real output were to continue its long-term growth trend, and if general price increases were to continue their *hyperbolic* upward trend actually underway during the past 15 years, the rate of price increases would tend toward *infinity* and the Harwood Index would closely approach the noninflationary level of 100, both within several months of each other, in 1990. (See Appendix D.) Still, the Index would not decrease precisely to 100. For that to happen, inflationary purchasing media would have to be removed from circulation.

One way that inflationary purchasing media could be reduced before these possible near-future ominous events occurred would be to restore convertibility of the dollar, i.e., to again offer "for sale" on a continuing basis at a fixed price the entire U.S. Government stock of monetary gold. The dotted curve in Chart 6, labeled "potential," indicates what the level of the Harwood Index would have been had convertibility been restored at the then-current market price of gold *and* had the "profits" from the devaluation been used to retire Treasury securities held by the banking system. The most recent value of this

Table 5
FUTURE BUYING POWER OF $1,000 AT COMPOUNDED ANNUAL RATES OF PRICE INCREASES

| | *Annual Rates of Price Increases* | | | | |
|---|---|---|---|---|---|
| *At End of* | *10%* | *15%* | *20%* | *25%* | *30%* |
| 5 years | $620.92 | $497.18 | $401.88 | $327.68 | $269.33 |
| 10 years | 385.54 | 247.18 | 161.51 | 107.37 | 072.54 |
| 20 years | 148.64 | 061.10 | 026.08 | 011.53 | 005.26 |
| 30 years | 057.31 | 015.10 | 004.21 | 001.24 | 000.38 |
| 40 years | 022.09 | 003.73 | 000.68 | 000.13 | 000.03 |

"potential" Harwood Index recently was somewhat above 100 because restoration of convertibility at the market price of gold through 1980 would have transformed only a portion of inflationary purchasing media in use into purchasing media representing gold.

For the "potential" Harwood Index to be near 100, the gold price would have had to average nearly $1,000 per ounce during 1980. Inasmuch as the exchange ratio of gold for other things at actual 1980 prices for gold was substantially above the upper portion of its long-term historic range (see Chart 2), such a massive devaluation of the dollar probably would not end general price increases. Indeed, in such a situation, general prices probably would increase further.

The outlook for what a paper dollar will buy in the future is grim. Aside from merely extrapolating into the future its 15-year trend (as in Appendix D), we have no way of predicting the rate at which the purchasing power of the dollar actually will depreciate. Probably the rate of general price increases will vary, sometimes more rapidly, other times more slowly. But unless inflating is brought to an end, almost surely the paper dollar will continue to depreciate. An indication of destructive effects on buying power of general price increases is given by the data in Table 5. This table *understates* what would happen should the hyperbolic trend of consumer prices remain intact. If you think that the worst effects shown there are not possible, consider what has happened to the once "good as gold" dollar in the past decade.



# Appendix A

# THE LOST ART OF COMMERCIAL BANKING

## by E. C. Harwood

THE evolutionary development of human culture extended over millions of years. The written record of what has occurred is relatively short, but we know not only from the written record but also from the artifacts of earlier human societies that men acquired various arts or special skills only to lose them in subsequent centuries.

Perhaps in most instances loss of acquired arts was not a determining influence in the retrogressions, the decline and fall of an unknown number of civilizations. However, in the present century an art has been lost or nearly lost, and the consequences may have a significant influence on the breakdown of Western civilization. This now nearly lost art is the art of commercial banking.

As has been true for many developments in human culture, commercial banking evolved as men attempted to cope with their problems, in particular the exchange problems encountered in a world of rapidly increasing production. From one point of view, the development of modern science and its technological application to production forced the more or less parallel development of commercial banking. Although more and more men learned the procedures of scientific inquiry that enabled them to create the amazingly productive modern industrial society, they never did apply similarly scientific methods of inquiry to the problem of effecting the tremendously augmented number of exchanges that characterized mass production for mass markets. Commercial banking evolved as an art by a succession of trials and errors just as many other human arts have developed rather than as an outcome of scientific inquiry.

Eventually the developing art of commercial banking was crudely described and in some degree understood by its practitioners. For about a hundred years it was sustained at an advanced level of development before retrogression began. Today, almost no bankers and few money-credit economists are familiar with significant aspects of this lost art. No doubt, other lost arts that once flourished seemed durable and assured of perpetuity, but the fact is that arts once lost have not readily been recovered.

### THE PROBLEM SOLVED BY COMMERCIAL BANKING

Medieval markets were like those existing today in the more primitive societies. Things were produced on a small scale, were brought to the public markets by the producers or their families or friends, and exchanges were effected by barter in large part. Even in those early markets where money was used, the money frequently was gold or silver coin, and the transactions more nearly resembled primitive barter than the modern banking and exchange procedures now widely used.

However, as the Industrial Revolution developed through the 18th and 19th centuries, mass production for mass markets became commonplace. The flow of things to organized and continuous markets became thousands of times the physical volume of things exchanged earlier. Today, as anyone who has observed modern shopping centers, supermarkets, major discount houses, and department stores can see for himself, the problem of facilitating exchanges has become enormous compared with the exchange problems of a village market centuries ago.

The modern-day problem may be summarized as follows:

a. Coming to the markets of any country such as the United States is a vast flow of merchandise, transported in ships, freight cars, trucks, and airplanes, a flow continuously in movement day and night (with intermissions for parts of the flow at times).

b. Millions of individuals and businesses obtain varying portions of this flow, for consumption or perhaps for facilitating the production of other things.

c. If the flow is to continue uninterrupted and without either accumulations of surpluses or serious scarcities in the markets, potential claimants (buyers) must be provided the claim checks (purchasing media) that will enable them continuously to buy what is offered. Neither an excess nor a deficiency of claim checks must be provided.

If you were suddenly confronted with such a problem, and had no experience with modern financial and exchange procedures, had never handled what you think of as money, the problem might well seem extraordinarily difficult. Remember that innumerable items flow into the markets: gold ingots from South Africa, manufactured watches, silver in many shapes and forms, diamonds and other precious gems, food in infinite variety from raw material to precooked TV dinners, fabrics and clothing also of seemingly unlimited variety, millions of automobiles, all kinds of chemicals, medicines, household appliances, etc.

Also, remember that practically all of the buyers in the markets have, in some manner or another, participated in the processing efforts that have resulted in this vast flow of things. Each is entitled to his share: this man has fitted the wheels on each of thousands of cars; that woman has sewn the seams of hundreds of suits; this manager has coordinated the efforts of a few hundred thousand people engaged in processing a flow of tires to market; another man has loaned his savings to a company that provides electricity for all to use; still another, a barber, has just performed a service for Tom Jones and has received from him some of the claim checks earned by Tom during the past week, so that, although a barber sends no things to market, he also obtains the means to buy.

Let us suppose that your problem is to provide for all the potential sharers in the flow of things some means of claiming their shares in the markets. We shall not suggest that you stumble down all the blind alleys where men were frustrated in trying to solve this problem during the long evolutionary development of useful commercial banking. Instead we provide a summary description of the most advanced, most efficient stage of development that was reached in the decades before World War I.

We chose that stage of development because retrogression began with World War I as will be described in more detail later.

## HOW A USEFUL MONEY-CREDIT SYSTEM FUNCTIONED

One of the obvious requirements for solving the problem as described is an accounting unit in terms of which the exchange values of all things in the markets can be determined. Clearly, claim checks valid in the markets for purchasing things being offered for sale must be denominated in some unit of measure for exchange values. Thus, the claim checks can be anonymous and available for general use in claiming (buying) any thing. Unlike the situation in a baggage check room, those who wish to claim things offered in the markets want their claim checks to be valid for any item available, rather than valid for claiming only one thing. The buyer in a market wishes to claim the number of units of exchange value to which he is entitled rather than the specific items that he may have participated in producing or in bringing to the market.

Nevertheless, the market situation is in some respects like that in a baggage checkroom. If claim checks for baggage were counterfeited, or in some way were issued when baggage had not actually been left in the checkroom, people could be trying to claim more baggage than there was baggage to claim. Conversely, if baggage checks that had been issued properly as baggage was received were either lost or destroyed, some baggage eventually would remain unclaimed in the checkroom.

Similarly in a nation's markets, if the claim checks (or purchasing media, or "money") were counterfeited or in some other way amounts were issued to potential buyers in excess of the amounts required to represent values of things in the markets, buyers would have far more to spend than the usual market prices of things for sale. In trying to use their excessive purchasing media, buyers would bid for relatively scarce goods, and prices would rise.

In the reverse situation, that is, if claim checks (purchasing media) were not issued in sufficient amount to represent the values of things being offered in the markets at the usual prices, prospective buyers would not be able to claim all the things offered. Then merchants would be forced to reduce prices in order to sell their stocks of things before the continuing flow of goods to market exceeded the capacity of their storerooms.

The accounting unit finally chosen by all leading industrial nations was a specified amount of gold by weight and degree of purity. In some instances, different weights of gold were designated as the accounting unit, and various names were applied by the different nations to the weights of gold they selected, such as dollars, francs, pounds, etc. Nevertheless, because all the accounting units were gold all were freely exchangeable with one another in the simple proportions of their relative weights of gold.

While these conditions prevailed, any specific number of the accounting units designated so much gold by weight. One had no need to talk about a "price" of gold in terms of the various currencies, any more than one would discuss the "price" of a bushel of potatoes in terms of potatoes. One might talk about the weight of a bushel of potatoes as being 60 pounds of potatoes; and in similar fashion one might talk about 100 dollars as being a specified amount of gold by weight, because a dollar by statutory definition was approximately one-twentieth of an ounce of pure gold.

The fact that gold was the accounting unit chosen explains neither how that choice came to be made nor how it facilitated the issue of claims for things in the markets. As for how the choice happened to be made, we shall comment here only briefly.

As human culture evolved, men discovered the usefulness of gold as an exchange medium. This was not a scientific discovery in the usual sense involving laboratory experiments and analyses; it simply was the result of unplanned experience. Men discovered the durability of gold, which neither rots nor rusts; its comparative scarcity; the fact that its exchange value for other things (or rather for the average of other things over wide areas and prolonged times) was relatively stable, as compared with the relative exchange value of anything else; even its pleasing appearance to men and women; its easy divisibility; and possibly other attributes may have been taken into consideration.

At this point we are focusing attention on some of the facts and are not attempting to describe how those facts came to exist. These are aspects of the entire problem that need not concern us here, however interesting they may be to students of economic history. The fact is that gold was the unit of account for modern industrial civilization.

We turn now to a description of the commercial banking procedure that issued claim checks representing things in the markets, retired those claim checks from circulation as things in the markets were sold, and issued new claim checks to represent the new things coming into the markets. These procedures had to occur in order to facilitate the huge volume of exchanges essential to the orderly functioning of a modern industrial society.

At this point, one must first realize that gold held in the banking system was one of the things continually offered in a nation's markets. As gold was brought to the banks, paper currency was issued to represent it, or additions to individual checking accounts were made to represent the gold; i.e., to the account of the man who deposited gold was added, by a bookkeeping entry, the appropriate number of gold accounting units (in the United States, dollars). These purchasing media, i.e., currency or checking accounts, could be used by the holders at any time to claim gold from the banks, that is to buy the gold in that segment of the nation's markets.

The commercial banks also created claim checks (purchasing media consisting of currency and checking accounts or demand deposits) representing things being shipped to and offered in the nation's markets. The procedure formerly more widely used is somewhat easier to understand.

As a manufacturer shipped completed things to market, he would prepare a document describing the shipment, take it to his bank, and borrow purchasing media that, in practical effect, represented the things en route to market. The bank made the loan by crediting an appropriate amount to the checking account of the manufacturer, but this amount was *not* deducted from other checking account liabilities of the bank. Thus, new purchasing media were created and were placed in circulation when the manufacturer used the addition to his checking account to pay wages, salaries, suppliers, and other costs of processing the things sent to market. (As the things were sold, the receipts from sales were used to repay the bank loan by having the amount deducted from the manufacturer's account. Thus the purchasing media created for temporary use were withdrawn when their purpose had been served.)

Those who received the newly issued purchasing media from the manufacturer then could choose whatever they wanted that the markets offered. Also demanding things in the markets were those individuals who had purchasing media representing gold in the banks. Everyone who had purchasing media at his disposal could buy anything he chose in the markets including the gold continually being offered by the banks, which was one segment of the entire market.

A brief digression is necessary at this point, because the procedure described above has been modified in recent decades as mass production has developed on a broader scale and now occurs almost continuously throughout the year. For example, automobile manufacturers ship cars to market practically every business day except for the few weeks each summer when plants are closed for the changeover to new models. Preparing new sets of documents nearly every day for all shipments for use as a basis for bank credits would be unnecessarily time-consuming. Consequently, a different procedure has been developed.

The automobile manufacturer arranges with commercial banks for a "line of credit" and gives a promissory note that may be paid off only once each year during the model changeover period when no cars are en route to markets. Thus a series of borrowings continually being repaid as cars are sold is replaced by a single borrowing resulting in the creation of purchasing media that remain in circulation as long as the flow of cars to markets continues. Instead of using the receipts from today's sales of cars to pay off the note secured by the bill of lading for the shipment, the receipts from today's sales are used by the manufacturer to finance his next shipment. (Whether the time intervals involved are daily, weekly, or monthly depends in part on customary timing for the payment of wages, salaries, dividends, bills for materials, etc.)

Clearly, the art of commercial banking requires knowledge about many aspects of production and exchange. The banker must be an expert judge of financial statements and must know the customary production and shipping procedures of those for whom he creates new purchasing media by discounting their notes. He also needs to have some knowledge of market prices, although much of this information is available in the records of billings by the processors of things being sent to or in the markets.

## POTENTIAL ERRORS IN JUDGMENT

The commercial banker also must have a sound basis for judging prices. Inasmuch as gold by weight was the accounting unit when the gold standard was in general use, as it was before World War I, prices of all things except gold were quoted in terms of gold. For example, at that time, "dollar" was simply another and shorter name for about one-twentieth of an ounce of pure gold. Today, "dollar" is a fictional unit, and judging prices quoted in it is a nightmare.

Errors by commercial bankers in judging the prices of things that are represented by new credits (by newly created purchasing media) could have disturbing repercussions. If, because of overoptimism about prices generally, the bankers created so much new purchasing media that prices in the United States increased in relation to prices for similar things elsewhere in the world, some potential buyers would buy in foreign markets. In that event, the banks would have had to send gold abroad, because a foreign holder of U.S. purchasing media (or of claims on it) would buy the relatively cheapest thing available in U.S. markets, which at that time would be gold.

The outflow of gold would reduce the purchasing media in the United States representing gold and thus would reduce somewhat demand for other things. Prices of most things would fall, and the commercial bankers' error attributable to overoptimism perforce would be corrected. A cumulative distortion attributable to errors of overoptimism would seem to be highly improbable, provided the basic principle of sound commercial banking were followed. However, major errors of a different type have created increasingly greater distortions that have led to periodic breakdowns of the money-credit system.

## SAVINGS AND INVESTMENT

As commercial banking developed, especially in the United States, two quite different functions have been performed by the same institutions. In addition to the commercial banking function already described, most banks performed an investment function, accepting saved purchasing media and investing it.

Savings are purchasing media that the original holder decides not to spend himself; instead he requests the bank to invest it for him and pay him interest on his savings account, sometimes called a time deposit. The bank invests such purchasing media by lending it to a borrower who perhaps is buying equipment for his factory or to a borrower who may desire to buy a new car or for some other purchase. Thus, the purchasing media (currency or checking accounts) are used by someone to buy things in the markets although the original recipient of those purchasing media chose not to buy but to save. He acquires a credit to his savings account or time deposit, which shows that he is the owner, indirectly, of whatever investments the bank has selected, such as bonds, mortgages, installment loans, etc.

The borrower from the bank in the savings-investment transaction is *not* at that time sending to or otherwise offering things of equal value in the markets to be sold. He does *not* desire purchasing media so that he may distribute it to employees and suppliers who participated in preparing things *for* the markets. His desire is to claim things *from* the markets, either equipment for his factory, or a new car for personal use, or any of the multitudes of other things available, such as new bricks for construction of a factory, etc. Consequently, the bank should not create new purchasing media for such a borrower but should lend him purchasing media already in existence that some present owner or owners save and deposit in the bank.

Probably because the same banks have been performing two functions, each of which involves lender-borrower transactions, similar forms (such as promissory notes), and related procedures, many bankers have confused the two functions. In the United States the "wildcat banks," usually small institutions in more or less remote areas, so inextricably confused these two functions that they not only created new deposits (by discounting notes and crediting the proceeds to checking accounts) for typical commercial purposes but also they followed the same procedure and created new checking accounts when discounting mortgage notes. In the first type of procedure, the new purchasing media created represented the exchange value of things en route to or being offered for sale in the local markets; however, in the second the new purchasing media represented things (such as land, factories, or consumer goods) not being offered by the borrowers for sale but on the contrary being removed by them from the markets.

Perhaps the clearest example of the confusion between commercial and noncommercial banking is provided by

the financing of automobiles in or en route to markets in contrast with consumer installment borrowing to purchase a new car. The important distinction that makes all the difference between sound and unsound commercial banking is:

a. When an automobile manufacturer borrows newly created purchasing media and distributes them among employees, suppliers, and others, he is arranging for those potential buyers to obtain their shares (in dollar value) of things in or en route to markets.

b. When an installment buyer arranges to purchase a car, he is *not* claiming a share corresponding to his participation in producing things for markets, he is claiming someone else's share. James Brown can properly do that provided John Doe is willing to lend to James Brown the share that Doe's purchasing media (currency or checking account) proves he is entitled to claim. Such an arrangement usually is effected via the savings-investment procedures with a bank as intermediary. If the bank creates new purchasing media for James Brown to use instead of arranging a loan from John Doe or others, the result will be more purchasing media available to potential buyers than the corresponding value of things in or en route to markets.

Thus, one can see that a bank's lending transaction may reflect additional things offered in the markets *or it may not.* If it does, creation of new purchasing media (for use until retired by repayment of the loan by the seller) is sound commercial banking. If the lending transaction does *not* reflect *additional* offerings in the markets, it should be financed by the savings-investment procedures.

When the borrowers from "wildcat banks" attempted to buy, they discovered that merchandise was scarce; they bid prices higher and higher for the available things. Soon, those having purchasing media tried to buy more cheaply in more distant markets. The sellers in those markets did not wish to buy most things in the local markets but used their claims to demand gold from the "wildcat banks," which then were unable to meet their obligations and collapsed.

This disastrous practice has been repeated again and again in human experience. Another notorious instance was that of the Scottish banks, of which a multitude collapsed after similarly neglecting to apply what might be called the basic principle of sound commercial banking.

Finally, the lesson was learned. During nearly a century prior to World War I, the leading English banks applied the basic principle of sound commercial banking most of the time with outstanding success. The basic principle became more widely understood and applied among industrial nations. Even U.S. bankers, who were "slow learners," embodied this basic principle in the original legislation for the Federal Reserve System in 1913. The Federal Reserve banks originally were permitted to rediscount for the member banks only commercial paper directly tied to the volume and value of things flowing to markets. Such widespread application of the basic principle of sound commercial banking marked the farthest advance achieved by the human race in the evolutionary development of a money-credit system that could serve a modern industrial society.

## RETROGRESSION

During World War I the prolonged evolutionary development ended, and retrogression began that has continued to date. Perhaps the decisive influence was the political decision by each leading combatant to finance the war by inflating. This procedure was not justifiable on economic grounds (as Napoleon had demonstrated a century earlier), but apparently it was politically expedient. The basic principle of sound commercial banking was simply disregarded when the governments used the various banking systems to monetize government debt. Not only the central banks but also the commercial banks generally were stuffed with government promissory notes of short and long duration, the latter called bonds in exchange for credits to the checking accounts of governments. As the new purchasing media or claim checks were used to buy things in the markets, things already represented by other purchasing media in use, demand exceeded supply at the original gold-exchange values. This was inflating, and of course prices rose.

During the 1920's, similar inflating occurred by means of the overexpansion of private debt. The gold-exchange-standard experiment then under way facilitated nearly simultaneous inflating in most industrial nations by the double-counting of gold reserves. When the credit bubble finally burst, the aftermath was the worldwide deflation and depression of the early 1930's.

Before World War II, the Keynesian notion that perpetual prosperity could be sustained by perpetual inflating was applied. It was continued through World War II, and thereafter it was applied on an increasing scale. The basic principle of sound commercial banking was forgotten. Perpetual inflating became the new way of life.

As the currencies of several leading nations deteriorated, that is, as prices generally rose at increasing rates, gold was demanded from the banking systems. After the gold held by U.S. banks had decreased to only 40 percent of the amount held shortly after World War II, the pretense that the dollar still was a unit of gold was abandoned in 1971.

No longer was gold by weight the accounting unit of all leading industrial nations. The "governor" of modern banking that had made possible dynamic equilibrium was abandoned. The depreciating paper currencies provided no standard of value.

From then on, lacking both a warning signal in the form of an outflow of gold and any definite restraint on the expansion of purchasing media, bankers based commercial loans on current inflated prices and made other loans and investments at similarly inflated prices. All increases in wages and other prices were validated by more and more increases of purchasing media by the central banks and the other commercial banks. Thus all the leading industrial nations became trapped in an inflation spiral of ever-increasing wages and other prices, in other words, a spiral of depreciating currencies. For this situation there is no certain end short of complete depreciation of the currencies, depreciation to the point that currencies no longer are used to effect exchanges.

From time to time during a prolonged inflationary spiral temporary setbacks occur. Overspeculation in various aspects of the economy, such as building construction in major cities or excess tanker construction, may be followed by recessions or even more severe depressions. Nevertheless, in the absence of the gold governor or any other sound basis for judging comparative exchange values, the inflationary spiral continues as long as the banks create more inflationary purchasing media to finance government deficits and/or excessive private borrowings.



# Appendix B

# FINANCIAL CLAIMS: PURCHASING MEDIA OR NOT?

BECAUSE in common usage there now are many referents to the name "money," we attempt to avoid using "money" whenever that is practicable. Our substitute name for a particular referent for money – namely, things *generally* used in final payment of purchases and debts – is "purchasing media." We discuss below some of the things sometimes referred to as money to see which should be classified as purchasing media. See Table 3 on page 6 for how the *official* monetary aggregates are constructed and Table 4 on page 6 for AIER's calculation of purchasing media in use.

*Currency in circulation.* Currency in "circulation" includes the paper notes issued by Federal Reserve banks and the U.S. Treasury, and the coins minted by the U.S. Treasury that are possessed (held) by the public. Obviously these things are generally accepted in final payment of purchases and debts and therefore are a type of purchasing media.

*Demand deposits.* Demand deposits are claims against commercial banks that can be transferred to third parties on written order of the claim holder (depositor). These accounts commonly are referred to as checking accounts. Relatively new deposit transfer arrangements such as Telephone Orders of Withdrawal do not essentially alter the "on demand" aspect of these claims. Inasmuch as transfers of such deposits generally are used in final payment of purchases and debts, they too are a type of purchasing media. But what about the many instances when a seller refuses to accept a personal check? Compared with the instances when checks are accepted, the instances of refusal are small. That is, checks are *generally* accepted. Moreover, refusal to accept a personal check usually does not involve a refusal to accept the transfer of a demand deposit claim *per se* but a refusal to accept the *evidence* that such a transfer indeed is represented by the written order (the check). In such cases, other arrangements are made with a form of purchasing media needing no such evidence, such as currency, cashier's or certified checks.

*Time and savings deposits.* These deposits are claims on commercial banks and "thrift institutions" on which the claim holder receives interest but also on which the "bank" contractually can require advance notice before it has to pay. In practice, banks do not require this advance notice and thus the funds are immediately available. However, also in practice, the transfer of claims on time and savings deposits *are not generally used* in final payment of purchases and debts. Claim holders of these accounts usually (if not always) must first convert them to currency or demand deposits for making payments; they do not usually make a written order to the savings institution to transfer their claim to someone else. Thus, time and savings deposits are not a type of purchasing media.

*Certificates of deposit (CDs).* CDs represent claims on funds deposited at a commercial bank for a specified time period at a specified interest rate. Many CDs are "negotiable," that is, the claim on the bank can be transferred to someone else. And many such claims are indeed transferred in practice, which enables the original CD holder to exchange this type of claim to, say, an existing demand deposit claim. Of course he then could use the demand deposit claim in final payment of a purchase or debt. But this does not qualify the CD as purchasing media; it is not generally used in final payment of a purchase or a debt, just as savings deposits are not so used. Indications are that CDs in the future *may* directly be used as purchasing media for final payment of obligations between corporate treasurers. When and if such occurs, some CDs then should be so counted.

*U.S. Treasury securities.* Some analysts contend that because Treasury securities also can be sold easily (they are "liquid"), they are much like "money." However, like CDs, these securities generally are not used in final payment of purchases and debts, but first must be converted to pre-existing currency or demand deposits for such purposes. Thus, Treasury securities are not purchasing media.

*Credit cards.* Credit cards represent an open line of credit made available to the card owner by the card issuer. Because credit cards generally are used for making purchases, some analysts claim that they have the same potential as currency or demand deposits. However, as many readers no doubt realize, until the bills for their credit purchases arrive each month, the use of credit cards does not involve final payment for the card holder. The seller who accepts a credit card (or his bank) must present the credit invoice to the card issuer in order to receive final payment, and he generally receives final payment by means of a demand deposit transfer drawn against the credit card issuer in favor of the seller. Later, the credit card issuer demands final payment from the credit card holder, and final payment is made by transfer of currency or a claim on a demand deposit. Credit cards are not classified as purchasing media.

*Traveler's checks.* Liability for *bank-issued* traveler's checks already properly is included in official demand deposit measures. These liabilities are used as means of final payment *from the point of view of the buyer of things* and thus have purchasing media status. *Non-bank-issued* traveler's checks such as those of American Express Company currently are not included in official money stock measures, simply for lack of data. Such liabilities in principle should be so included but even if they were so in the future, the problem would remain of *foreign-issued* traveler's checks domestically in use, data for which probably never would be forthcoming. All in all, however, these amounts are relatively small and now present no major problems for measurement of total purchasing media.

*Negotiable orders of withdrawal (NOW accounts).* Since early 1976, savings banks in the northeast have issued claims on deposits called NOW accounts. Since early 1981, NOW accounts have been offered nationwide. Claims on these accounts are transferred at the written demand of the claim holder and are generally accepted in final payment of a purchase or debt. Thus, they are like demand deposits and would appear to be purchasing media. However, insofar as savings banks use demand deposit balances at commercial banks for clearing their NOW checks, these deposit balances are *not* purchasing media because they are not transactions balances used as means of final payment for goods and services but rather are *reserves* against those thrifts' NOW liabilities. These should not be counted as purchasing media, just as member commercial bank reserve balances at Federal Reserve banks are not so counted.

Furthermore, the *total* of NOW liabilities at both savings

and commercial banks are not purchasing media. Portions of interest-bearing NOW accounts are not *bona fide* transactions balances; instead, they are savings-type balances. Comparative deposit turnover studies indicate that during the 1976-79 experience with NOW accounts offered only in some northeastern states, their annual turnover activity was only about one-third that of household checking accounts and between the turnover of household checking accounts and that of time and savings accounts. Inasmuch as similar results were obtained for Automatic Transfer of Savings (ATS) accounts, credit union share drafts, and demand deposits at mutual savings banks, we count only one-third of total such "other checkable deposits" as purchasing media. Recent Federal Reserve guesstimates suggest that of the inflow of funds to NOW accounts associated with their nationwide introduction during the first few months of 1981, 20 to 25 percent represent saved funds. More accurate estimates will have to wait until after-the-fact turnover studies are made of the new nationwide NOW accounts a year or so hence.

*Repurchase agreements.* These financial claims are a curious form of purchasing media. They differ from other such forms in that the liability is not itself used as means of final payment but rather represents purchasing media that are so used but simply do not appear in the official measure of the M-1B money stock. Purchasing media status pertains not to long-term but only to "overnight" and "continuing contract" repurchase agreements, which arise when a corporate treasurer, upon completion of the day's payment activities, arranges with his bank to buy government securities from the bank's own portfolio in lieu of holding the transactions balance in the company's demand deposit. This reduces that demand deposit to zero before the end of the day, which is when such deposits are required to be counted for reports to the monetary authorities for reserve requirements and the money stock statistics. The government securities are repurchased by the bank the next morning at a slightly higher price, the difference of which effectively constitutes interest, and the proceeds replenish the corporation's demand deposit for use during the day until the next repurchase agreement hours later. Not only are the effective interest payments on this arrangement advantageous to the corporation which otherwise would receive either less or no interest, the bank also finds advantageous this "managed liability" compared with other types of accounts, for less or no reserves at the Fed currently are required for repurchase agreements.

*Eurodollars.* Two related but distinct purchasing media considerations apply to Eurodollars. First, a "managed liability" arrangement between a corporate treasurer and a bank exists which is similar to the aforementioned repurchase agreements. This is *overnight* Eurodollars issued by Caribbean branches of U.S. banks to U.S. nonbank customers. (Eurodollars simply are any dollar-denominated bank deposit in a foreign bank.) This arrangement, like repurchase agreements, pays interest to the customer and reduces his domestic demand deposit balance to zero by the end of the day, when official money stock data are collected. Again, although this "nondeposit liability" is not directly used as means of final payment, it represents purchasing media that are so used but simply escape reporting as such. Second, these currently relatively small amounts should not be confused with the purchasing media status of the entire multi-billion dollar world Eurodollar market. Inasmuch as Eurodollars generally facilitate foreign trade, they do not affect domestic spending and prices any more than do foreign currencies and thus should not be included in the U.S. stock of purchasing media. Furthermore, the Federal Reserve recently finally began to report domestic money stock measures net of demand deposits in U.S. banks owned by foreigners. Although such deposits have grown markedly over the past decade, the overwhelming majority of them do not involve payments within the United States. Rather, the purposes to which they are put involve the following: (i) settlement clearings of foreign banks' Eurodollar transactions (and thus constitute a reserve base for the Eurodollar banking system, which should not be counted in the U.S. or even foreign money stock measures, just as our domestic bank reserves properly are not counted in the U.S. money stock); (ii) settlement of foreign exchange transactions (of which only a small portion directly involves foreign commerce of the United States); and (iii) "compensating balances" to remunerate U.S. banks for services rendered to accounts due to foreigners.

*Money market mutual funds (MMMF).* This is a fairly new innovation that has become extremely popular recently. By early 1981, MMMF liabilities exceeded $100 billion. This is a mutual fund that invests solely in short-term credit instruments, such as Treasury securities, CDs, commercial paper, etc. MMMFs are a viable alternative for investors or savers to savings accounts at banks and thrift institutions, at least until such time as the 6-year phase-out of savings account interest rate ceilings becomes fully implemented as mandated in the Monetary Control Act of 1980. MMMF accounts offer daily-changing, market-related interest rates that often are far higher than passbook savings account interest rates. Although MMMFs carry *check-writing* privileges, which suggests that they are a form of purchasing media, they cannot to date be so regarded, for it turns out that such privilege in fact has not been used as means of final payment for purchases of goods and services. Turnover activity of MMMF deposits so far has been less than even that of time and savings accounts, and less than one-third that of household demand deposits. These figures suggest that checks written on MMMFs merely swap *saved* funds for existing conventional forms of purchasing media when purchases are contemplated. This situation could change markedly at any time, however, and if the behavior of MMMF holders warrants, those liabilities then will be counted as purchasing media.

*Treasury deposits at commercial and Federal Reserve banks.* The purchasing media status of Treasury deposits has been a source of confusion even for many "hard money" advocates. In general, a crucial consideration is that accounts cannot be regarded as purchasing media *in use* unless they are *bona fide* transactions balances actually held for making payments during the current income/expenditure, or accounting period. Otherwise, one would be hard pressed to describe how non-transactions balances could affect spending and prices. Another decisive aspect is that the Treasury is a *bank* and accounts due to it therefore should be consolidated along with member bank reserve accounts at the Fed and with banks' interbank and correspondent deposits. Its holdings thus are excluded from all reported monetary aggregates and purchasing media. Furthermore, the Fed's open market operations fully offset on a daily basis shifts of Treasury deposits between commercial and Federal Reserve banks, which otherwise would play havoc with potential money stock changes occurring *via* the relationships between bank reserves and multiple bank deposit expansion or contraction. (See Appendix D for discussion of the latter.) Elaborating on the above first crucial consideration, it is arbitrary to separate Treasury holdings in its capacity as one of the monetary authorities from those under its auspices as an operating agency or as a fiscal agent thereto. Even to whatever extent that it indeed is an operating agency, the relation between the Treasury's money balances and how it spends them cannot be construed as homogeneous with this relation for the non-bank public because, for example, of the Federal Government's power to create purchasing media out of thin air.

*Miscellaneous.* Some theorists contend that *any* financial claims ostensibly redeemable in cash on demand are purchasing media. In addition to ones already dealt with above, these include (1) total policy reserves of life insurance companies (net of policy loans outstanding) because such policies can be cashed in or policy loans can be made on them "on demand"; and (2) U.S. savings bonds (at current rates of redemption) because these can be cashed in at any time. Both of these claims, however, do not qualify as purchasing media inasmuch as inclusion of each simply would involve double-counting, for each first must be exchanged for existing currency or checkable deposits, just as with the aforementioned bank savings and time deposits and CDs, *before they can be spent.* Thus far, insurance policy documents and savings bonds are not themselves generally accepted as means of final payment.



# Appendix C

# HOW BANKS CREATE PURCHASING MEDIA

NOT all commercial banks in the United States are members of the Federal Reserve System. The Monetary Control Act of 1980, however, mandated eventual *uniform* reserve requirements for nonmember banks as well as for Fed members. Monetary policies are implemented through these depository institutions, but the effects spread throughout the money and credit system because of the business ties that banks have to nondepository institutions and because of the linkages among all aspects of the economy.

Member banks are required to maintain deposits with the Fed (or cash in their vaults) equal to a minimum percentage of their deposit liabilities. These deposits (plus vault cash) are called reserves, and the minimum percentage is called the reserve requirement. Reserve requirements on checkable deposits currently are from 3 percent to 12 percent, according to a graduated schedule of the deposit liabilities of the bank. Reserve requirements on time deposits are from 0 percent to 3 percent, according to maturity and ownership.

## PURCHASING MEDIA CREATION INITIATED BY THE FED

Let us say that Fed officials decide to try easing monetary conditions somewhat. They usually would do so by purchasing U.S. Treasury securities in the open market, that is, from the 20 or so major Government securities dealers, among whom are a number of banks. For our illustration, assume the amount of securities purchased is $10 million. The Fed pays for these securities by crediting the reserve account of the dealer-banks or of the clearing banks who handle the paperwork for the nonbank dealers. Those clearing banks then would credit the demand deposit account of their nonbank dealer-customers. Assuming in our illustration that the purchase is from a nonbank dealer (Bond Dealer), the balance sheets (in thousands of dollars) of the entities involved in the transaction would change as shown below.

| *ASSETS* | | *LIABILITIES* | |
|---|---|---|---|
| | *Federal Reserve Bank (FRB)* | | |
| +$10,000 | Treasury securities | +$10,000 | Reserves of CBA |
| | *Bond Dealer (BD)* | | |
| −$10,000 | Treasury securities | | No change |
| +$10,000 | Demand deposit at CBA | | |
| | *Commercial Bank A (CBA)* | | |
| +$10,000 | Reserves at FRB | +$10,000 | Demand deposit of BD |

One result of this transaction was an immediate increase of $10 million in purchasing media – the increase in the demand deposit (checking account) liability of the commercial bank (CBA) to the bond dealer (BD). Just so easily are purchasing media created. The demand deposit increase of the bond dealer is no different from any other demand deposit claim; it becomes lost in the Nation's stock of "money."

What makes the creation of purchasing media possible by this process is the unique ability of the Fed simply to create monetary reserves by a bookkeeping entry. This ability is given to the Fed by the laws of the Nation, and it is made effective by the willingness of the general public (like the bond dealer) to accept demand deposit claims on commercial banks in *final payment* of an obligation (the purchase of the Treasury security). Through the commercial banks the Fed thus can convert IOUs (debts) not used as purchasing media into IOUs that are so used (the demand deposit liability of a commercial bank).

If the Fed were to sell some of the securities it already owned, the opposite result would occur: purchasing media would be destroyed as the public would end up holding more IOUs not used as purchasing media (the Treasury securities) and less IOUs so used (the demand deposit balance that would be reduced when the buyer of the securities paid the Fed for the securities).

## PURCHASING MEDIA CREATED BY COMMERCIAL BANKS

The creation of purchasing media by the Fed purchasing Government securities is only one method by which purchasing media are created. Let us follow through some other possible transactions arising from the initial purchase of securities by the Fed.

Assuming the reserve requirement on demand deposits of Commercial Bank A (and for simplicity, all other commercial banks as well) is 10 percent, at the end of the steps previously indicated, CBA would have more reserves at the Fed than required. Note in the earlier balance sheet changes that CBA's reserves at FRB increased by the same amount as its deposit liabilities increased, namely $10 million. But with reserve requirements of 10 percent, the increase in *required reserves* is only $1 million. The difference between CBA's actual reserves and its required reserves ($9 million in our illustration) is known as *excess reserves.*

Commercial bankers attempt to keep excess reserves to a minimum because the Fed does not pay interest on the

deposits (reserves) its member banks maintain with it. Thus, the bankers of CBA would "put to use" the excess reserves it holds. One way they would do so is described below.

When a commercial bank makes a loan, it usually does so by crediting the demand deposit of the borrower, that is, by increasing its own liabilities. In our illustration, assume Firm B (FB) borrows $9 million from CBA. The effects on the balance sheets of FB and CBA (in thousands of dollars) would be as shown below.

| *ASSETS* | | *LIABILITIES* | |
|---|---|---|---|
| | *Commercial Bank A (CBA)* | | |
| +$9,000 | Promissory note of FB | +$9,000 | Demand deposit of FB |
| | *Firm B (FB)* | | |
| +$9,000 | Demand deposit at CBA | +$9,000 | Promissory note to CBA |

Of course, Firm B would not borrow funds if it did not plan to use them; therefore, let's assume it purchases $9 million of merchandise from Firm C (FC) and pays with a check against its account at CBA. Firm C then deposits the check at the bank with whom it maintains its demand deposit account, say Commercial Bank B (CBB). CBB then sends the check for collection to the FRB, and FRB pays CBB by crediting CBB's reserve account by $9 million, while debiting CBA's reserve account by the same amount. When the check returns to CBA, CBA debits the demand deposit account of FB by $9 million. The balance sheet entries of these transactions would be as follows:

| *ASSETS* | | *LIABILITIES* | |
|---|---|---|---|
| | *Firm B (FB)* | | |
| +$9,000 | Merchandise | | No change |
| −$9,000 | Demand deposit at CBA | | |
| | *Firm C (FC)* | | |
| +$9,000 | Demand deposit at CBB | | No change |
| −$9,000 | Merchandise | | |
| | *Commercial Bank B (CBB)* | | |
| +$9,000 | Reserves at FRB | +$9,000 | Demand deposit of FC |
| | *Federal Reserve Bank (FRB)* | | |
| | No change | +$9,000 | Reserves of CBB |
| | | −$9,000 | Reserves of CBA |
| | *Commercial Bank A (CBA)* | | |
| −$9,000 | Reserves at FRB | −$9,000 | Demand deposit of FB |

A number of noteworthy changes now are apparent. CBA no longer has any excess reserves with the FRB; those reserves were lost to it when the check of its borrower cleared the FRB. But those reserves were gained by CBB. If we consider CBA and CBB to comprise a single unit called the Commercial Banking System (CBS) and we net their transactions to this point, these are the net balance sheet changes.

| *ASSETS* | | *LIABILITIES* | |
|---|---|---|---|
| | *Commercial Banking System (CBS)* | | |
| +$1,000 | Reserves of CBA at FRB | +$10,000 | Demand deposit of CBA to BD |
| +$9,000 | Promissory note of FB to CBA | +$9,000 | Demand deposit of CBB to FC |
| +$9,000 | Reserves of CBB at FRB | | |

Other results now are apparent. CBS has created additional purchasing media: the demand deposit liability of CBB to FC. Thus, the original injection of $10 million

Table 6
CREATION OF PM BY THE COMMERCIAL BANKS
(In thousands)

| *Bank* | *Increase in Demand Deposits* | *Increase in Required Reserves* | *Increase in Earning Assets* |
|---|---|---|---|
| A | $10,000 | $1,000 | $9,000 |
| B | 9,000 | 900 | 8,100 |
| C | 8,100 | 810 | 7,290 |
| D | 7,290 | 729 | 6,561 |
| E | 6,561 | 656 | 5,905 |
| F | 5,905 | 591 | 5,314 |
| G | 5,314 | 531 | 4,783 |
| H | 4,783 | 478 | 4,305 |
| I | 4,305 | 431 | 3,874 |
| J | 3,874 | 387 | 3,487 |
| Others | 34,868 | 3,487 | 31,381 |
| Totals | $100,000 | $10,000 | $90,000 |

reserves into the banking system by the Fed's purchase of Treasury securities has resulted in the creation of $19 million purchasing media. But this is not the end of the chain, because CBB now has $8.1 million of *excess* reserves, only $0.9 million being required (10 percent times $9 million) to support the increase in CBB's demand deposit liabilities. CBB then could follow the path taken by CBA when it had excess reserves, namely, make loans totaling the amount of excess reserves.

The theoretical maximum increase in purchasing media and earning assets in our illustration is shown in Table 6. The original injection of $10 million of reserves by the Fed from a purchase of Government securities from a nonbank dealer would foster an increase in purchasing media of $100 million and an increase in bank earning assets (loans or investments) of $90 million. Ten million of the increase in commercial banks' assets would be in the form of nonearning reserves with the Fed.

Without describing the specifics, we should alert the reader to one oversimplification in our illustration. We assumed that as the purchasing media were created with each loan, all of the funds remained in the form of demand deposits at commercial banks. In practice, the public holds funds in other forms, such as cash, and time deposits. These decisions reduce the amount of reserves available to support demand deposits; consequently, the total of purchasing media actually created is less than the theoretical maximum. Currently each dollar of reserves supports nearly eight dollars of demand deposits.

Commercial banks can create purchasing media because of their ability to convert an asset that is not purchasing media into a liability that is purchasing media. Although in our illustration we assumed the banks made loans when they had excess reserves, the effects on purchasing media would have been the same if the banks instead had acquired corporate bonds, Government securities, a new building, foreign currencies, etc. The key feature is the increase in demand deposit liabilities, not the asset acquired in the process of creating the increase in those deposits.

Likewise, for the Fed. Our illustration was based on the Fed's purchase of Treasury securities. However, the results would have been similar had the Fed accomplished the increase in reserves of the banking system by making a loan to a member bank or by purchasing a Government agency security. The key is that the reserve liability of the Fed is the reserve asset of the member banks.

## BUT WHAT CAN THE FED ACTUALLY CONTROL?

The foregoing is merely the standard textbook account of the *basic* process of multiple expansion of purchasing media (bank deposits) against Federal Reserve liabilities.



Table 7
FACTORS INFLUENCING THE ADJUSTED MONETARY BASE*
SIGN INDICATES EFFECT ON THE ADJUSTED MONETARY BASE
(Millions of dollars)

| *Sources* | | *Dec. 1980* | *Dec. 1979* | *Change* | *Percent Change in Adjusted Monetary Base attributable to:* |
|---|---|---|---|---|---|
| I. | Federal Reserve Credit | $143,298 | $140,008 | $ 3,290 | 26.5% |
| | a. U.S. Government Securities | 128,019 | 126,629 | 1,390 | 11.2 |
| | b. Loans | 1,617 | 1,454 | 163 | 1.3 |
| | c. Float plus other Federal Reserve Assets | 13,662 | 11,925 | 1,737 | 14.0 |
| II. | Other Factors | 19,074 | 16,718 | 2,356 | 19.0 |
| | a. Treasury Deposits with Federal Reserve | −2,722 | −2,963 | 241 | 1.9 |
| | b. Gold Stock plus Other Items[1] | 21,796 | 19,681 | 2,115 | 17.0 |
| III. | Source Base (I+II) | 162,372 | 156,726 | 5,646 | 45.4 |
| IV. | Reserve Adjustment[2] | 3,257 | −3,524 | 6,781 | 54.6 |
| V. | Adjusted Monetary Base | 165,629 | 153,202 | 12,427 | 100.0 |
| *Uses* | | | | | *Percent Change in Adjusted Monetary Base absorbed by:* |
| VI. | Adjusted Bank Reserves[3] | $ 47,029 | $ 45,002 | $ 2,027 | 16.3% |
| VII. | Currency held by the Public | 118,600 | 108,200 | 10,400 | 83.7 |

* Preliminary monthly averages of daily figures; not seasonally adjusted; our estimates from Federal Reserve Board and Bank of St. Louis data.
1 Includes SDRs held by F. R. banks, Treasury currency outstanding, Treasury cash holdings, deposits with the Federal Reserve other than Treasury deposits and member bank reserves, and other F. R. liabilities and capital accounts.
2 Adjustment for reserve requirement ratio changes. Reserve adjustment computed by the Federal Reserve Bank of St. Louis.
3 Includes member bank deposits at F. R., and vault cash of all commercial banks, plus reserve adjustment (see footnote 2).

It is a simplified illustration of a complex process. In the "real world," the final outcome of Fed activity is affected by complicating factors such as "leakages" to other types of deposits, various differing reserve requirements, and the preferences of the public. We discuss below the monetary vagaries that limit the monetary control of the Fed.

Of the three chief *reserve* aggregates – Federal Reserve Credit, Member Bank Reserves, and the Monetary Base – the Fed has the greatest control (virtually absolute control) over Federal Reserve Credit. The Fed's main instrument for effecting its policy is its open market operations. These are purchases (or sales) by the Fed of Government securities by means of the Fed making bookkeeping credit (or debit) entries ultimately to the reserve accounts of its member banks. This is the Fed's primary means of promoting monetary expansion or contraction, or of promoting "easy" or "tight" credit conditions in the Nation's money markets, or of offsetting other factors to be discussed below. The Fed has total control over its holdings of Treasury and other Government obligations, which constitute the largest component of Federal Reserve Credit (see Table 7, line I.a.).

Loans and advances to member banks from the Fed are not a right of the member banks but a privilege, although requests from member banks normally are honored nearly automatically, provided that the individual banks otherwise are in good standing. The Fed exerts considerable influence over member banks' borrowings through the "discount window" by its second major policy instrument, namely, changes in the interest rate it charges on those loans (the "discount rate"). If the discount rate is below rates on alternative bank sources of funds, primarily the rate on Fed funds and short-term Treasury bills, banks are induced to borrow at the Fed and lend or invest the reserves at the higher rates. If the discount rate is above other short-term rates, it behooves banks to not borrow at the Fed or even to reduce any such borrowings outstanding. The Fed thus also has close control over its advances and loans to member banks, which comprise the second major component of Federal Reserve Credit.

"Float" arises from the Fed's check clearing service to member banks in which checks presented to the Fed by one member bank from another member bank are temporarily credited to the first bank before collection is made from the second bank. Such "float" is a technical factor that can create unintended changes in Federal Reserve Credit in the short run of a week or so, but is not significant beyond. Together with other controllable items ("other Federal Reserve assets"), the "float" comprises the last major portion of Federal Reserve Credit.

As Table 7 reveals, the Monetary Base by source (line III) consists of Federal Reserve Credit plus "Other Factors." "Other Factors" comprises various additive and subtractive items, including SDRs, Treasury currency, Treasury deposits, other non-member bank deposits, capital accounts, etc. Over these the Fed has limited (if any) control, but one can see that the total amount of these is small in comparison with Federal Reserve Credit. Indeed, changes in Federal Reserve Credit often are made to offset changes in "Other Factors."

The third major Fed policy instrument is changes in reserve requirement ratios. The required reserve ratio specifies the minimum percentage of a member bank's liabilities that must be held in vault cash or on deposit with the Federal Reserve, neither of which earns interest for the bank and which bankers therefore attempt to minimize. Changes in reserve requirements do not appear as an asset or liability account of the Fed, but they do affect the monetary aggregates. To incorporate this policy instrument into the reserve aggregates, a "reserve adjustment magnitude" (RAM) calculated by the St. Louis Fed is applied to Federal Reserve Credit, to the Monetary Base, and to Bank Reserves. This adjustment formerly also accounted for shifts in deposits between banks for which different reserve requirements applied because of bank size. Because of the lengthy phase-in of uniform reserve requirements for all depository institutions man-

dated by the Banking Act of 1980 and its attendant complications, the St. Louis Fed no longer incorporates the effects of deposit shifts into its RAM. We believe this renders the RAM less useful than before, thereby compounding control problems for the Fed. The Fed simply cannot measure as well what effectively happens to the very reserve aggregates it would like to control.

The total of RAM-adjusted Federal Reserve Credit plus "Other Factors" (Fed assets) equals the total of RAM-adjusted bank reserves plus currency in circulation (Fed liabilities), and this total is the Adjusted Monetary Base. The first is the "Source Base" and the second is the "Use Base."

Adjusted Bank Reserves are a liability of the Fed but an asset of the member banks. These reserves "support" the member banks' own liabilities, primarily checkable deposits and time and savings deposits.

## LIMITED CONTROL OVER MONETARY AGGREGATES

Once the Fed credits ("out of thin air") an amount of reserves to the banking system, it has virtually no control over the portion the public decides to use as currency and as checkable deposits, which together constitute reported transactions balances. A dollar of reserves supports only a dollar of currency, but a dollar of reserves supports a multiple amount of checkable deposits, more than $8.00 recently. When the public changes its preference for these forms of its reported transactions balances, the Fed through open market activity tries to keep total transactions balances (currency and checkable deposits) from diverging widely from the amount the Fed would like them to total. But such offsetting actions cannot be instantaneous, which is one reason why reported changes in M-1B (the Fed's monetary aggregate we believe is least flawed in representing transactions balances) do not necessarily reflect Fed policy.

Further complicating Fed control of the monetary aggregates is the freedom of the public to decide the allocation of funds between checkable deposits and savings and time deposits. A dollar of bank reserves supports a greater multiple of savings-type deposits (because of lower reserve requirements) than of checkable deposits, but as the proportion of total reserves required to support time deposits increases the proportion available for checkable deposits decreases. Therefore, a set growth rate for the reserve aggregates will not always foster the Fed's desired growth rate of the various monetary aggregates, for example, M-1B and M2. If the public decides to save proportionately more (as it did in the spring of 1980) and the Fed reacts by increasing reserve aggregates in order to reach a target growth rate for M-1B (as apparently it did in the summer of 1980), when the public reverses its decision on saving, the earlier-provided reserves may support excessive growth of M-1B (as occurred in the fall of 1980).

Recent innovations in banking practices have blurred the distinction between transactions balances and savings balances, posing yet greater problems for the Fed. Included in M-1B is "other checkable deposits" in addition to currency outside banks and demand deposits at commercial banks (old M1). These "other checkable deposits" include NOW accounts and credit union share draft accounts. Only a portion of these are used as transactions balances, the rest effectively are savings balances. Until the rate of transactions activities of these deposits (now offered nationwide) can be estimated from deposit turnover studies, we shall not be able to ascertain how much of the total amount serves each of the two functions. Consequently, the amount of transactions balances, or purchasing media in use, will be partially unknown for a time. Associated with the introduction in 1981 of nationwide NOW accounts through March appears to have been about a $36 billion decrease in M-1A but about a $7 billion decrease in M-1B. The difference of $29 billion is nearly totally accounted for by about a $30 billion increase in "other checkable deposits."

As aforementioned, we believe the Fed M-1B series is an inadequate measure of *bona fide* transactions balances. An accurate measure of this quantity is essential for the hope of containing inflating. For our "purchasing media in use" estimate we add to currency and commercial bank demand deposits (M-1A) one-third of "other checkable deposits," plus overnight and continuing-contract repurchase agreements, plus overnight Eurodollar deposits at Caribbean branches of U.S. banks, less an estimate of inactive purchasing media. For December 1980 our series exceeded M-1B by about $12 billion. Our guess is that the gap will narrow and then M-1B will rise above our series as nationwide NOW accounts become more widely used and they are totally counted in M-1B as transactions balances. We furthermore expect that future innovative forms of purchasing media will "crawl out of the woodwork" if prices and interest rates continue to accelerate and the dollar remains a no-thing monetary unit. Consequently, even if the Fed had tight control over transactions balances and successfully met its announced targets for them, the series controlled may have limited significance for inflating.

## WHAT'S IT ALL ABOUT?

An aspect of the monetary problem more basic than the question of the amount of purchasing media and its control is the apportionment of the banking system's time

Table 8
ASPECTS OF THE MONETARY PROBLEM*

I. Objective: dynamic balance between
   - A. Exchange value of newly produced things offered in markets, and
   - B. Amount of purchasing media in use

II. Purchasing media in use consists of
   - A. Nonreported M1-type claims (certain repurchase agreements, etc.) plus
   - B. Reported M1-type claims, which consist of
     1. Currency held by the public
     2. Transactions balances portion of checkable deposit claims of the public at all depository institutions

III. Checkable deposit plus savings and time deposit liabilities (and other minor liabilities) of all depository institutions are matched in total amount by those institutions' assets, which consist of
   - A. Earning assets, which consist of
     1. *Bona fide* commercial, industrial and agricultural loans (*properly* funded only in amount of checkable liabilities) and
     2. Investment-type loans and purchases of securities (*properly* funded only in amount of time and other noncheckable liabilities)
   - B. Nonearning assets, or reserves, which consist of
     1. Vault cash of banks and
     2. Deposits at Federal Reserve (F.R.) banks

IV. Changes in deposit liabilities of F.R. banks to member banks are reflected in changes in F.R. credit, which is extended as the F.R. banks alter their assets in the form of
   - A. U.S. Government securities
   - B. Loans to member banks
   - C. "Float" plus other F.R. assets

* In highly simplified form.



and demand liabilities between its investment-type assets and its commercial lending function. This aspect of the operation of the banking system is critical to the ultimate objective of monetary control: a noninflationary monetary system conducive to sound economic activity. That objective is more nearly achieved as a dynamic balance is more closely approached between the amount of purchasing media in use and the sum-total exchange values (prices) of newly produced things offered in markets. If the banking system creates new demand liabilities (purchasing media) only in the process of making commercial, industrial, and agricultural loans that fund the offering of things for sale in the markets (the commercial lending function), the goal of dynamic balance would be approximated. Inflating, its related misallocation of resources, and chronic increases in general prices then would be avoided in the free market.

The Fed today, however, publicly decries "too much money," but it never seems to specify by what standard "too much" is "too much." It was not always thus. The commercial lending function was incorporated in the original Federal Reserve Act, but it soon was abandoned in order more easily to finance World War I. During the 1920's inflating bubble, Fed Governor Benjamin Strong complained that he could not control what the bankers did with the newly created funds made available by the Fed ostensibly to serve the commercial lending function. Yet the Fed kept doling out reserves, and the 1930's consequences are history.

Today the Fed has no firm understanding of the ultimate objective of the monetary system, providing the amount of purchasing media needed to effect market-clearing exchanges of things in a noninflationary manner. From time to time, however, the Fed apparently has "blundered" into policy statements that approach AIER's views on purchasing media and inflating. For example, it has cautioned "money supply watchers" to regard only 75-80 percent of increases in the "other checkable deposits" component of M-1B as transactions balances (the other 20-25 percent as savings-type balances), which suggests that there is a need to distinguish between the *purposes* for which deposits are held. In early 1980, the Fed exhorted commercial bankers to make loans (that create purchasing media) not to finance corporate mergers, etc., but to confine such loans only to "productive purposes," which implies that there is some connection between inflating and the types of loans made by banks.

But these were isolated statements that have not been incorporated in the Fed's primary policy objective. Its stated primary goal is to reduce the rate of increase in the significant monetary aggregates (which is not a settled matter) in order eventually to bring their long-term rate of increase into line with the long-term growth potential of the economy (which also is not a settled issue). Whatever the Fed's reserve and monetary aggregates, its targets, its "new policies," its regulations, or new instruments of monetary control, in the absence of having a sound ultimate objective of monetary control, only by sheer accident could that ultimate objective be reached.

Making that possibility even smaller is the fact that the dollar today is a no-thing. If the dollar were made a fixed amount of gold and if demand liabilities of the banking system and the Federal Reserve banks were made redeemable on demand of the holders, Fed attempts to control money would be superfluous. Bankers would re-evolve sound commercial lending practices or they would go out of business for failing to pay their obligations in gold. In a sense, today's monetary chaos can be traced to the attempt to protect bankers and their depositors from their own folly. The time has come to return monetary power to the people through restoration of the dollar as a unit of gold, or barring that, through the elimination of prohibitions against private banking in gold units so that a sound system might re-evolve in competition with the official paper system.

## WHAT TO WATCH

Adjusted Federal Reserve Credit probably still is the single most useful series for assessing Fed policy. It is more useful, however, when used in conjunction with the Adjusted Monetary Base and Adjusted Bank Reserves. As for the longer-term success or failure of Fed policy, perhaps the best indicator of success or failure toward attainment of the above ultimate objective of monetary control is the trend of the AIER series, "Inflationary Purchasing Media In Use" (see page 9). This series presently shows no sign of reversal of its almost 40-year upward trend, indicating that inflating has continued.

# Appendix D

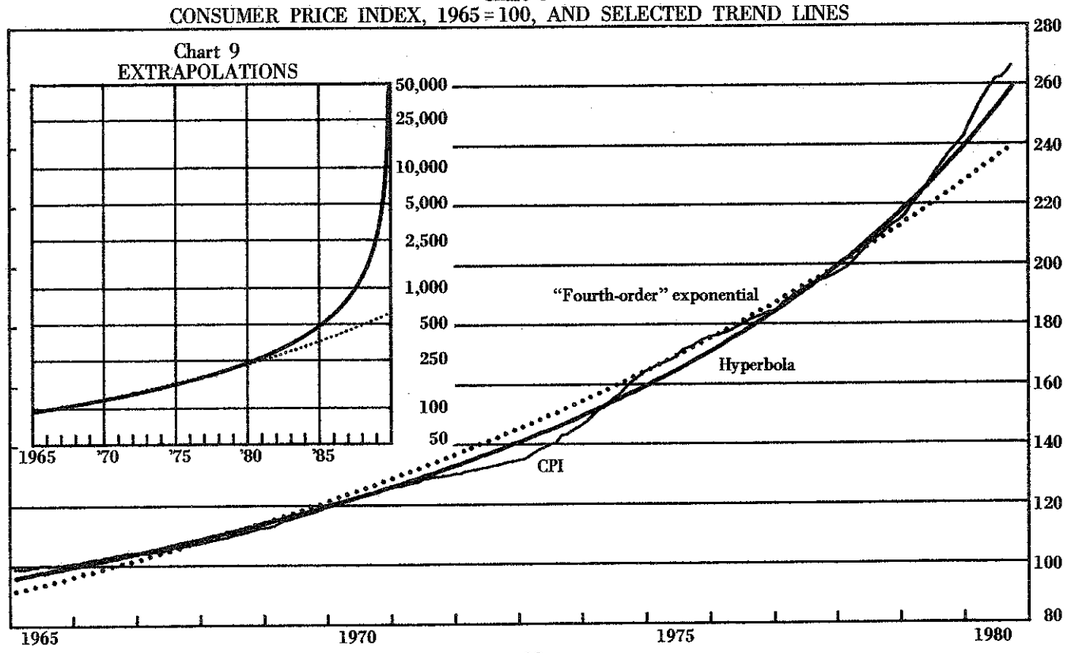
# HYPERBOLIC HYPERINFLATION?

As we mention below, the symptom of generally rising prices is only one of the more visible consequences of inflating. Nevertheless, measurements of changes in the consequences of inflating provide useful information. We recently conducted a study of the particular behavior of consumer prices from the time their increases raised widespread attention. A surprising finding of this research was that, in trying to mathematically fit a "trend line" through the Consumer Price Index (CPI), we were unable to find an *exponential*-type curve that would "bend upward" enough to capture the CPI's accelerating price increases (see Chart 8). Our "first guess" was that some kind of exponential growth probably was involved, inasmuch as this type of growth occurs quite commonly in economics, such as with compound interest paid on savings accounts, population growth, percentage mark-up pricing, fractional reserve banking, etc. But the trend of price increases always outpaced whatever exponential-type curve we fitted to the CPI data; therefore, we had to abandon our conjecture of such compound-interest-type growth for consumer prices during the past 15 years. The mathematical curve whose growth contour *did* best fit the data is alarming.

Using 1965 as the initial year for this pricing study seemed sound because of several pertinent economic considerations. One, the trend toward *accelerating* price rises began about then. Two, political concern about budget deficits was overwhelmed by demands for social welfare spending and financing the Vietnam War. Perhaps readers will remember Lyndon Johnson's "guns and butter" policy. Once accepted, the notion that Government was responsible for preventing or curing every economic hardship prevented even an approach to balaned budgets and noninflationary monetary policy. Three, sustained and rapid innovations in financial practices began about 1965. For example, liability management became popular with commercial bankers, corporate treasurers became aggressive cash managers, and the Eurodollar market began to grow rapidly. Such innovations almost surely altered significant relationships among the reported money supply, purchasing media actually in use, and economic activity.

Satisfied that the mid-1960's was an appropriate beginning point, we tried to find a curve more nearly in the pattern of the actual increases in consumer prices from 1965 through 1980. The curve we finally found to most closely fit the CPI is a hyperbola. This is shown in Chart 8 as the smoothed curve overlayed on the CPI. This curve has the property of abruptly tending toward *infinity* in the limit as a date in the future is approached. This date is established by the actual CPI growth pattern; it is not arbitrary. An extrapolation (extension into the future) of the hyperbola depicted in Chart 8 is shown as the solid curve in Chart 9. As the chart reveals, this pattern, which closely traces the actual trend in the CPI from 1965 through 1980, tends toward infinity by 1990, or in less than 10 years. At that point, the paper dollar would be virtually worthless, as was the German mark in November 1923. (For comparison, the best-fitting "fourth-order" exponential curve is shown in Charts 8 and 9 by the dotted curves. That curve does not have a limit, and by 1990 it is far below the hyperbolic curve.)

Chart 8
CONSUMER PRICE INDEX, 1965 = 100, AND SELECTED TREND LINES






The process of fitting curves, or equations, to data is not a useful procedure unless plausible behavior can be described to account for the data. Moreover, the more that the purported behavior is tested and corroborated, the more confidence one can have that the purported significant relationships are as described. For the hyperbolic curve, we are at the first step in the procedure, namely, that of offering a plausible description of behavior that may account for that pattern of price changes.

Exponential growth occurs when a series increases by a constant percent change over time. Higher-order exponential growth involves an iterated constant percent change *of* a constant percent change. In fact, however, sellers (including sellers of their labor) attempt to "keep ahead" of any rate of general price increase by adding an extra amount or rate to these rates. Labor unions surely demand cost of living increases *plus* something more. Producers try to mark up the prices they charge by a greater percentage than their costs rise. The process is accelerated as more and more people realize that the accelerating wages and prices they demanded were not adequate for later general price increases; their pricing demands always were "too late." If, for example, this year's wage adjustments after-the-fact reflect last year's 12 percent rise of the CPI, but the higher wages are spent this year for things whose prices increase on average, say, 15 percent, then a real pay cut results and it becomes the reason for higher demands later. Progressive income tax rates accompanying rising nominal wages and inadequate historical-cost depreciation practices impel labor and business to raise their prices even more.

A break could be achieved at any point in the accelerating price-trend continuum if the monetary authority did not make available the excess purchasing media (money) needed to validate the higher prices demanded, that is, by *not* providing the money needed to clear the market of products and labor at the next stage of higher prices. But the monetary authority has not done so. Instead, it has fostered excess creation of purchasing media in order to validate the always-higher price demands *plus some extra* to spur economic growth. That, of course, is inflating, which in fact initiated and sustains the accelerating price trend.

## RELATIVE DEFLATING

Inflating occurs when the amount of purchasing media in use exceeds the then-current money value of newly produced things offered for sale in the Nation's markets. The Harwood Index of Inflating is a ratio (in percentage terms) of the total amount of purchasing media in use to the noninflationary amount. If the two amounts are the same, their ratio is unity and the Harwood Index is 100 (percent), a noninflationary condition. The Harwood Index currently is about 250, indicating that inflationary (excess) purchasing media is about 1.5 times more than noninflationary purchasing media.

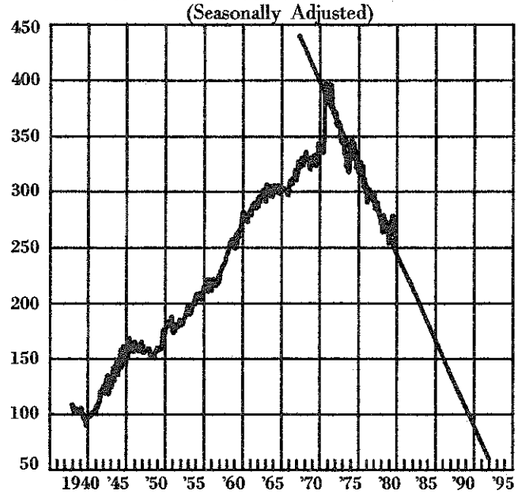
Neither in timing nor magnitude of changes is there a rigid relationship between inflating and general prices (consumer or wholesale). This should not be surprising, inasmuch as inflating might foster more output at one time, higher prices at another, imports of foreign merchandise at another, capital investment in foreign countries at another, loss of international reserves by the central bank at another, or any combination of these at any point in time. Indeed, the early effects of inflating, when few persons realize it, understandably should be different from the effects after it is widely perceived. The output effects usually are greater earlier, and the price effects are greater later, as now in the United States.

According to the Harwood Index, the current episode of U.S. inflating began in the early 1940's. The Index of Inflating rose irregularly to 200 by 1955, and the CPI reached twice its 1940 level 2 years later. The Harwood Index again doubled to its peak of about 400 by 1972, and the CPI again had doubled by only a few years later. Subsequently, however, the Harwood Index trended downward and the price trend continued upward.

Chart 10 shows the continuing nearly decade-long downward trend of the Index of Inflating. As we described earlier, that downward trend (indicating relative deflating) is *not* attributable to a reduction in the amount of inflationary purchasing media (which would indicate absolute deflating), as was the case historically in *every* other instance of a decline in the Index. This episode is attributable to the dollar value of currently offered production (which value is dominated by rapidly rising prices) increasing faster than the purchasing media is increasing, even though the latter is continuing to increase excessively. In other words, at each point of time on the downward trend, prices were "catching up" to previous injections of inflationary purchasing media at a greater rate than that of the contemporaneous injections of inflationary purchasing media. Included in Chart 10 is the best fitting curve drawn through the downward trend of the Harwood Index. It is a straight line, which when extrapolated, reaches 100 in 1990, near the date when the hyperbolic curve approaches infinity.

It happens that the reciprocal of our hyperbolic curve is a downward sloping straight line. And the reciprocal of a price index is a measure of the purchasing power of currency, in this instance the dollar. The hyperbolic curve fitting the CPI from 1965 through 1980 has a reciprocal indicating that the purchasing power of the dollar is decreasing at a constant 4 cents (in 1965 dollars) per year. In 1965, this was only a 4 percent loss of purchasing power. But after 15 years, in 1980, only 40 cents re-

Chart 10
HARWOOD INDEX OF INFLATING
(Seasonally Adjusted)



mained of the 1965 dollar's 100 cents of purchasing power; thus the loss of 4 more cents of purchasing power was a 10 percent loss in 1980. At this rate (and, remember, it is the actual trend), only 4 cents in purchasing power of the 1965 dollar would remain in 1989. That would be gone by 1990, when prices would tend to infinity and the dollar would become worthless.

## IMPLICATIONS

The decline in the Harwood Index to 100 and the total loss of purchasing power of the dollar by 1990 point to an end to inflating by a flight from currency, perhaps in 10 years or so. Of course, continuation of these trends is not assured. The trends might be interrupted by major changes in U.S. social and political organization before the dollar fell to worthlessness, perhaps when triple-digit or some other higher rate of price increases was reached. An economy does not function well with a rapidly depreciating monetary unit. When one observes what happened in Poland in late 1980 and early 1981, for example, because of an economy that failed to provide for the public's perceived necessities, it is difficult to imagine Americans stoically accepting a prolonged period of economic contraction.

Indeed, that America's leaders refused to allow the economy to go through a cyclical recession deep enough to remove prior inflationary distortions and instead pushed inflationary policies to ever-higher levels in the hyperbolic progression is probably the major factor in fostering the dangerous trend. Whenever less inflationary policies are pursued for a time, signs of severe recession quickly surface; then the officials have the two unappealing alternatives of seemingly to watch idly as the economy goes through the recession, perhaps into depression, or of re-inflating again at an even more accelerated rate.

In spite of many pledges to the contrary, neither Republican nor Democratic administrations of recent decades have resolutely pursued and accomplished monetary restraint. *Maybe* the Reagan administration will find the will and support of Congress to break from this course of self-destruction. *Maybe* the Federal Reserve Board under the Chairmanship of Paul A. Volcker will in fact reduce the rate of excess monetary expansion, as it repeatedly has pledged. But that is yet to be proven. There are many hurdles between good intentions and sustained favorable economic results. We should be delighted if past trends successfully are broken, and we shall monitor economic developments closely for signs of such. They have not occurred yet, however, and those who are lulled by promises alone should understand they are taking a major risk.