

Research Department
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The Base Money Paradox

Base money is government-issued money. It includes dollars held by the public and financial institutions as currency and coin, plus dollars held by financial institutions as reserve deposits with Federal Reserve Banks. Base money is the monetary standard in which payments, bookkeeping records, and debts are denominated.

But here is the paradox: the more rapidly that base money increases in dollar terms, the more rapidly it decreases in real terms. Real base money (b) is its purchasing power, calculated by multiplying the total number of dollars of base money (B) times the purchasing power of each dollar ($1/P$), so that $b = B/P$. (P is the GNP deflator, an index of the average level of prices for all goods and services included in GNP.) If the price index doubles, purchasing power is halved.

Sources of base money

Where does base money come from? It is created by the monetary authorities—the U.S. Treasury and the Federal Reserve. When the monetary authorities buy anything at all, they pay for it by creating base money: for example, Federal-government purchases of goods and services, revenue-sharing payments to state governments, government credit extensions, or Federal Reserve purchases of government securities or foreign currencies. These payments can be made by issuing currency and coin. More typically, they are made by issuing checks (drawn on Federal Reserve Banks) that the public and banks can cash for currency and/or credits to Reserve Bank deposit accounts. In contrast, base money is destroyed whenever the government gets paid for anything: for example, tax receipts, loan repayments, or Treasury or Federal Reserve sales of securities or foreign currencies. Thus base money increases when the government pays for anything, and decreases when the government is paid for anything. Historically, base money has grown most during war periods, because of the

government's inability to finance substantial budget deficits by taxation alone.

The monetary authorities don't necessarily have control over base money in the long run—especially if they are obligated to buy or sell anything at a fixed dollar price, such as gold, foreign currencies, or U.S. Treasury securities. Under a fixed exchange-rate system, an attempt by the monetary authorities to increase base money excessively would induce price, output, and interest-rate changes, and those changes would subsequently force them to sell gold or foreign currencies to prevent the dollar from depreciating. Such sales would reduce base money, offsetting the attempted increase. Thus, base money can't be controlled, at least not for long, under fixed exchange rates. In contrast, under flexible exchange rates, the monetary authorities are not obligated to intervene in foreign-exchange markets, so that the dollar amount of base money can grow at whatever rate they choose.

Under either fixed or flexible exchange rates, the amount of real (price adjusted) base money is determined not by the monetary authorities but by the public. Even if the authorities determine the dollar amount of base money, the public determines the price level and thereby holdings of real base money. And again, when growth in the dollar amount of base money speeds up, growth in real base money slows down.

Sources of the paradox

Hyperinflation, a base-money disease, provides the best illustration of the paradox. Consider the characteristic pathology of this disease. Large government deficits are financed largely by the issuance of base money. In response to the resulting inflation, the public in every instance systematically economizes on its real base-money holdings. This "flight from the currency" means that people reduce holdings of real base money

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by bidding up prices even faster than the authorities inject nominal base money into the economy. By so doing, the public actually adds to the inflationary effect of base-money injections. In hyperinflations, such flights from the currency eventually destroy base money as a functioning monetary standard for transacting, bookkeeping, and denominating debts. As a consequence, the authorities find it necessary to institute monetary reforms, including guarantees against further inflationary issue of base money, to replace the defunct monetary unit with a new one.

Even in less virulent inflations, the base-money paradox can sometimes be observed. In the United States in the 1970s, for example, accelerated injections of nominal base money became associated with decelerated growth in real base money (see Chart 1), and in base money per unit of output (see Chart 2).

Attempts by the monetary authorities to alleviate tight money by buying securities and making loans—and thereby pumping base money into the economy—have in time the exact opposite effect. The reason is that accelerated base-money injections fuel accelerated inflation, which raises (rather than lowers) nominal interest rates. (How long this takes depends on the credibility of the authorities—that is, whether the authorities can be expected subsequently to take offsetting actions to prevent inflation.) Higher rates then induce the public to reduce real base money, leaving a smaller amount available to effect transactions.

Comparative trends

One can think of real base money as a rough measure of the value the public places on its use as the monetary standard. Growth in nominal base money accelerated in recent decades, from a 4.3-percent annual rate in the 1960's to a 7.7-percent rate in the 1970's (Chart 1). In contrast, real base money decelerated, from a 1.5-percent annual rate in the 1960's to a 1.0-percent rate in the 1970's. In 1980, when inflationary expectations were

well entrenched, base money in nominal terms increased 8.6 percent while real base money actually fell 1.0 percent.

Moreover, base money fell relative to GNP throughout the past two decades (Chart 2). In 1960 base money was over 9 percent of GNP. In 1980 it was down to less than 6 percent of GNP, demonstrating the relation between its abundance in nominal terms and its scarcity relative to the income-producing transactions it supports.

Waste of inflation

How valuable is base money to the economy? The answer becomes obvious when an economy breaks down in the final stages of hyperinflation. The monetary standard has real significance. But even in comparatively mild inflations, when people come to expect inflation and increase their use of real resources to economize on base-money holdings, consumable real output declines in parallel. An inflation-induced reduction in real base money raises the real costs of effecting transactions. This is waste pure and simple. It costs virtually nothing for the monetary authorities to maintain the stock of base money. But one cost of inflation is that it costs billions in people's time and materials ("shoe leather" costs) to economize base money when expected inflation and nominal interest rates are high.

Indirect evidence of this waste is the plethora of branches of financial institutions that opened in the 1970's. (In San Francisco, for instance, the zoning authority recently prohibited the establishment of any more offices of financial institutions in Chinatown because of a belief that they were ruining the character of the area.) Nationwide, there were about 46,000 offices of depository institutions in 1959, 69,000 in 1969, and 153,000 in 1979. In terms of jobs, banks accounted for 1.2 percent of nonagricultural employment in 1958, 1.3 percent in 1968, and 1.6 percent in 1978.

Whatever the measure—increases in numbers of banking offices and employees or fall-

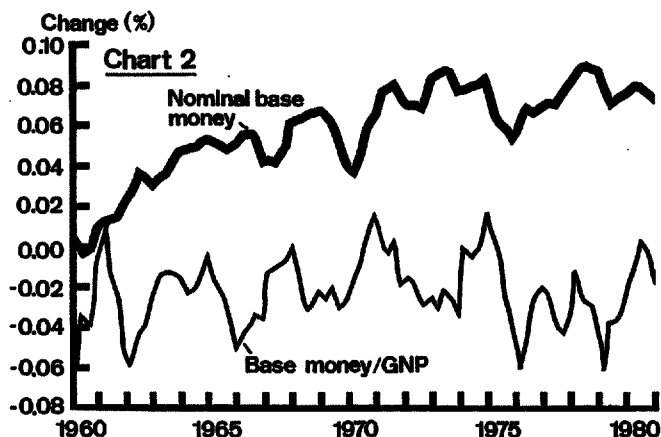
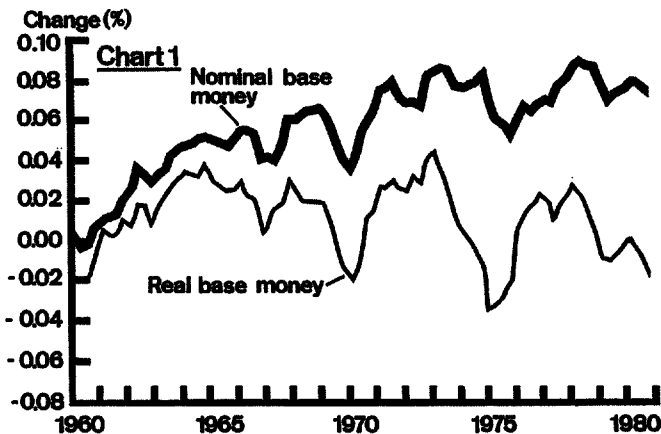
ing growth in real base money—inflation imposes substantial waste in the form of underutilization of a monetary standard which costs virtually nothing to supply, or overutilization of costly substitutes. Such waste can be reduced either by eliminating inflation or by paying a sufficient nominal return on base money. Administratively it would be feasible for the Federal Reserve to pay interest on bank reserves. But this might not do much good. Most bank reserves are held to meet statutory reserve requirements—and in any event constitute only one-fourth of base money, in comparison with the three-fourths' share in currency and coin held by the public.

Paying interest on currency and coin could be an administrative nightmare. The nominal

value of an interest-bearing currency would constantly be changing, and this would confound its functioning as the monetary standard. Furthermore, to collect interest on currency, holders would have to turn it in to be counted periodically, thereby raising the real costs of maintaining base money. Thus, eliminating inflation is probably the best prescription for curing the base-money disease and reducing waste in the money-payments system.

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Note: Base money is adjusted for required-reserve ratio changes.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT
 (Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding 9/9/81	Change from 9/2/81	Change from year ago	
			Dollar	Percent
Large Commercial Banks				
Loans (gross, adjusted) and investments*	151,822	- 733	11,861	8.5
Loans (gross, adjusted) — total#	130,857	- 569	12,704	10.8
Commercial and industrial	39,426	- 340	5,152	15.0
Real estate	53,947	102	6,089	12.7
Loans to individuals	23,212	17	674	- 2.8
Securities loans	1,372	- 3	359	35.4
U.S. Treasury securities*	5,747	- 159	685	- 10.6
Other securities*	15,218	- 5	154	- 1.0
Demand deposits — total#	43,927	3,235	4,545	- 9.4
Demand deposits — adjusted	29,678	1,788	3,992	- 11.9
Savings deposits — total	30,070	299	363	1.2
Time deposits — total#	85,926	- 612	21,954	34.3
Individuals, part. & corp.	77,734	- 568	22,176	39.9
(Large negotiable CD's)	34,901	- 634	10,775	44.7
Weekly Averages of Daily Figures	Week ended 9/2/81	Week ended 8/26/81	Comparable year-ago period	
Member Bank Reserve Position				
Excess Reserves (+)/Deficiency (-)	117	- 204		92
Borrowings	331	10		136
Net free reserves (+)/Net borrowed(-)	- 215	- 214		- 43

* Excludes trading account securities.

Includes items not shown separately.

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