

Article on INFLATION

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The upsurge of interest in the phenomenon of inflation over the past five years was not a random event; it was well-founded in the experience of people all over the world. The rates of inflation of most countries have been something like three times as high in the period since 1970 as they were in the preceding decade or two. Equally notable, perhaps, is the degree to which different countries have experienced similar rates of inflation over substantial spans of time.

These two points are highlighted in Tables I and II. In Table I the experience of the industrial countries is reviewed, while Table II covers that of the less-developed countries (LDC's).¹ Among the industrial countries, prices increased nearly as much between 1970 and 1975 as they did between 1955 and 1970. Looking at the countries one by one, we find that for none of them was the five-year rise of prices from 1970 to 1975 as little as half that of the fifteen-year period 1955-70. And for all but

¹Soviet-bloc countries are not included in the present examination. They are, by and large, not members of the International Monetary Fund, which is the world center for recording data on monetary matters. Moreover, treatment of the mechanisms by which inflation is generated and propagated in Soviet-style economies would unduly complicate a brief exposition such as this. In what follows, therefore, when I refer to a "worldwide" inflation, exhibiting certain features which are "general" across countries, it should be understood to refer to areas outside the Russian and Chinese orbits.

three of them the percentage price rise of the later quinquennium differed by less than a third from that of the previous decade and a half. To see how similar were the experiences of the different countries listed in Table I, it is convenient to concentrate on their compound annual rates of inflation: these lay between 2.4 and 4.5 percent per year for all the listed countries during the 1955-70 period, and between 6.2 and 8.7 percent per year for all but Australia (10.3), Italy (11.3), Japan (11.3), and the U.K. (13.0) in the later period.

For the industrial countries, then, the inflation experience of the past two decades has been a shared one, with an annual rate averaging around 3.2 percent up to 1970 and rising to around 9 percent thereafter. Table II shows how closely the experience of most less-developed countries mirrored that of the major centers of economic power. In the table, many of the more important LDC's are arrayed in ascending order of their annual average rates of inflation. Juxtaposed to them, for the corresponding period, are the annual average inflation rates of the developed countries. In each case the span of rates for the LDC's is somewhat wider than that for the industrial countries, but only modestly so. These particular LDC's, which cover five continents and represent widely different types of economies, can therefore be said to have participated in the world inflationary experience of the past two decades, in a fashion quite similar to the major industrial centers.

Table II is sufficient to demonstrate that the less developed countries as such are not especially prone to inflation. Indeed, a number of them have had more moderate rates of inflation than most of the developed countries. Yet side by side with "normal" LDC's stand a handful or two that have exhibited a marked susceptibility to inflation, in either its chronic or its acute form. These are shown in Tables III and IV.

TABLE I
 PERCENTAGE INCREASE OF PRICE LEVELS IN INDUSTRIAL COUNTRIES
 (Annual average rates in parentheses)

| | (1) 1955 to 1970 ^a | (2) 1970 to 1975 ^b |
|----------------|----------------------------------|----------------------------------|
| Australia | 49% (2.7) | 63% (10.3) |
| Belgium | 47 (2.6) | 50 (8.4) |
| Canada | 44 (2.5) | 42 (7.3) |
| France | 95 (4.6) | 52 (8.8) |
| Germany | 43 (2.4) | 35 (6.2) |
| Italy | 61 (3.2) | 71 (11.3) |
| Japan | 94 (4.5) | 71 (11.3) |
| Netherlands | 72 (3.7) | 51 (8.6) |
| Norway | 78 (3.9) | 50 (8.4) |
| Sweden | 78 (3.9) | 46 (7.9) |
| Switzerland | 47 (2.6) | 45 (7.7) |
| United Kingdom | 70 (3.6) | 84 (13.0) |
| United States | 45% (2.5) | 34% (6.8) |
| Mean | 61% (3.2) | 54% (9.0) |
| Median | 61% (3.2) | 50% (8.4) |

^aSource: International Monetary Fund, International Financial Statistics, 1972 Supplement.

^bSource: International Monetary Fund, International Financial Statistics, April, 1976.

TABLE IIA

ANNUAL AVERAGE RATES OF INFLATION, 1955-70

| Selected Industrial Countries | | Selected Less-Developed Countries | |
|-------------------------------|-------|-----------------------------------|-------|
| | | Guatemala | (0.5) |
| | | El Salvador | (0.6) |
| | | Panama | (0.8) |
| | | Malaysia | (0.9) |
| | | Singapore | (0.9) |
| | | Iraq | (1.9) |
| Germany | (2.4) | Greece | (2.0) |
| Canada | (2.5) | Thailand | (2.1) |
| United States | (2.5) | Sri Lanka | (2.1) |
| Belgium | (2.6) | Tunisia | (2.7) |
| Switzerland | (2.6) | Morocco | (2.7) |
| Australia | (2.7) | Syria | (2.7) |
| Italy | (3.2) | Ecuador | (2.8) |
| United Kingdom | (3.6) | Egypt | (2.9) |
| Netherlands | (3.7) | Mexico | (3.0) |
| Norway | (3.9) | Pakistan | (3.0) |
| Sweden | (3.9) | Iran | (3.4) |
| Japan | (4.5) | Nigeria | (4.1) |
| France | (4.6) | Philippines | (4.7) |
| | | Ghana | (5.4) |
| | | India | (5.8) |
| | | Taiwan | (5.8) |
| | | Spain | (6.8) |

Source: International Monetary Fund, International Financial Statistics, 1972 Supplement.

TABLE IIB

ANNUAL AVERAGE RATES OF INFLATION, 1970-75

| Selected Industrial Countries | | Selected Less-Developed Countries | |
|-------------------------------|--------|-----------------------------------|--------|
| | | Tunisia | (5.2) |
| | | Egypt | (5.9) |
| Germany | (6.2) | Iraq | (6.3) |
| United States | (6.8) | Panama | (7.2) |
| Canada | (7.3) | Malaysia | (7.3) |
| Switzerland | (7.7) | Sri Lanka | (7.4) |
| Sweden | (7.9) | El Salvador | (7.8) |
| Norway | (8.4) | Morocco | (8.3) |
| Belgium | (8.4) | Guatemala | (8.4) |
| Netherlands | (8.6) | Thailand | (8.8) |
| France | (8.8) | Iran | (9.5) |
| Australia | (10.3) | Singapore | (10.5) |
| Italy | (11.3) | Syria | (11.2) |
| Japan | (11.3) | Paraguay | (11.6) |
| | | India | (11.7) |
| | | Mexico | (12.1) |
| | | Spain | (12.1) |
| | | Taiwan | (12.2) |
| | | Greece | (12.3) |
| | | Peru | (12.8) |
| United Kingdom | (13.0) | Ecuador | (13.5) |
| | | Nigeria | (14.2) |
| | | Philippines | (15.1) |
| | | Pakistan | (16.8) |

Source: International Monetary Fund, International Financial Statistics, April, 1976.

TABLE III
 EXAMPLES OF CHRONIC INFLATION^a

| Country | Period | Annual Average Rates of Increase | |
|------------|---------|----------------------------------|----------------------------------|
| | | in Consumer Prices ^b | in the Money Supply ^c |
| Argentina | 1949-74 | 27% | 29% |
| Brazil | 1951-75 | 31 | 36 |
| Chile | 1950-71 | 30 | 30 |
| Iceland | 1968-75 | 23 | 25 |
| Paraguay | 1952-61 | 21 | 24 |
| Uruguay | 1959-74 | 50 | 46 |
| Viet Nam | 1965-74 | 36 | 29 |
| Yugoslavia | 1969-75 | 20% | 24% |

^aSource: International Monetary Fund, International Financial Statistics.

^bRates of price increase are calculated from the average levels of prices over the calendar year.

^cRates of money supply increase are calculated from beginning-of-years (end of previous year's) levels.

TABLE IV
 EXAMPLES OF ACUTE INFLATION^a

| Country | Period | Annual Average Inflation Rate ^b | Monthly Average Rates of Increase | |
|-------------|---------|---|-----------------------------------|------------------------------|
| | | | Consumer Prices ^c | Money Supply ^d |
| Bolivia | 1951-56 | 117% | 6.7% | 5.9% |
| Chile | 1972-75 | 400 | 13.5 | 10.7 |
| Indonesia | 1965-68 | 300 | 12.6 | 11.0 |
| Paraguay | 1949-52 | 84 | 5.2 | 4.0 |
| South Korea | 1949-55 | 115% | 6.6% | 5.8% |

^aSource: International Monetary Fund, International Financial Statistics.

^bRates of price increase are calculated from the average levels of consumer prices over the calendar year.

^cMonthly rate which, compounded continuously, gives annual rate shown in preceding column.

^dMonthly rate which, compounded continuously, produces the percentage rise of the money supply from December 31 of the year preceding the period to December 31 of the final year of the period.

These tables list all cases, in the period since 1950, of sustained inflations at annual rates of more than 20 percent. It is noteworthy how few such cases there are, and how close are the respective rates of increase of prices to those of the money supply. In the chronic inflation cases, there appears to be a mild tendency for the money supply to increase more rapidly than prices. This is explained by the fact that as real income grows, people normally wish to increase their real holdings of money (i.e., the buying power of their currency and bank deposits). Needless to say, for real holdings of money to grow, its nominal amount must rise more rapidly than prices.

In the acute inflation cases, the reverse tendency is apparent; the rate of increase of money is invariably less than that of prices. The explanation here rests in the fact that people (regardless of whether they are consumers or merchants, workers or employers) tend to attune their holdings of real money balances to the rate of inflation that they perceive and expect. The higher the perceived rate, the more people will tend to economize on their real money holdings, since inflation imposes a severe cost on the holders of cash. It does so by eroding away their value. In the case of chronic inflation shown in Table III it is broadly correct to consider that people have "adapted" to the inflation--i.e., they have reduced their real cash balances below what they would hold without any inflation, but have achieved the balances they want to maintain, given that inflation is proceeding at its chronic rate (say, 30 percent per year). Once this adaptation has taken place, people's holdings of real balances respond predominantly to changes in their real income (i.e., the amount of real goods and services they can buy with their earnings) or in other determining variables. The chronic inflation rate, so long as it

remains more or less stable, does not introduce further perturbations of real cash balances, above and beyond their initial adaptation to the existence of inflation.

The acute inflationary episodes that were reviewed, however, all entailed a drastic increase in perceived and expected inflation rates. The fact that prices rose somewhat more than the money supply in all these cases simply reflects the response of people to the drastically increased cost of holding money balances. Insofar as people succeeded in reducing real money balances, they generated a situation in which prices necessarily rose by more than the nominal quantity of money. This is what we observe in the data.

In every case appearing in Tables III and IV the rate of monetary expansion is quite similar to the rate of inflation. Much other evidence to this same effect could be assembled; indeed, many economists, working on the basis of such evidence, view monetary expansion as the "cause" of inflation. This is true, however, only in a very proximate sense. Generally, when the money supply expands at the exaggerated rates reflected in Tables III and IV, it is not because of the whim of the Central Bank; some more fundamental and less tractable cause underlies it. For the majority of the countries listed in these tables, the underlying cause was a fiscal (budgetary) deficit that the government in the end was unable or unwilling either to reduce or to finance in a non-inflationary way. The residual source of financing of the deficit was simply the printing of money.

Sometimes it is easy to tell whether an inflation is or is not being caused by the use of money creation to meet government budget deficits. For example, in Chile, both in its chronic-inflation phase (1950-71) and in its acute-inflation episode (1972--) the government's borrowings from the banking

system grew by more than the quantity of money, principally through squeezing the private sector's share of credit. Moreover, the government's share in total bank credit grew from less than 10 percent in the early 1950's to around 50 percent in the late 1960's, and finally to around 80 percent from 1972 onward. Here it is hard to dispute the fundamental role of fiscal deficits as the ultimate cause of the inflation.

At the other extreme, we have the case of Brazil since 1967, where the share of government in total bank credit was constantly declining, reaching less than 5 percent in 1974 and turning negative (i.e., the government lending to the banking system rather than vice versa) in 1975. Here it would be impossible to assert that government budget deficits were the main source of the inflationary increase in bank credit and the money supply.

In most of the cases of chronic and acute inflations, however, the evidence lies between these rather dramatic extremes. A case in point is that of Argentina, where the government's share in total bank credit oscillated between one quarter and one half all the way from 1950 to 1975. Here one can point neither to an overwhelming dominance of government in the credit picture nor to a strong upward trend in the government's share. Yet a very strong case can be made that the basic cause of Argentina's inflation was in fact the fiscal deficit. The scenario runs as follows: the deficit causes the government to borrow from the banking system. This entails an expansion of money and an inflation of prices. If nothing else were done, the share of bank credit going to the private sector would decline continuously, and the purchasing power represented by this credit would be drastically eroded by inflation. To prevent this from happening, or to stem the erosion once it starts to occur, the amount of nominal bank

credit to the private sector is allowed to expand more or less in step with credit to the public sector. The main way in which this has occurred in practice is through credit to the public sector coming largely from the Central Bank, with the commercial banks being permitted to continue to concentrate the bulk of their lending in the private sector.

If the above scenario, where it appears to fit the data, is considered to be a valid ground for classifying an inflationary experience as originating in government budget (fiscal) deficits, then the only countries whose inflations appear to be non-fiscal are Uruguay, Iceland, and Yugoslavia (which paradoxically regularly allocates around 90 percent of its bank credit to the private sector). They are joined, for part of their respective inflationary episodes, by Brazil (since 1967) and Paraguay (from 1952 to 1961).

All of these non-fiscal inflations appear to fit well in a category that might be called "private-sector credit inflations." They are characterized by the use of the banking system as an instrument for stimulating particular private-sector activities, or at times for cushioning shocks to which such activities might be subject, rather than as an instrument of monetary control. In most cases this sort of conception of the banking system is justified by appeal to the "real bills doctrine," an ancient idea whose ghost has survived a thousand burials. This doctrine asserts that bank credit extended for productive purposes is not inflationary. Plausible though it may appear at first glance, the proposition does not survive close examination. A country's money supply will typically be equal to something between one and two month's income. An effort to extend credit equal to even three or four months' production would be frustrated by inflation, unless the credit came from outside the monetary system. This

is so simply because people would not be willing to hold three or four months' income in the form of money balances.

If one looks alternatively at a country's stock of productive capital, one finds that this is typically around three or four times a year's national income--i.e., around 25 times the normal money supply. It is clear that one could not even finance a tenth of this stock by bank credit without pushing the money supply far beyond what people would normally be willing to hold. Their reaction to an excess of cash in hand is to spend it, setting in train a sequence of price level increases which only ceases when the real value of cash balances has been driven down (or eroded away) to normal levels via inflation.

Actually, the real-world inflations reported in Tables III and IV have had a tendency to perpetuate themselves. That is to say, in the cases of private-sector credit inflations, before inflation has eroded January's excess expansion of credit (and money), new bursts of expansion have occurred in February or March. The most common result is a sort of inflation equilibrium in which the nominal amounts of credit and of money expand at rapid but more-or-less steady rates, while their real counterparts (i.e., nominal credit and nominal money deflated by a general price index) move only slowly over time. This description fits quite accurately the inflation in Brazil since 1967, as well as the other cases categorized above as "private-sector credit inflations."

In discussions of inflation, the question inevitably arises, does one buy growth or prosperity with either acute or chronic inflation? The answer, from the evidence, appears to be quite clearly no. All the cases of acute inflation coincide with disorganization of the productive mechanisms of the

economies concerned. It is hard for the price mechanism to give its signals well, and there can be no doubt of its failure to do so in practice, when prices overall are rising at 5 or 10 or 20 percent per month.

With respect to the chronic inflations, the evidence is less dramatic but nonetheless clear. On the average, the economies in question have not performed better than their less-inflationary counterparts. While Brazil's growth rate has been one of the highest in Latin America, Uruguay's has been the lowest, and Argentina's, Bolivia's, Chile's, and Paraguay's have been modest and unspectacular. During their respective inflations, Yugoslavia's growth rate has been above, and Iceland's well below the European average. Faced with this evidence it is hard to assert that inflation in the range of 20 to 30 percent per year represents an economic disaster for the country concerned, but equally hard to ascribe to it any significant benefit.

The preceding survey of chronic and acute inflations serves as a useful backdrop against which to view the "world inflation" reflected in Tables I and II. For the bulk of the period under review, most of the currencies represented therein were connected by a system of fixed exchange rates, in which the British pound, for example, was pegged at \$2.80, the French franc at a little over 20 cents, etc. Under these circumstances, it is useful to consider the concept of an aggregate money supply, this being the aggregate value of the various interchangeable currencies (and checking deposits denominated in them) which is outstanding at a given point in time.

For the countries listed in Table I, the aggregate money supply grew at an average annual rate of 5 percent per year between 1955 and 1970, and at an average rate of 12.9 percent per year between 1970 and 1975 (beginning-

of-year figures). These rates were moderately in excess of the corresponding average rates of inflation, indicating that real holdings were rising as economies in question grew.

To some extent, the money supplies of the industrial countries, like those of the less-developed nations listed in Table II, may have followed causes determined by their respective governments and/or Central Banks. But such autonomy is possible only to a limited degree, where the currency in question is linked to the world system by a fixed exchange rate. In general, a fixed exchange rate pegs a country's price level to the level of world prices; this is why the countries listed in Tables I and II had such similar inflation experiences. When such a country prints more money than is warranted by its exchange rate combined with what is happening in the rest of the world, it tends to suffer balance of payments deficits, and its "excess money" tends to be drained off through loss of international reserves.

International reserves thus play an important role in the monetary system of fixed-exchange-rate countries. When the system has more reserves, it is both easier and more likely for countries to engage in monetary expansion. It is noteworthy, therefore, that the international reserves of the industrial countries grew at the rate of only 2.3 percent per year during the 15 years from 1955 to 1970, when the rate of inflation was moderate, while they burst out at an average rate of 17.1 percent per year between 1970 and 1975, when the rate of inflation was rapid.

The rapid rise in international reserves, which started in 1969, stemmed from a variety of causes. The expansion of the supply of United States dollars (which have been for half a century the key currency in the international system) accelerated somewhat under the strains of the Viet Nam

war. Simultaneously, the world banking system created imported new supplies of dollars (Eurodollars) and of some other currencies (German marks, Swiss francs) as it expanded its lending operations denominated in these moneys. Quite independently, but more or less at the same time, there was a significant growth of SDR's (Special Drawing Rights), the new "world money" created within and by the International Monetary Fund to add to the supply of international reserves. Finally, in the mid 1970's there was an expansion of lending by the International Monetary Fund to the Central Banks of its member countries, most of it under the rubric of the IMF Oil Facility, a series of credits advanced to the countries that were hardest hit by the dramatic oil price rise of 1974.

These developments provided the fuel (international reserves) for the rapid expansion of the aggregate money supplies of the industrial countries and of the LDC's (see Table II) whose monetary systems were closely linked to that of the industrial world. This aggregate money supply in its turn fueled the rapid advance of prices that marked the first half of the 1970's.

At the time of this writing, prospects for the future are quite uncertain. The most notable event of the recent past, in the realm of international monetary affairs, has been the abandonment (at least for a time) of the formal system of fixed exchange rates which linked the major currencies together. Since 1973 these currencies have been "floating" vis-a-vis one another, i.e., with quotations between the pound, mark, lira, franc, and dollar which change from day to day in response to the forces of supply and demand in the market.

This sort of system in principle gives each individual country a greater degree of independence in the pursuit of its own monetary policy. In principle, that is, the British and the Italians could make their own

inflation, while the Germans, Americans, and Canadians maintained stable price levels in their own currencies. The element which would make these differing experiences compatible with each other would be exchange rates that varied significantly over time. In the case cited, the pound and the lira would undergo continuing losses of value vis-a-vis the dollar and the mark.

Until recently, however, the system did not work in the fashion described. Exchange rates were kept more stable than market forces would have dictated, through official intervention in the foreign exchange market. This practice, of the Central Banks themselves intervening in a major way in the exchange market, has given rise to the expression "dirty float" (as distinct from a "clean float" which would describe a market without such intervention). The way in which "dirty float" operated is epitomized in the experience of the British pound. Though basically a weak currency, its value was prevented from dropping significantly until 1975. Then, as the "dirty float" became progressively cleaner, the pound dropped sharply in value, from \$2.35 at the end of 1974 to \$2.02 at the end of 1975 to approximately \$1.80 as of May, 1976. If the system of floating exchange rates can be kept relatively "clean," then the prospect for the future is a closer link between national monetary policy and national inflation experience than has been true for the bulk of countries in the past. Citizens will then be able more truly to give blame or credit to their own governments (and their own Central Banks) for success or failure in their battles on the inflation front.