also call for agreement on the distribution of the burden of financing national budget deficits. On the other hand, different weights of the public deficit on the income of different member countries may be justified by different national targets in terms of demand management and supply of social goods. (Hence the proposal of a European budget, which should gradually supplement national budgets in various fields.)

Much confusion about the definition of "monetary discipline" and "monetary policy harmonization" stems — in my opinion — from a misleading interpretation of the propositions advanced by the advocates of the so-called "monetary approach to the balance-of-payments" (MABP). In short, like any "reduced form" model which becomes tautological, the MABP is of little help in economic forecasting and planning, since it does not explain the determinants of the demand for money in a world of underutilized resources.

In the traditional MABP model, any creation of domestic financial assets has no impact on the real variables — and hence on the demand of domestic financial assets — since the balance of payments acts as a mechanical safety valve, which destroys or creates domestic liquidity according to any "excess" or "deficit" supply of money from domestic sources.

In conclusion, of the three basic meanings attributable to the words "monetary integration" — namely currency unification, monetary policy unification, financial integration — the latter should be the primary focus of discussion in the present transitional phase.

Milan

FABREZZO ONDA

World Reserves and World Inflation (*)

Introduction

World reserves have almost tripled since 1968, world monetary growth has accelerated since 1971, and world inflation jumped to double digits in 1974. In addition, the 1971 realignment of parities, the 1973 move to floating exchange rates, the rise in the price of gold, and the massive oil deficits have significantly affected the demand for international reserves, its potential supply, and its distribution among the individual countries.

A key question, in light of these recent developments, is whether the stock of world reserves has grown so rapidly that it may generate further world inflation, or whether it is deficient and potentially deflationary. One assessment associates the rapid 1971-73 acceleration in monetary growth and the 1973-74 jump in world inflation with the rapid growth in external reserves. The growth in the monetary bases in many countries is seen as a factor that will continue to fuel world inflation.

An alternative approach, utilizing the IMF procedures in setting up the SDR's, views the current stock of international liquidity as potentially sufficient. A related view is that the redistribution of reserves from the oil importing to oil exporting countries may cause reserve stringency and deflationary policies — at least for particular countries.

In Section I of the paper we review the expansion of global reserves in the 1968-73 period of fixed exchange rates and the recent acceleration of world inflation. Several key developments, including the March 1973 move to floating rates which may affect the demand, the supply, and the distribution of international reserves, world

(*) Financial support from the National Science Foundation and from Wayne State University is gratefully acknowledged.

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34 The full-employment assumption validates the theoretical underpinnings of the MABP model, but of course makes it far less relevant for economic policy purposes.
monetary growth, and world inflation, are then considered. A comparison of the transitional and permanent effects of floating rates on the demand for international reserves, on excess reserves, on monetary growth, and world inflation is presented in Section II. The impact of gold prices on the monetary bases, monetary growth, and inflation is taken up in Section III. OPEC's accumulation of foreign assets and its impact on the international reserves and on the monetary bases of individual countries is considered in Section IV. Other influences on world liquidity are reviewed in Section V, and our conclusions are presented in the last section.

I. Reserve Changes, Monetary Growth and Worldwide Inflation

The stock of international reserves valued in dollars increased over $40 billion to $225 billion in 1974 — the largest increase ever recorded in a single year. The cumulative expansion of international reserves since the 1970's, when the SDR's were first introduced, is now approaching $150 billion; the 1974 stock of international reserves is nearly three times as large as the $77 billion held in 1968. (See Table 1.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gold Stock</th>
<th>SDR's</th>
<th>Reserve Position in IMF</th>
<th>Foreign Exchange</th>
<th>Total Reserve Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>38.9</td>
<td>6.5</td>
<td>32.0</td>
<td>77.4</td>
<td></td>
</tr>
<tr>
<td>1969</td>
<td>39.1</td>
<td>6.7</td>
<td>32.4</td>
<td>78.8</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>37.4</td>
<td>7.7</td>
<td>46.6</td>
<td>96.6</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>39.4</td>
<td>6.4</td>
<td>72.2</td>
<td>126.6</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>36.8</td>
<td>9.4</td>
<td>103.5</td>
<td>143.7</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>42.3</td>
<td>10.6</td>
<td>122.0</td>
<td>185.2</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>42.7</td>
<td>10.6</td>
<td>169.7</td>
<td>238.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual Reports of the IMF and BIS.

While total reserve assets almost tripled in the 1968-74 period, the foreign exchange component of reserve assets exploded even more dramatically, increasing fivefold from $32 billion in 1968 to $161 billion in 1974. Total reserves and foreign exchange holdings moved simultaneously with the dramatic increase in U.S. liabilities from about $18 billion in 1968 to almost $70 billion in 1973; approximately 80 per cent of this extraordinary surge in U.S. liabilities occurred in the three years 1971-73. The growth in foreign exchange holdings and reserve assets accelerated in 1971 as the U.S. official settlements deficit skyrocketed to an unprecedented $36 billion.

In the face of such mammoth U.S. payments deficits, the surplus countries bought dollars to maintain the fixed exchange rate regime up until March 1973. This attempt to maintain the par value system brought about an explosion of international reserves and accelerated growth in the monetary bases and in money starting in the fourth quarter of 1970. World reserves almost doubled from 1970 to 1973, and most of the $31 billion growth in reserves was in the foreign exchange component; growth in the monetary bases (IMF reserve money) and in money for ten industrial countries accelerated sharply in the years 1971-73, as the surplus countries expanded their domestic money to acquire the flood of dollars resulting from the extraordinary jump in the U.S. deficit. (See Tables 2a and 2b.)

Inflation emerged as an increasingly important worldwide problem during the 1973-74 period, with annual inflation rates ranging between 7 per cent and 16 per cent. World inflation defined as a weighted average for the ten industrial countries leaped to a 7.6 per cent rate in 1973 and to 13.2 per cent in 1974, accompanied by the oil price hike which lifted inflation rates throughout the world. The 13.2 per cent rate in 1974 compares with world inflation rates of about 4 per cent in the latter half of the 1960's and 5 per cent for the 1970-72 period. (See Table 3.)

1 The increase in Eurodollars and Eurocurrency deposits is the other major source of growth in the foreign exchange component of total reserves. This category grew from about $7 billion in 1968 to over $36 billion in 1973, with the really dramatic increases starting sometime in 1970-71. And the Eurodollar proportion may be higher, depending on what part of the $17 billion unidentified residual also consists of Eurodollar holdings. See the 1973 IMF Annual Report, pp. 31-34.

Eurodollar claims are clearly the most prevalent form of foreign exchange held next to dollar holdings. At the end of 1973 Eurodollar holdings were estimated at approximately two-thirds of foreign exchange other than claims on the United States, and Eurodollars were the second largest component contributing to reserve expansion in 1973, excluding the dematerialization loss in the 1973 case. While for the increase in official sterling holdings, a considerable part of the $26 billion increase in foreign exchange holdings in 1974 took the form of dollar reserve held in the U.S., or in the Eurocurrency market.
### Table 2A

**GROWTH IN MONETARY BASES FOR TEN INDUSTRIAL COUNTRIES**

Selected Years *

<table>
<thead>
<tr>
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<tbody>
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<td>Belgium</td>
<td>2.5</td>
<td>2.2</td>
<td>7.2</td>
<td>14.1</td>
<td>18.5</td>
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<tr>
<td>Canada</td>
<td>8.2</td>
<td>6.3</td>
<td>15.2</td>
<td>15.6</td>
<td>16.1</td>
</tr>
<tr>
<td>France</td>
<td>7.2</td>
<td>7.6</td>
<td>10.6</td>
<td>31.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Germany</td>
<td>6.9</td>
<td>3.3</td>
<td>15.0</td>
<td>26.3</td>
<td>7.4</td>
</tr>
<tr>
<td>Italy</td>
<td>8.0</td>
<td>13.1</td>
<td>17.0</td>
<td>14.0</td>
<td>17.1</td>
</tr>
<tr>
<td>Japan</td>
<td>18.9</td>
<td>19.6</td>
<td>14.6</td>
<td>99.0</td>
<td>34.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.0</td>
<td>7.3</td>
<td>5.0</td>
<td>9.1</td>
<td>4.8</td>
</tr>
<tr>
<td>Switzerland</td>
<td>18.9</td>
<td>7.3</td>
<td>20.3</td>
<td>8.9</td>
<td>4.7</td>
</tr>
<tr>
<td>U.K.</td>
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<td>2.0</td>
<td>19.1</td>
<td>21.2</td>
<td>31.5</td>
</tr>
<tr>
<td>U.S.</td>
<td>6.6</td>
<td>4.4</td>
<td>9.4</td>
<td>3.8</td>
<td>8.0</td>
</tr>
</tbody>
</table>

* The monetary base data are IMF Reserve Money.

**Source:** IMF International Financial Statistics.

### Table 2B

**MONETARY GROWTH IN TEN INDUSTRIAL COUNTRIES**

Selected Years *

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>6.6</td>
<td>6.0</td>
<td>4.8</td>
<td>10.1</td>
<td>12.4</td>
<td>13.7</td>
<td>13.7</td>
</tr>
<tr>
<td>Canada</td>
<td>6.2</td>
<td>4.3</td>
<td>7.5</td>
<td>12.8</td>
<td>13.9</td>
<td>14.5</td>
<td>14.5</td>
</tr>
<tr>
<td>France</td>
<td>12.0</td>
<td>4.0</td>
<td>6.7</td>
<td>13.7</td>
<td>15.2</td>
<td>15.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Germany</td>
<td>7.6</td>
<td>7.7</td>
<td>10.1</td>
<td>16.1</td>
<td>16.1</td>
<td>16.1</td>
<td>16.1</td>
</tr>
<tr>
<td>Italy</td>
<td>15.8</td>
<td>15.2</td>
<td>21.7</td>
<td>19.2</td>
<td>21.9</td>
<td>21.9</td>
<td>21.9</td>
</tr>
<tr>
<td>Japan</td>
<td>18.6</td>
<td>18.4</td>
<td>25.5</td>
<td>22.0</td>
<td>26.2</td>
<td>26.2</td>
<td>26.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>8.2</td>
<td>8.6</td>
<td>10.6</td>
<td>17.7</td>
<td>7.4</td>
<td>7.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Switzerland</td>
<td>8.0</td>
<td>10.8</td>
<td>9.7</td>
<td>18.5</td>
<td>13.3</td>
<td>9.4</td>
<td>9.4</td>
</tr>
<tr>
<td>U.K.</td>
<td>3.5</td>
<td>4.1</td>
<td>3.3</td>
<td>15.3</td>
<td>14.9</td>
<td>5.4</td>
<td>5.4</td>
</tr>
<tr>
<td>U.S.</td>
<td>3.4</td>
<td>2.0</td>
<td>3.6</td>
<td>7.0</td>
<td>6.3</td>
<td>7.4</td>
<td>7.4</td>
</tr>
</tbody>
</table>

* The money concept used is M1.

**Source:** Rates of Change in Economic Data for Ten Industrial Countries, Federal Reserve Bank of St. Louis.

### Table 3

**WORLD MONETARY GROWTH AND WORLD INFLATION**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Growth** of World Money</th>
<th>Percentage Change** in World Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>5.5</td>
<td>9.0</td>
</tr>
<tr>
<td>1961</td>
<td>7.0</td>
<td>2.0</td>
</tr>
<tr>
<td>1962</td>
<td>7.1</td>
<td>2.8</td>
</tr>
<tr>
<td>1963</td>
<td>8.0</td>
<td>2.8</td>
</tr>
<tr>
<td>1964</td>
<td>7.4</td>
<td>2.4</td>
</tr>
<tr>
<td>1965</td>
<td>7.4</td>
<td>3.0</td>
</tr>
<tr>
<td>1966</td>
<td>7.0</td>
<td>3.4</td>
</tr>
<tr>
<td>1967</td>
<td>6.1</td>
<td>3.5</td>
</tr>
<tr>
<td>1968</td>
<td>8.0</td>
<td>3.9</td>
</tr>
<tr>
<td>1969</td>
<td>8.0</td>
<td>5.0</td>
</tr>
<tr>
<td>1970</td>
<td>7.2</td>
<td>5.6</td>
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<tr>
<td>1971</td>
<td>12.3</td>
<td>5.1</td>
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<tr>
<td>1972</td>
<td>11.6</td>
<td>6.5</td>
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<tr>
<td>1973</td>
<td>11.6</td>
<td>7.6</td>
</tr>
<tr>
<td>1974</td>
<td>7.6</td>
<td>13.3</td>
</tr>
<tr>
<td>1975***</td>
<td>9.1</td>
<td>10.2</td>
</tr>
</tbody>
</table>

* The countries are: U.S., Canada, Japan, U.K., Germany, France, Italy, Netherlands, Belgium, and Switzerland.
** The series is calculated by the First National City Bank of New York as a weighted average for the ten major industrial countries. Each country's monetary growth and inflation rate is weighted by its real GNP.
*** Estimated.

The linkage between the accumulation of foreign exchange reserves, growth in the monetary bases, monetary growth, expansive aggregate demand policies, and world inflation is controversial. While granting that inflation has many and complex causes, the 1973-74 jump in world inflation cannot be divorced from the cumulative build-up in international reserves since 1968 and the 1971-73 acceleration in monetary growth. Redundant reserves may relax the pressure on individual countries to pursue internal anti-inflationary policies, and may thereby magnify and intensify expansionary influences from trading partners.

The B.L.S., which does not start with any monetarist preconception, describes the 1971-74 experience as follows in its 1974 Annual Report:

One of the limitations on monetary restraint in recent years has been the huge volume of external flows of funds, largely associated with...
exchange rate uncertainties. The strength of monetary expansion by early 1973 was based largely on cumulative foreign exchange inflows showing up in the balance of the country's net acquisition of foreign assets. Since then the surplus countries have found that floating, leading off from an already more realistic international structure of rates, has been helpful in bringing monetary expansion under better control.

Rapid monetary growth in the 1971-73 period was thus one consequence of the buildup of foreign exchange holdings under the fixed exchange regime, and the acceleration in money growth was, in turn, an integral part of the process responsible for the 1973-74 jump in world inflation.

The major countries abandoned fixed rates in early 1973, and the move to floating rates did provide the surplus countries with some means to control their domestic money stocks and to defend themselves against imported inflation. World monetary growth slowed slightly to an 11 per cent rate in 1973 and dropped substantially to a 7.6 per cent rate in 1974, and recent data suggest a deceleration of world inflation in 1975.

II. Floating Exchange Rates and World Inflation: the Transitional and Permanent Effects

The very substantial increase in global reserves from 1968 to 1973 was associated with an acceleration in world monetary growth and imparted an inflationary thrust to the world economy. The question that we now consider is whether the March 1973 move to floating rates has created an environment which can further fuel inflation by converting a substantial part of the officially held reserves into excess reserves.

World inflation may accelerate following a transition to floating rates if countries permit exchange rates to adjust and find need for external reserves. Specifically, if the monetary authorities are under less compulsion to defend, or maintain, a given set of exchange rates, their demand for international reserves should decline relative to their pre-floating requirements. Some portion of the $326 billion in official reserve holdings may prove to be excess reserves — if we maintain a regime of floating rates. Some countries may utilize these seemingly redundant reserves by following more expansionist aggregate demand policies and risk larger deficits, thereby fueling a further rise in world inflation. The change from fixed rates to floating rates would result in a transitional, one-shot, reduction in the global demand for international reserves.

The move to floating rates may thus bring about an increase in excess reserves, and its monetary impact is potentially inflationary. But in addition to these transitional and potentially inflationary, indirect monetary effects associated with excess reserves, floating rates have been seen as being directly responsible for the recent emergence of double-digit inflation in many countries. Some critics have argued that the temporary declines in exchange rates that have occurred since March 1973 have been inflationary in many countries through a ratchet effect on cost-price structures, that the monetary policies of the non-reserve currency countries have not been as independent under floating rates as some had expected, that the deficit countries have followed more expansive monetary policies than would have been the case under fixed rates. These critics also cite...
the British case as one example where the authorities appear to be under less constraint to restrict monetary growth in the face of a deficit; they assume that loss of reserves would exert more restraining influence on the authorities than a depreciation of the exchange rate.

The extent to which floating rates have pared down the demand for official reserves and generated inflationary excess reserves is still somewhat uncertain. The monetary authorities are still experimenting with, and adjusting to, this relatively new system of managed floating, and may not view some of the reserve assets as redundant. Moreover, the manner in which individual countries perceive their reserve needs is undoubtedly influenced by the several international monetary disturbances since March 1973. Consequently, while floating rates may ultimately reduce the official demand for international reserves, the potential redundancy in reserve holdings may have been temporarily offset by other disturbances. And many central banks may have other reasons for holding foreign exchange reserves.

In sharp contrast to the critics who argue that floating rates have directly speeded up world inflation, defenders of floating rates argue that they give the monetary authorities greater control over the money stock, and that the permanent and continuing effects of floating rates should be less world inflation: floating rates therefore are consistent with, and indeed indispensable to, achieving less world inflation. Defenders of floating rates do, however, acknowledge that the monetary effects of the transition to floating rates are potentially inflationary.6

---

4 Several exchange rate regimes in mid-1974 lend support to the hypothesis that some central banks viewed their reserve holdings as somewhat redundant relative to demand. Thus, several countries imposed restrictions on imports while removing them on exports, despite the potential reduction in foreign exchange earnings. Other nations took in 1973 to curb capital inflows and liberalize outflows may also be viewed as reflecting a general feeling of reserve adequacy. This attitude may have changed substantially at the end of the year. See the 1974 IMF Annual Report, pp. 1-16.

5 Some countries find it necessary, or desirable, to intervene in the foreign exchange markets; some countries hold reserves to preserve confidence in their currency and to secure foreign borrowing; some countries may hold foreign exchange reserves in order to preserve their option of joining a monetary bloc or of returning to a par value system; and most countries still pay their currencies to some other currencies.6

6 They do concede that the move to floating rates may ease the price level to rise. On the other hand, since these lurps in the price level end as the redundant international reserves are eliminated, the inflationary price level increases should not be viewed as permanent changes in the inflation rate.

The March 1973 move to floating rates has, in our view, two opposing effects on world inflation: the change from fixed to floating rates will reduce the demand for reserves relative to supply — a transitional monetary factor potentially contributing to world inflation until the excess reserves are eliminated; at the same time, the establishment of floating rates provides the national monetary authorities with better control over their monetary basi and monetary growth — a permanent factor contributing to less world inflation.

Our analysis enables us to rationalize the emergence of two opposing views on the relation between floating rates and inflation. To the extent that the move to floating rates resulted in excess international reserves, it may have been a monetary factor contributing to the emergence of double-digit inflation. But these indirect and transitional monetary effects of floating on inflation recede as the excess reserves are eliminated. They are not to be identified with the direct effects of floating rates on cost-price structures and inflation emphasized by the critics. At the same time, once floating rates are established, they may, as claimed by the defenders, help us achieve better monetary control — a continuing factor helpful in slowing down world inflation.

III. Gold and World Inflation

A. Supply and Demand Affecting Gold Prices

The very sharp rise in gold prices in the past seven years, and especially in the past four years, reflects both stock and flow factors. On the flow side, gold production output fell from 1,265 tons in 1970 to approximately 595 tons in 1974, a drop of over 20 per cent, with South Africa accounting for 90 per cent of the decline.7 The stock supply of gold, dominated by the monetary gold held in central banks and by private gold holdings, is many times larger than

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7 This strategy and foreign exchange needs of South Africa and the USSR play a major role in determining the world supply of gold. Russian gold sales depend on the liabilities incurred in its transactions with the West. The South African reserve bank functions as a price buyer and withdraws gold from the market when the demand is sluggish and also, apparently, when the U.S. sells gold. See Business Review, Federal Reserve Bank of San Francisco, Winter 1974-1975.
annual world production. The total stock is estimated at 3.7 billion ounces, and central bank holdings are 35 times as large as annual production.3 (See Table 4.)

### Table 4

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Metric Tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>1,065</td>
<td>1,230</td>
<td>1,170</td>
<td>1,085</td>
<td>955</td>
</tr>
<tr>
<td>Estimated sales by commissaric peace countries</td>
<td>50</td>
<td>50</td>
<td>260</td>
<td>330</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>1,115</td>
<td>1,280</td>
<td>1,130</td>
<td>1,415</td>
<td>1,135</td>
</tr>
<tr>
<td>Change in western official gold stocks</td>
<td>265</td>
<td>-125</td>
<td>90</td>
<td>-35</td>
<td>-45</td>
</tr>
</tbody>
</table>

Source: BIS.

The demand for gold depends on both stock and flow considerations; there is a flow demand for gold by industrial, commercial, and artistic purposes; there is also a stock demand for gold by central banks, by private hoarders, by investors, and by speculators. Not surprisingly, the flow demand for gold has declined as its prices have risen, with the largest decline in jewelry fabrication. The central banks’ stock demand for gold has been relatively constant for several years; the increase in overseas official gold holdings of 72 million ounces was almost matched by the 63 million ounce decline in U.S. holdings. The private stock demand for gold increased recently as world inflation accelerated and as investors bought gold as an inflation hedge.9

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3 Central banks' decisions to sell gold in the free market will depend largely on their foreign gold holdings. Recently gold has been used as collateral for loans, and this may be viewed as one step in this direction.

9 The speculative, investment and hoarding demand for gold is characterized by different motives. Hoarding demand appears to be price elastic and is strong in those parts of the world where there is political and economic turmoil. The investment demand seeks gold until investment in other assets is more attractive and the speculative demand is fueled by inflationary expectations. The speculative demand was manifested in the 1972-74 inflation as asset holders shifted from conventional assets into commodity speculations. See Business Review, Federal Reserve Bank of San Francisco, Winter 1974-1975.

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B. Recent Gold Developments

Gold supplies fell in recent years at the time of accelerating inflation, weak security markets, and continuing currency unrest—a combination of events which strongly stimulated investment demand for gold. The U.S. Treasury, in December 1973, announced that it would permit the holding of coins dated 1969 or earlier. The London gold price rose by 75 percent from $312 an ounce at the end of 1973 to $537 an ounce at the end of 1974.

The U.S. private demand for gold has proved thus far to be very small, and the January 1975 gold auction here did not attract much private interest. In April of this year the price had fallen to $365 an ounce, and the current price is approximately $450 an ounce. The Treasury auction in June and the possibility of additional Treasury auctions and IMF sales may have further depressed gold prices.

The need to finance oil deficits led some countries to revalue their monetary gold stocks. The EEC and the Group of Ten agreed on the use of gold as collateral for central bank credits, and gold served as collateral for a $2 billion loan from Germany to Italy. The U.S. and the French announced on December 16, 1974 that they would favor the revaluation of official gold holdings on the basis of current market prices. In January 1975 the French revalued their gold stocks at $470 an ounce, and also announced that they would adjust the valuation every six months. Thus far, no other country has followed the French lead in revaluing its gold stocks on the basis of market price.

The price of gold lived up to its role as a thermometer of international economic disturbance. The combination of large currency fluctuations, double-digit inflation, and the quadrupling of oil prices pushed gold quotations in 1974 to levels that could hardly have been envisaged in earlier years.

C. On the Monetary Role of Gold

At the end of 1974 central bank gold holdings were approximately $43.7 billion, assuming the official gold price of approximately $42 per ounce. Valued at, say, $150 per ounce, the central bank gold stock is worth approximately $65 billion.

Two agreements affecting the monetary role of gold were terminated in 1973: the 1968 Washington agreement not to sell gold to the private market was terminated in November 1973; and the
agreement regarding the purchase of South African gold was terminated in December 1973. These agreements were terminated as the market price of gold was rising from $100 an ounce in mid-1973 to over $160 an ounce in mid-1974. Sales of the officially held gold to the private market could generate a very major increase in world liquidity for two related reasons: first, gold sales would enable the central banks to utilize a frozen asset and thereby increase their supply of usable foreign reserves; and second, the substantial difference between the market price of gold and the official price would further increase their total stock of foreign reserves. The possibility of utilizing the official gold stocks — valued at their market price — constitutes a potentially extraordinarily large addition, of perhaps 50 per cent, to the stock of world reserves.

An increase in official reserves of this magnitude could generate, facilitate, or accommodate more worldwide inflation in the next five to ten years. Gold has a very substantial potential for fueling further world inflation unless we develop a coordinated policy to deal with it. The U.S. has sought to reduce and eventually eliminate gold's monetary role on the grounds that it was incompatible with a stable international monetary system. There has been a broad agreement that the key role of gold should be reduced, and some techniques have been developed for achieving this objective. The communiqués of the January 1975 and June 1975 meetings of the IMF Interim Committee revealed substantial agreement to enhance the SDR, rather than gold, as the central asset in the international monetary system. The issues relating to gold, still unresolved at these meetings, concerned the transitional arrangements and whether the IMF should be allowed to acquire gold from members.

In these negotiations the U.S. has strongly supported proposals to move gold out of the system and to eliminate those rules and practices that gave gold a special status different from other commodities. The U.S. has advocated abolition of the official price of gold; elimination of provisions which require use of gold in transactions between the IMF and members; provisions enabling the Fund to sell its gold; elimination of restrictions on transactions by monetary authorities, subject to safeguards to ensure that gold's monetary role does not re-emerge; limiting the amount of officially held gold to the levels currently being held (including IMF gold); and constraints on a country's ability to acquire gold.

At the August 1975 meeting specific operational provisions were developed to reduce the role of gold in the international monetary system: The Group of Ten countries agreed to observe these transitional arrangements for a two-year period. But even if gold loses its role as a key asset in the international monetary system, the official gold stocks may be revalued to reflect the current market price. Thus, even if gold is phased out of the monetary system, we may still face a substantial increase in world reserves.

IV. The Oil Deficits and World Inflation

The oil deficits can change world reserves and thereby change world money and world inflation. To investigate the inflation consequences of the oil deficits, we shall examine their effects on the demand, supply, and distribution of world reserves.

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10 Termination of the 1968 Washington agreements did not result in central bank gold sales to the private market. The reluctance to sell gold may have reflected a fear that such sales would precipitate a sharp price decline, or possibly a belief that gold prices would rise still further. Nevertheless, the opportunity to use gold as collateral, and to value this gold collateral at a price significantly higher than the official gold price, enabled some countries to use their gold holdings.


12 The Board of Governors of the IMF at the August 31, 1975, meeting noted that the Group of Ten have agreed to observe the following arrangements for two years (which could be renewed to by any other member of the Fund): that there be no restriction as to the price of gold; that the total stock of gold held in the hands of the Fund and in the hands of the monetary authorities of the Group of Ten would not be increased; that the parties would respect any further condition governing gold trading agreed to by the central bank representatives; that each party report semi-annually to the Fund and to the BIS the total amount of gold that is used to back its currency and that each party agree that these arrangements will be reviewed at the end of two years and then either continue, modify, or terminate. See IMF "Press Communiqué of the Interim Committee of the Board of Governors on the International Monetary System", August 31, 1975.

13 In analyzing the impact of oil developments on world inflation, we have focused primarily on its effects via the demand, supply, and distribution of international reserves. We have abstracted from the direct impact of the oil price rise in raising inflation rates throughout the world since early 1974. Our analysis focuses primarily on the impact of the oil developments on inflation through its effect on world reserves and world monetary growth.
A. The 1974 Deficit

OPEC earned $126 billion from oil exports and $32 billion from investments, for a total of $158 billion, and expended approximately $65 billion on imports of goods and services and $4 billion on transfers, leaving them with a current account surplus of about $55 billion. Three-fourths of this surplus accrued to the middle-eastern members of OPEC and perhaps one-third to Saudi Arabia. OPEC external financial assets increased from $16 billion in 1973 to over $80 billion in 1974.

Private financial markets financed more than half of the 1974 deficit with OPEC: new Eurocurrency bank credit facilities totaled $22 billion in 1974; American banks increased their claims on foreigners by $15 billion in the first eleven months of 1974; and new bond issues, including publicly announced private placements, totaled about $6.3 billion in 1974. OPEC imports increased over $20 billion, but did not grow as rapidly as exports. Accordingly, OPEC's accumulation of financial and real claims abroad increased. The currencies, the assets, and the countries that OPEC selects for their rapidly growing stock of foreign assets will vary with the circumstances and opportunities. The international commercial banking system played a major role in this extraordinary intermediation function. Middle-east petrodollar investments in the U.S. are still relatively small, but OPEC investments in the U.S. may grow in the next year or so, probably at the expense of the Eurobond share.

Effective intermediation of the commercial banking system has enabled the oil-importing countries to finance their 1974 deficits without undue difficulty. But the international commercial banking system may not be able to continue its international intermediary role at last year's pace. The initial estimates of the payments imbalance between the oil exporters and the oil importers projected an accumulation of OPEC assets reaching $66 billion in 1980 and $12 trillion in 1984. Recent studies have questioned these initial estimates and have suggested instead that OPEC's accumulation of foreign assets may peak in 1978-79.

B. The 1975 Deficit

The 1975 current account deficit with OPEC is expected to be smaller than the 1974 deficit, and its financing may take different forms. Official recycling may finance between 15-20 per cent of the expected 1975 deficit; the IMF oil facility may help finance about $7.5 billion; and the EEC Community Loan is expected to provide approximately $2 billion later on in the year. The slowdown in international bank lending in the latter part of 1974 is expected to continue in 1975. Commercial banks are expected to finance only one-quarter to one-third of the 1975 deficit, relative to the 50 per cent financed in 1974, because of the credit risks in financing large, and persistent, current account deficit countries, and because bank capital ratios have fallen to low, and possibly, imprudent levels.

The international bond market is providing more finance in 1975. The decline in short-term interest rates, together with the slowing of inflation in some countries, may have stimulated more international bond issues. New public offerings and private placements in the Eurobond market have averaged over $500 million


37 In addition, the Group of Ten has agreed on Secretary Kissinger's proposed $28 billion fund to serve as a safety net and supplement the IMF oil facility and to be spent over two years.
monthly this year. And more foreign borrowers have come to the
U.S. bond market. 28

The official recycling facilities, commercial bank loans and
credits, and the international bond issues may provide $30 billion
finances the expected 1975 deficit with OPEC. Recent estimates
suggest that OPEC's 1975 current account surplus may be $45 billion,
or less. The deficit countries' need for additional financing is thus
lower than previously expected. 29

C. Changes in the Stock and Distribution of International Reserves

The brief review of the 1974-75 deficits suggests that OPEC
accumulation of financial assets may continue for several years
although possibly at a lower rate than initially projected. There are
some differences of opinion whether these holdings will peak in
1979 or later, depending in part on the assumptions introduced
concerning OPEC's capacity to expand imports in the short run. 30
The world economy may have to face the prospect of substantial
OPEC reserve accumulations in the next several years which can
have major implications on the demand, supply, and distribution
of international reserves.

Suppose first that the deficit countries use their own reserves
to settle their payments imbalances. In this case, as OPEC acquires
the reserves of the oil deficit countries, the collective reserves of the
deficit countries would be reduced by an amount equal to the
increase in reserves of the oil exporting countries. The stock of

28 A recent analysis of the international credit markets summarizes the 1975 develop-
ment as follows: "New-issue activity in the international bond market has been at a
record level so far this year. In the first seven months of 1975, over $100 billion has been
raised or announced. Interestingly, new publicly-announced medium-term Euro-currency
bank credit facilities totaled about the same amount during this period. This is in marked
contrast to all of last year, when only $65 billion was raised in the international bond
market, and $29.9 billion in the Euro-currency market". World Financial Markets, Morgan

29 Direct OPEC lending and investing is not expected to expand sufficiently to match
the financing requirements of individual deficit countries. Additional private intermediary
institutions may be helpful to facilitate the flow of OPEC funds to the deficit countries
and to provide whatever additional financing may be needed in 1975 and subsequent years.

30 The factors that determine the rise of OPEC's current account surplus and its
accumulation of financial assets are the demand elasticity for OPEC oil; the supply of
non-OPEC oil; the supply of non-OPEC non-oil energy; the substitution of non-oil energy
for oil; and OPEC's demand for imports from the oil exporting countries.

world reserves would remain unchanged. 31 There are, however,
plausible cases in which the total stock of reserves may change.

World reserves will increase in the case (which appears important
in practice) where the deficit countries borrow reserves to pay for
their oil deficits. World reserves may also increase in the case where
the deficit countries transfer foreign exchange that they held in the
issuing country and OPEC places these funds in the offshore markets.
World reserves may decline if the oil importers transfer reserves in
offshore markets and OPEC places them in the country of issue. A
transfer by OPEC of foreign exchange from the country of issue
to the offshore market facilitates an expansion of international reserves,
while a transfer from the offshore market to the country of issue
tends to accentuate the reserve decline of the oil importers, except
for the extent that the deficit countries are able to borrow in the
reserve center. 32

In 1975, global reserves increased by over $40 billion. The
reserves of the oil exporting countries increased approximately $36
billion, while the oil importing countries' reserves went up by
approximately $2.9 billion. Most of the increase in global reserves
was associated with a sharp rise in foreign exchange holdings of
approximately $36 billion. As in previous years, this rise took the
form of an increase in dollar reserves held either in the U.S. or in
the Eurocurrency market. But unlike previous years, it was not the
result of a U.S. deficit, but was primarily the consequence of the
deficit countries borrowing in order to avoid reserve losses. The
deficit countries may nevertheless feel that their reserve positions
have deteriorated, even though their total holdings show a slight
statistical increase. (See Table 5.)

31 The deficit countries' demand for foreign reserves may increase because of
uncertainty as to their ability to secure financing, and because they may want additional
reserves as security for borrowing.

32 While the intervention policies of the countries gaining and losing reserves may
change world reserves, this impact may be lessened to the extent that capital is mobile.
For example, an OPEC decision to deposit reserves in the U.S., rather than in the
Eurocurrency market, may tend to reduce world reserves. But the deficit country could
rebuild their reserve holdings if they are able to borrow more in the U.S. — a possibility
enhanced by the U.S. removal of capital controls in January 1974. Of course, if U.S.
monetary policy sterilized capital inflows in order to facilitate domestic monetary manage-
ment, the oil importers may not be able to borrow more as OPEC investments in the
U.S. rise.
### Table 5

<table>
<thead>
<tr>
<th>Areas &amp; Periods</th>
<th>Gold</th>
<th>Foreign Exchange</th>
<th>IMF Reserve Positions</th>
<th>SDR's</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In millions of U.S. dollars</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total oil-importing countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>390</td>
<td>+20,600</td>
<td>-315</td>
<td>+8,800</td>
<td>+24,950</td>
</tr>
<tr>
<td>1973</td>
<td>+415</td>
<td>+18,800</td>
<td>+515</td>
<td>+1,145</td>
<td>+21,140</td>
</tr>
<tr>
<td>1974</td>
<td>+320</td>
<td>+1,750</td>
<td>+1,450</td>
<td>+180</td>
<td>+3,900</td>
</tr>
<tr>
<td>Amounts outstanding at end of period</td>
<td>40,290</td>
<td>110,650</td>
<td>8,495</td>
<td>10,430</td>
<td>171,885</td>
</tr>
<tr>
<td>Oil-exporting countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>5</td>
<td>+2,155</td>
<td>+55</td>
<td>+160</td>
<td>+3,960</td>
</tr>
<tr>
<td>1973</td>
<td>+160</td>
<td>+4,985</td>
<td>+119</td>
<td>+45</td>
<td>+4,580</td>
</tr>
<tr>
<td>1974</td>
<td>+55</td>
<td>+8,440</td>
<td>+1,935</td>
<td>+40</td>
<td>+10,444</td>
</tr>
<tr>
<td>Amounts outstanding at end of period</td>
<td>550</td>
<td>59,385</td>
<td>9,385</td>
<td>415</td>
<td>54,570</td>
</tr>
</tbody>
</table>

* Including valuation changes.

** Ecuador, Venezuela, Iraq, Iraq, Kuwait (central bank's holdings plus BIS estimates of government holdings), Oman, Saudi Arabia, Indonesia, Algeria, Libya and Nigeria. For Bahrain, Qatar and the United Arab Emirates only IMF reserve positions are included.

Sources: BIS.

The oil importers' demand for reserves may rise pari passu with the growth of their deficits, and they may seek to borrow additional reserves. The stock of world reserves may rise in the next several years because of a widespread and increasing feeling of reserve stringency. The $3.9 billion increase in international reserves of the oil deficit countries, brought about through larger borrowings, may thus reflect their growing sense of reserve stringency and their increased demand for reserves. Such an increase in world reserves need not be inflationary, and may even be deflationary, if the increase in demand exceeds the increase in supply. Moreover, the monetary consequences of the $3.64 billion buildup of OPEC reserves in 1974 differs from the 1971-73 increase in reserves to the extent that some of the oil exporting countries do not issue domestic currency for the dollars and reserves they accumulate. In this sense, expansion of OPEC's reserves need not be inflationary, and may even be deflationary, depending on domestic monetary growth in all of the oil exporting countries.

V. Other Influences on World Liquidity

In its 1974 Annual Report the IMF examines the ratio of reserves to imports for a sample of 60 countries in the period 1954-72. This ratio has declined continuously from over 75 per cent in 1954 to 28 per cent in 1970, except for the years 1958 and 1961. Some analysts interpret this decline as evidencing a need for additional supplies of international reserves.

There are, however, several problems with this approach. First, if we utilize this indicator to conclude that the demand for reserves is overriding the supply, we are implicitly assuming that the ratio of international reserves to imports — or its reciprocal the velocity of these reserves — is a constant. Second, if floating exchange rates do, in fact, reduce the demand for reserves, any demand relationships derived from the pre-floating regimes data will tend to overestimate the current demand for official reserves. Third, if the market price of gold exceeds the official price, estimates of world liquidity which peg central bank gold stocks at the official price will tend to underestimate the stock of potential liquidity — especially if oil deficit countries take actions to mobilize their gold reserves.

In contrast, the redistribution of reserves from the deficit countries to OPEC in the next several years may cause us either to overestimate the available supply or to underestimate the relative growth in demand. Estimates of world liquidity aggregate the reserves of the oil exporters and the oil deficit countries. But the

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23 Dollars acquired by the foreign central banks in the years 1971-73 were bought with national currencies. Thus, the accumulation of international reserves by the Swiss National Bank and by the German Bundesbank was associated with an expansion of francs and marks. In contrast, the Saudi Arabian National Bank does not apparently issue credits against the dollar, and its accumulation of reserves does not necessarily correspond with an expansion of its domestic currency. Saudi Arabia, and perhaps Kuwait, are, in effect, overestimating their accumulation of reserves. Of course, some OPEC countries, like Venezuela, may be increasing their money supply just as the non-OPEC countries are. But to the extent that the domestic currencies in some OPEC countries do not expand with the accumulation of reserves, monetary consequences are not inflationary, and may even be deflationary. See Omerdizhan Elnaraz, "Remarks at the Japan-U.S. Assembly Meeting", April 1975.
Redistribution of reserves reduces the liquidity of the deficit countries, even though the stock of global reserves is unchanged. Finally, the deficit countries' demand for reserves may rise pari passu with their rising deficits, and the demand for reserves may be rising even faster than the supply of reserves.

Private holdings of internationally liquid assets more than doubled in the 1968-73 period, growing at about the same rate as official reserves. This is another factor that we need to consider in assessing world reserves and inflation. Although they are privately held, these international liquid assets can be used to finance a payments deficit, in addition to the official reserve holdings. This would suggest that we add the private international liquid assets to the official reserve assets. On the other hand, the availability of these privately held assets to finance payments imbalances may be diminished somewhat to the extent that floating rates may have increased the private demand for international liquidity.\(^{26}\) (See Table 6).

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Private International Liquidity</th>
<th>Official Reserve Holdings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>24.4</td>
<td>70.3</td>
</tr>
<tr>
<td>1965</td>
<td>27.3</td>
<td>72.4</td>
</tr>
<tr>
<td>1966</td>
<td>38.9</td>
<td>73.8</td>
</tr>
<tr>
<td>1967</td>
<td>56.9</td>
<td>74.8</td>
</tr>
<tr>
<td>1968</td>
<td>45.5</td>
<td>77.4</td>
</tr>
<tr>
<td>1969</td>
<td>71.6</td>
<td>78.1</td>
</tr>
<tr>
<td>1970</td>
<td>74.4</td>
<td>79.5</td>
</tr>
<tr>
<td>1971</td>
<td>75.7</td>
<td>79.3*</td>
</tr>
<tr>
<td>1972</td>
<td>98.1</td>
<td>88.2*</td>
</tr>
<tr>
<td>1973</td>
<td>106.1</td>
<td>86.6*</td>
</tr>
<tr>
<td>1974</td>
<td>D.N.A.</td>
<td>248.3*</td>
</tr>
</tbody>
</table>

* These data on Official Reserve Holdings taken from the IMF Annual Report differ slightly from the Total Reserve Assets for these years shown in Table 1 and taken from the BIS Annual Report.

26 The contribution of private international liquidity is offset somewhat to the extent that the increased liabilities by a debtor country reduce what it regards as its available reserves. This means that increased private liquidity holdings make a net addition to reserve

Some of the official actions taken in 1973 to restrict exports, to relax import restrictions, to curtail capital inflows and to liberalize outflows may be interpreted as evidence for the view that world reserves were ample relative to supply. This suggests that international reserves were adequate at least substantially at the end of 1973 when some of these policies were reversed. A sense of reserves stringency was manifest in 1974 when some deficit countries took actions to restrict imports, to increase official borrowing in order to curtail reserve losses, to maximize access to the oil facility, and to mobilize gold reserves at the highest possible price. And finally, the reduction in the real value of reserves as a result of the depreciation of the reserve currencies and the speed-up in world inflation may have further aggravated the feeling that international reserves were inadequate.\(^{23}\)

**Conclusion**

The stock of international reserves has been increasing very rapidly in recent years and has been associated with an acceleration of world monetary growth and a bust of double-digit inflation in the world economy. Waiving the question of cause and effect, it is clear that the three-fold increase in global reserves was a factor facilitating worldwide inflation.

Several developments in the last two years can significantly affect the prospects for world inflation. The move to floating rates in 1973 may have reduced the demand for reserves, rendering some of the reserve holdings into excess reserves; the transition to floating rates can bring about a speed-up of money growth and a temporary increase in inflation. On the other hand, floating rates also enable the monetary authorities to regain control over their domestic money stock; the maintenance of a floating rate regime may in this sense be a necessary, though not a sufficient, condition for non-inflationary monetary growth and a reduction in world inflation.

A second recent change which can influence the prospects for world inflation is a very sharp run-up in the price of gold, which...
can add over $100 billion to world reserves. There have been official
discussions, and the IMF recently announced an agreement to phase
gold out of the monetary system. But the official gold holdings may
be revalued to reflect the current market price. We may thus see
some additional increase in the monetary base and world liquidity
unless active steps are taken to offset this potential increase in inter-
national reserves.

The oil price increase is another factor influencing world in-
flation through its effects on the demand, the supply, and the
distribution of international reserves. The deficit countries may
desire additional reserves in order to finance their prospective oil
deficits. This could result in another increase in global reserves.
Also, depending on how OPEC chooses to hold its assets — i.e.,
whether they hold them in the offshore Eurocurrency markets or
the country of issue — world reserves may either increase or decrease.
The oil developments are likely to result in an increased demand
for reserves to finance the expected oil deficits and some increase
in the supply.

The distribution of global reserves has worsened in recent years,
and the oil deficit countries' demand for international reserves may
be rising. This demand could be satisfied by official borrowing and
by a continued growth of foreign exchange component of interna-
tional reserves. A revaluation of the official gold holdings would
also tend to increase the stock of reserves, and a continuation of
floating rates should tend to reduce the demand for reserves.

Those who are concerned about reserves stringency point to a
decline in the real value of global reserves because of world inflation
and to the oil deficits which suggest some increase in demand relative
to supply. Actions by the deficit countries in 1974 to restrict imports,
to increase foreign borrowing, to gain access to the oil facility, and
to mobilize their gold reserves may be interpreted as suggesting a
sense of reserve stringency relative to earlier years.

There is no evidence yet of inappropriate deflationary policies
being dictated by reserve stringency. On the contrary, some coun-
tries have used their reserves on a substantial scale to prevent the
depreciation of their currencies. Import restrictions have not spread
to countries that are not suffering from large non-oil deficits, and
the move to floating exchange rates has reduced the payments
disequilibria and the need for reserves by several countries.

World liquidity may thus be subject to opposing forces. The

transition to floating rates would tend to reduce the demand for
international reserves, and the rise in gold prices would tend to
increase supply; these two factors together operate to bring about an
increase in supply relative to demand and suggest a potential
increase in excess reserves and a speed-up of world inflation. The
oil deficits tend to increase both the demand for, and the supply of,
reserves with demand growing relative to supply; ceteris paribus,
the oil developments would suggest a potential problem of deficient
reserves and deflationary policies in some countries.

These two forces may have offset each other in the past year,
but there is no inherent reason why the oil deficits should increase
the demand for international reserves just sufficiently to offset the
influence of gold and floating rates operating to increase the supply
of global reserves. A revaluation of gold may bring about a jump
in reserves which is not likely to just net out the influences of other
factors on raising the demand for reserves. Accordingly, the rapid
growth in global reserves may pose a potentially serious inflationary
problem which needs to be monitored.

If the oil developments should dominate and the world turns
out to be short of international liquidity, we must be alert to re-

Detroi[...]

[8]

World Reserves and World Inflation

DAVID I. FAND