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# REVIEW


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# Inflation and Taxes: Disincentives for Capital Formation

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ONE of the disappointing features of the current expansion has been the sluggish growth of business investment spending. Businesses appear to be more reluctant to make outlays for purchases of new plant and equipment than was the case in previous periods of economic growth. Since the beginning of the current expansion in early 1975, investment expenditures have grown at a 9.4 percent annual rate, compared to an average 11.8 percent rate for comparable periods in the four previous recoveries.[1] When these dollar outlays are measured in terms of their purchasing power, the differential is even greater: real business investment in plant and equipment has grown at only a 3.7 percent rate during the current expansion, compared to a 7.8 percent average rate in previous expansions.

Numerous factors have been suggested as explanations for this relatively sluggish growth in capital outlays, including the uncertainty over proposed changes in tax and energy policy, the higher replacement cost and lower productivity of capital goods due to higher energy costs since 1974, and general uncertainty about the economic consequences of a new Administration. One factor which has not received its rightful share of publicity, however, is the unusually rapid rate of inflation associated with the current expansion. Inflation, in conjunction with the accounting convention of recording transactions at their historical values, reduces the returns generated by investment projects. In addition, the combined effects of inflation and the personal income tax structure tend to drive up the cost of obtaining the funds necessary for a given capital investment program. Each of these adverse effects of inflation provides a disincentive to business investment. Thus, inflation should be high on the list of culprits responsible for the lackluster performance of business investment spending.

[1]The postwar recovery beginning in the second quarter of 1958 is excluded since it did not last as long as the current expansion.

## INFLATION'S IMPACT ON INVESTMENT RETURN

In order to discuss the effects of inflation on investment return, it is useful to distinguish between *nominal* and *real* rates of return. Nominal measures refer to dollar amounts which use currently prevailing dollar prices as a yardstick. Real measures use a yardstick with a constant purchasing power of the dollar — the dollar value of goods and services is measured in terms of prices which prevailed in some previous or "base" period. In essence, real values measure the extent to which increases in nominal values actually reflect changes in the ability to purchase goods and services. An increase in income from $100 to $120 during a period when prices are rising by 5 percent per period involves a $20 or 20 percent gain in *nominal* income. However, since this income will command only $15 more in goods and services, *real* income has increased by only 15 percent.[2] Since real measures are free of distortions produced by using a variable yardstick, real rates of return are examined below.

A series of examples illustrates the adverse impact of inflation on an investment project's real rate of return.[3] The project remains the same in the following examples, but the annual rate of inflation over the life of the project is assumed to change from zero, to 5, and then to 10 percent.

[2]This calculation of the real rate is found by subtracting the inflation rate over a period from the nominal rate of increase. The exact measure of the real income gain in the example above provides a slightly different result. Since $120 will buy only $114.29 ($120 ÷ 1.05) worth of goods and services, measured in the initial period's prices, the real gain could be stated as the simple percentage gain of 14.3 percent.

[3]Considerable work on this problem has been done by George Terborgh, *Essays on Inflation* (Washington, D.C.: Machinery and Allied Products Institute and Council for Technological Advancement, 1971). Also see T. Nicolaus Tideman and Donald P. Tucker, "The Tax Treatment of Business Profits under Inflationary Conditions," in *Inflation and the Income Tax*, ed. Henry J. Aaron (Washington, D.C.: The Brookings Institution, 1976), pp. 33-74.

## *Investment Return With No Inflation*

Suppose that a firm is considering the purchase of an asset which costs $300,000 and is expected to yield an annual before-tax net cash income (the excess of cash receipts over cash expenses) of $100,000 over its expected useful life of 5 years.[4] The firm anticipates that the asset will have no value at the end of its useful life. To simplify the calculations, let the corporate income tax rate be 50 percent. Initially, it is assumed that inflation is nonexistent so that all dollar receipts and outlays over the expected life of the capital asset are also measures with constant purchasing power; any increase or decrease in dollar magnitudes implies a corresponding increase or decrease in the ability to purchase goods and services.

Table I indicates the annual cash flows associated with this project over its expected life. The first column depicts the annual before-tax net cash income of $100,000 generated by the project. On this pretax basis, the inflows serve as a measure of the benefits associated with the project itself, but do not represent a measure of the benefit which the firm will actually receive by acquiring this capital asset. To arrive at such a measure, corporate income taxes must be considered.

Corporate tax rates are intended to be levied on that portion of revenue which exceeds the total cost of operations over a particular period. To determine taxable income on this project, depreciation must be subtracted from the net cash receipts of Column I. Depreciation is the expense associated with the consumption, or wearing out, of a portion of a capital asset over any particular period. Under existing tax law, the firm is not allowed to deduct as an expense the cost of *replacing* the worn-out portion of the asset. Instead, it may only claim some portion of the *original* cost of the asset each year as an expense. Over time, total depreciation expenses cannot exceed the original cost of the asset.

The firm in the example is presumed to use straight-line depreciation, which means that an equal amount of the original cost is depreciated each year. Since the asset costs $300,000, the annual depreciation charge (Column II) in each of the 5 years is $60,000. By subtracting this amount from cash receipts in each period, taxable income is derived. The corporate tax

Table I

Return on a Hypothetical Investment With Zero Inflation

| End of Year: | I Net Cash Receipts | II Cash Receipts Not Taxed Due to Depreciation Charges | III Taxes Paid | IV After-Tax Cash Flow |
|---|---|---|---|---|
| 1 | $100,000 | $60,000 | $20,000 | $80,000 |
| 2 | 100,000 | 60,000 | 20,000 | 80,000 |
| 3 | 100,000 | 60,000 | 20,000 | 80,000 |
| 4 | 100,000 | 60,000 | 20,000 | 80,000 |
| 5 | 100,000 | 60,000 | 20,000 | 80,000 |

IRR = 10.4 percent

liability (Column III) is then determined by applying the corporate tax rate to taxable income. Subtracting this outflow of funds from net cash inflows (Column I), the net cash flow generated by the project and available to the firm is derived. These after-tax flows are shown in Column IV of Table I.

Given the initial cost of the asset, the after-tax flows in Column IV represent a rate of return of 10.4 percent per year. This rate of return may be compared to both the cost of obtaining investment funds (to determine whether or not to invest) and to the returns on alternative asset purchases (to determine how funds should be allocated).[5]

## *Investment Return With Selected Inflation Rates*

The project discussed above is now assumed to be generating a return in an environment where the price level is not stable, but rising at selected rates. A rising price level will affect the calculation of investment yield for two reasons. First, a given rate of inflation over the life of an asset will tend to be fully reflected in the pretax net cash receipts. That is, if all prices rise by 5 percent in any particular period, net cash receipts on the same units sold, in general, will

[4]To avoid problems associated with the measurement of income under the accrual method of accounting, it is assumed that all transactions occur on a cash basis. See Harold Bierman, Jr., and Seymour Smidt, *The Capital Budgeting Decision*, 4th ed. (New York: Macmillian Publishing Co., Inc., 1975), pp. 112-14.

[5]The rate of return on an investment here is the "internal rate of return" (IRR). While the IRR can be used to compare the relative merits of alternative asset purchases, there are situations in which it may lead to an incorrect investment decision. In general, the net present value (NPV) model is preferred for evaluating investment projects. The IRR is used here only because it allows a simpler and more direct presentation of inflation's impact on investment return. For a description and general discussion of the IRR and NPV models, see J. Fred Weston and Eugene F. Brigham, *Managerial Finance*, 5th ed. (Hinsdale, Ill.: The Dryden Press, 1975), pp. 267-75, and Bierman and Smidt, *The Capital Budgeting Decision*, pp. 41-57.

Table II

Return on a Hypothetical Investment With a 5 Percent Inflation Rate

| End of Year: | I Net Cash Receipts[1] | II Cash Receipts Not Taxed Due to Depreciation Charges | III Taxes Paid | IV After-Tax Cash Flow | V Purchasing Power of After-Tax Cash Flow[2] |
|---|---|---|---|---|---|
| 1 | $105,000 | $60,000 | $22,500 | $82,500 | $78,571 |
| 2 | 110,250 | 60,000 | 25,125 | 85,125 | 77,211 |
| 3 | 115,763 | 60,000 | 27,882 | 87,881 | 75,915 |
| 4 | 121,501 | 60,000 | 30,776 | 90,775 | 74,681 |
| 5 | 127,628 | 60,000 | 33,814 | 93,814 | 73,506 |

IRR = 8.5 percent

[1]Derived by applying the 5 percent inflation rate, compounded annually, to the net cash receipts in Table I.

[2]Derived by deflating after-tax cash income by the 5 percent inflation rate, compounded annually.

also rise by 5 percent. The second reason for recalculating investment return is due to the effect of inflation on the value of the after-tax dollar magnitudes generated each year. In the previous zero-inflation example, after-tax dollar flows (as well as pretax) represented real or constant-price magnitudes. In order to make comparisons with these real flows reported in Table I, the effects of inflation on the after-tax dollar flows have to be removed.

***Five Percent Inflation*** — As indicated in Column I of Table II, the before-tax cash receipts increase by 5 percent in each year. Given this inflation boost, the incoming receipts in the prior example rise from $105,000 after the first year of inflation to $127,628 after the fifth year. Such inflated receipts, however, command no more goods and services than the receipts generated without inflation.

The dollar amount of net cash receipts which is not taxed because of depreciation charges remains the same as without inflation, since only $60,000 per year is permitted for depreciation expense. Both taxable cash income and taxes paid are greater in each period because of the effects of inflation on the net cash receipts. The net result is that after-tax dollar inflows are greater than in the zero inflation example, but these receipts represent a diminished command over goods and services. This is indicated in Column V of Table II, which shows the after-tax cash inflows on a constant-dollar basis. A comparison of Tables I and II reveals that the *real* after-tax cash inflows are decreased by the inflation. Accordingly, the yield on this project is lowered 1.9 percentage points to an 8.5 percent rate. This after-tax decline in the project's real return occurs even though the before-tax real yield remains unchanged.

***Ten Percent Inflation*** — Table III shows how an inflation rate of 10 percent per year over the asset's depreciable life affects the project's yield. Net cash receipts advance with the 10 percent inflation, rising from $110,000 in year one to $161,051 in year five. Again, in terms of the goods and services which can be purchased, these receipts are the same as those of the no-inflation example.

While the depreciation expenses remain the same, nominal taxes and income after taxes are greater than in the 5 percent inflation example. Once again, even though the after-tax income reported in Column IV is increased, this rise in receipts is not sufficient to offset the general increase of prices which prevails over the project's life. Column V shows that on a purchasing-power basis, the cash inflows are considerably lower than those in the previous examples. Accordingly, the yield on this project falls to a 6.9 percent rate — some 3.5 percentage points lower than the return on the project in a no-inflation environment.

## The Adverse Effects on Investment Behavior

The source of the reduced real yield on investment is increased taxation associated with fixed nominal depreciation expenses. Even though the real value of cash inflows (before taxes) is insulated from the rate of inflation, the real value of the depreciation expense falls over time, and falls more as the inflation rate rises. This results in faster growth of taxable income — and the outflow of funds for taxes — than would be the case if depreciation expenses reflected the rising price level and replacement cost of capital. In effect, taxes are being levied not only on the income generated by the capital, but also on the capital itself. This taxation reduces the incentive of firms to invest.[6]

In response to such a disincentive, business firms would be expected to alter their behavior, primarily by reducing investment, in order to protect themselves

[6]Firms may react by attempting to offset part of the lower yield associated with inflation-induced taxation by increasing the use of accelerated forms of depreciation, such as the "double declining balance" or the "sum-of-the-years-digits" method. However, the presence of an inflation effect is independent of the method of depreciation chosen.

Table III

Return on a Hypothetical Investment With a 10 Percent Inflation Rate

| End of Year: | I Net Cash Receipts[1] | II Cash Receipts Not Taxed Due to Depreciation Charges | III Taxes Paid | IV After-Tax Cash Flow | V Purchasing Power of After-Tax Cash Flow[2] |
|---|---|---|---|---|---|
| 1 | $110,000 | $60,000 | $25,000 | $ 85,000 | $77,273 |
| 2 | 121,000 | 60,000 | 30,500 | 90,500 | 74,793 |
| 3 | 133,100 | 60,000 | 36,550 | 96,550 | 72,539 |
| 4 | 146,410 | 60,000 | 43,205 | 103,205 | 70,490 |
| 5 | 161,051 | 60,000 | 50,526 | 110,525 | 68,628 |

IRR = 6.9 percent

[1]Derived by applying the 10 percent inflation rate, compounded annually, to the net cash receipts in Table I.

[2]Derived by deflating after-tax cash income by the 10 percent inflation rate, compounded annually.

from the adverse effects of inflation. In addition, it is possible to show that the types of investment which firms undertake would be affected. For example, higher inflation rates discourage the adoption of capital intensive technologies, encourage the postponement of replacement investment, and typically discourage the purchase of capital assets with relatively long expected lives in favor of those with relatively short expected lives.[7]

Uncertainty about the future rate of inflation increases the riskiness of an expected income stream. Such riskiness reduces firms' incentives to acquire assets, given their real rate of return and the cost of funds. Recent evidence indicates that inflation uncertainty increases as the rate of inflation rises.[8] Thus, a rise in the rate of inflation expected by firms not only reduces expected rates of return, it also increases risk which further reduces investment incentives and the demand for new capital assets.

## INFLATION'S IMPACT ON THE COST OF ACQUIRING INVESTMENT FUNDS

While inflation — operating through the tax system — serves to erode the rate of return on capital goods, it also has an adverse impact on the cost of acquiring investment funds. Again, the tax system plays a crucial role. Given the prevailing tax system, inflation raises the *real* market rate of interest demanded by individuals in order to supply funds through bond or new equity share purchases, or through retained earnings.[9] The primary determinants of the cost of a given supply of investment funds are (1) the real yield required to induce the general public to forego current consumption in order to make new equity or borrowed funds available and (2) the personal tax treatment of the income received from owning stocks and bonds.

### *The Trade-Off Between Current and Future Consumption*

The first factor which influences the cost of investment funds depends upon individuals' decisions as to whether to direct a portion of current income to savings through, for example, the purchase of stocks and bonds, rather than to consumption. The saving decision involves the postponement of some current consumption for what is expected to be greater future consumption. The expected addition to future consumption opportunities is reflected in the yield obtained from holding stocks and bonds, which is most appropriately measured on a real *after-tax* basis.

### *The Taxation of Income from Bonds and Stocks*

Two features of the U.S. tax system are of special importance in considering the effects of income taxes on the cost of investment funds for business. First, the taxation of income derived from holdings of stocks and bonds — whether in the form of stock dividends, capital gains, or interest income from bond ownership — is based upon nominal, not real, income.[10] Thus, inflation tends to increase personal taxes by inflating

[7]See Charles R. Nelson, "Inflation and Capital Budgeting," *Journal of Finance* (June 1976), pp. 923-31.

[8]See Benjamin Klein, "Our New Monetary Standard: The Measurement and Effects of Price Uncertainty, 1880-1973," *Economic Inquiry* (December 1975), pp. 461-84.

[9]Martin Feldstein, Jerry Green, and Eytan Sheshinski, "Inflation and Taxes in a Growing Economy with Debt and Equity Finance," forthcoming in the *Journal of Political Economy* (April 1978), have formally modeled most of the considerations discussed in this section. They concentrate on the effect of inflation on real *net* rates of return to investors assuming a fixed stock of capital and supply of funds. John Lintner, "Inflation and Security Returns," *Journal of Finance* (May 1975), pp. 259-80, cites statistical evidence uniformly showing that stockholders' net returns, both nominal and real, are negatively related to inflation rates. He also argues that the cost of funds to firms, including debt, may be positively related to inflation rates.

[10]Michael R. Darby, "The Financial and Tax Effects of Monetary Policy on Interest Rates," *Economic Inquiry* (June 1975), pp. 266-76, has explored some of the implications of personal income taxation for the effect of inflation on interest rates.

nominal incomes, even if the purchasing power of the income payments remains the same. Such increased taxation is compounded by a second feature of the tax system — progressivity. As inflation raises the dollar incomes from almost all sources, it pushes taxpayers into higher "tax brackets," again regardless of whether the higher incomes represent an increased ability to buy goods and services or to pay taxes.[11] Both features tend to reduce the purchasing power of income received from stocks and bonds. As a result, individuals will have less incentive to supply funds, and an increased incentive to consume now, unless they are compensated for the anticipated losses associated with increases in the inflation rate *and* inflation-induced taxation.

For example, suppose that in the absence of inflationary expectations and income tax considerations the typical individual is willing to save $1,000 from current income to buy bonds yielding a 4 percent rate of return for one year. Individuals expect to be able to trade $1,000 worth of current consumption goods for $1,040 or 4 percent more of the same goods in a year. The anticipation of inflation does not change the evaluation of present consumption relative to future consumption — *at a minimum*, a 4 percent increase in the ability to purchase goods one year hence is still demanded. But, if prices are expected to rise over the year, a nominal yield of more than 4 percent is required if the demanded trade-off between current and future consumption is to be achieved.

If, for instance, prices are expected to rise by 5 percent, the dollar prices of future goods will be higher than at the time the bond was purchased. In order to be able to pay the higher prices, lenders will demand a higher nominal interest rate. The *nominal* yield required to induce individuals to forego $1,000 worth of current consumption would have to rise to 9 percent in order to secure the minimum 4 percent *real* yield.[12] In essence, individuals will demand the same real rate of return in the face of anticipated inflation; to secure this rate of return, ignoring personal income tax considerations, nominal interest rates must rise by an amount equal to the rise in the expected rate of inflation.

When personal income taxes are included, the effect on the nominal and real interest rates at which funds are supplied is more pronounced. Suppose that the typical individual is in a 20 percent income tax bracket. In the zero-inflation case above, a market (nominal and real) rate of 5 percent on bonds is required in order to yield a 4 percent return after taxes, since 20 percent of the interest income (.2 x 5 percent = 1 percent) is taken by the taxing authority. With the 20 percent tax rate and a 5 percent yield on the bond, individuals are able to trade $1,000 worth of current goods and services for $1,040 or 4 percent more of the same goods and services in a year.

When inflation is expected to run at a 5 percent rate, a higher nominal interest rate on the same $1,000 of lending is required in order to cover the higher prices in the future. In addition, individuals will face an enlarged tax burden in the future due to the higher nominal interest income. Thus, the nominal rate must rise by more than the increase in the anticipated inflation in order to assure a 4 percent real yield after personal taxes. Nominal interest income must rise enough to compensate for the effect of the inflation on the purchasing power of both the interest income *and* the initial funds supplied. Since taxes are levied on the nominal interest income, the interest return which is necessary to maintain the purchasing power of individuals' original capital is taxed as well. To compensate for this real tax burden on capital, taxpayers will demand a higher real market interest rate, before taxes, in order to supply the same funds.

In the example, the nominal market rate must rise from 5 percent (with no inflation and a 20 percent tax rate) to about 11.25 percent (with 5 percent inflation and a 20 percent tax rate) in order to provide the after-tax real yield of 4 percent to the individual. Of the interest income which accrues at a rate of about 11.25 percent per year, 20 percent must be paid in taxes (.2 x 11.25 = 2.25) so that the nominal after-tax yield is 9 percent. This is the rate required to yield a 4 percent real rate of return after taxes and to cover the 5 percent loss of purchasing power of the original $1,000. The nominal market rate of 11.25 percent, together with a 5 percent inflation rate, implies that a pretax real market rate of 6.25 percent (11.25 — 5 percent) is required to make the bond attractive. Thus, the 5 percentage point rise in inflation raises the real market rate demanded by lenders from 5 percent to 6.25 percent.

[11]The erosion of real income due to inflation in the presence of a progressive income tax is discussed by Nancy Jianakoplos, "Paying More Taxes and Affording It Less," this *Review* (July 1975), pp. 9-13, and Leonall C. Andersen, "So What, It's Only a Five Percent Inflation," this *Review* (May 1977), pp. 21-23. While the explanation and examples there are in terms of labor income, the analysis for capital income is essentially the same.

[12]The exact nominal interest rate in this instance would have to be 9.2 percent in order to provide the 4 percent real rate of return. All of the nominal interest rates in this section are calculated by simply adding the rate of inflation to the corresponding real interest rate. See fn. 2.

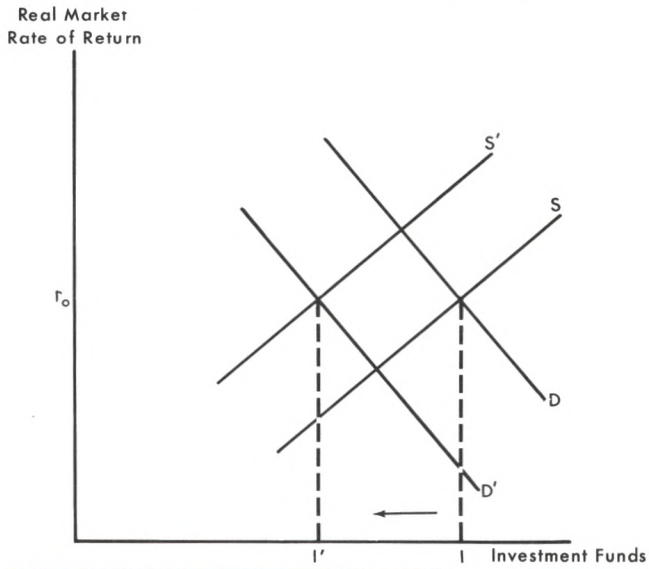
Since the personal income tax is progressive, higher nominal incomes associated with inflation can push taxpayers into higher tax brackets. Thus, a particular individual, initially in a 20 percent tax bracket, would require an even higher nominal return in order to compensate for this facet of the increased real tax burden. Since nominal interest rates rise by more than the 5 percent advance in the inflation rate in the example above, the real market rate must rise by more than 1.25 percentage points.

Since nominal dividend earnings as well as nominal capital gains are subject to personal income taxes, the required yield on stocks will be affected by anticipated inflation in the same manner as bonds. To supply the same dollar flow of funds, suppliers require compensation for both the anticipated inflation as well as the increased future tax liability which such a higher inflation rate would entail. Because the required nominal market yields on all supplies of funds rise by more than the increase in anticipated inflation, the real rates of interest which individuals require to supply a given amount of funds will rise.[13]

## THE MARKET FOR INVESTMENT FUNDS

Firms tend to make capital investments when the expected real after-tax rate of return from an investment equals or exceeds the cost of acquiring the necessary funds. As has been shown, inflation has an adverse impact on both aspects of this criterion. Due to the implicit tax on capital emanating from historical cost depreciation, higher rates of inflation over the life of a project reduce the real after-tax rate of return on investment projects. Projects which would be marginally profitable, with a given cost of funds, become economically unfeasible due to the emergence of inflation, thereby reducing the level of investment demanded by firms.[14] In addition, the same inflation rate, operating through the personal tax system, drives up the real market yields at which investors are willing to supply funds.

Figure I
**Inflation and the Market for Investment Funds**




The results are depicted in Figure I which shows business' demand for funds and investors' supply of funds at different real market rates. Initially the supply and demand curves are S and D. Additional factors which affect demand or supply, including the inflation rate, are assumed to be given along the curves. Other things equal, investors will supply more funds, the greater is the real market rate of interest. Similarly, businesses demand fewer funds to invest in assets when the real market rate of interest rises. The amount of funds supplied and demanded are equal, initially, at the real market interest rate, $r_o$.

For a given real market rate of interest (and cost of funds to business), an increase in the rate of inflation reduces the number of projects which businesses find attractive, thereby reducing their demand for funds. Such a shift in demand is indicated by D' in Figure I. At the same time, the increase in the inflation rate reduces the after-tax real rate of return on equity or bond purchases, given real market yields, reducing

[13]The real cost of funds to firms is also influenced by the corporate income tax treatment of the firm's payments of income to funds suppliers. A firm's nominal interest payments to bondholders are tax deductible expenses while dividend payments or capital gains which accrue through retained earnings are not tax deductible. When the inflation rate is expected to rise, this differential tax treatment creates an incentive for firms to place greater emphasis on the lower cost of debt financing relative to equity. This point has been emphasized by Tideman and Tucker, "The Tax Treatment of Business Profits under Inflationary Conditions."

Attitudes toward debt and its associated risk, however, limit the incentive to switch to debt. As debt becomes a greater proportion of a firm's desired financial structure, creditors and stockholders must be compensated for the increased riskiness of the firm. Thus, the cost of both sources of funds tends to rise by more than that suggested by inflation and tax considerations alone. A discussion of the effects of increased financial risk on a firm's cost of equity and debt may be found in Weston and Brigham, *Managerial Finance*, pp. 604-12 and 636-57.

[14]Hai Hong, "Inflation and the Market Value of the Firm: Theory and Tests," *Journal of Finance* (September 1977), pp. 1031-48, presents supporting statistical evidence of the reduction in the value of firms in an inflationary environment due to tax effects of historical cost depreciation.

the incentives for individuals to supply funds. Such a shift in supply is indicated by the leftward movement of supply to S′ in Figure I. The ultimate effect on the real market rate depends upon the change in the relative scarcity of funds in the market place. If the reduction in demand for new funds is matched by an equal reduction in the supply of funds, no change would occur in real market rates, as is indicated in the figure. However, if the supply of funds declines relative to demand, the increase in the scarcity of funds will cause a rise in real market rates.

Regardless of the net effect of inflation on real market rates of return, the analysis indicates that, as a consequence of the U.S. tax system, inflation unambiguously reduces incentives to undertake new investment projects, and therefore business investment spending declines. Such a reduction is indicated in Figure I by the change in investment funds from I to I′.

## CONCLUSIONS

The U.S. tax system evolved over a period of relatively minor inflation and was not designed to avoid inflation's detrimental effects on economic decisions. As inflation has trended upward and expectations of future inflation have become widely held, the U.S. tax system has had an increasingly detrimental effect on business investment.

Substantial changes in the tax system would be required to insulate investment decisions from the adverse effects of inflation. The requirements include tying the income levels for personal income tax brackets, as well as deductions and exemptions, to the rate of inflation in order to avoid the disincentives associated with progressivity of the personal income tax. In addition, the personal income tax would have to be altered so as to eliminate the taxation of inflation premiums in interest income from bonds and dividend income from stocks as well as the taxation of inflation-generated capital gains.[15] At the company level, a business would have to be allowed replacement cost depreciation rather than historical cost depreciation to avoid taxing capital as well as income.

The history of tax law alterations in the United States indicates that such a large number of major revisions in corporate and personal income tax laws is most unlikely. Nonetheless, the critically important role of business investment in providing for growth in productivity, employment, and our standard of living hangs in the balance.

Of course, there is an alternative to the massive tax reform suggested here. Fiscal and monetary policies could be adopted to reduce substantially, or even eliminate, inflation and the distortions it creates. Only a noninflationary environment is consistent with the principles of taxation and our existing tax laws.

[15]Of course, firms would have to be limited to deducting only real interest expenses and not nominal interest payments to eliminate any tax advantage which inflation-induced higher interest payments produce.

# International Reserves and the Role of Special Drawing Rights

DOUGLAS R. MUDD

THE increasing variability in the value of the U.S. dollar in foreign exchange markets has recently been the basis for discussion about the currency in which certain internationally traded commodities are priced. In particular, petroleum exporting countries have given some consideration to the feasibility of denominating the world price of oil in terms of the Special Drawing Right (SDR), rather than the U.S. dollar.[1] The primary function of the SDR, however, is not that of an international numeraire. Rather, the SDR was created in the late 1960s to augment what was then generally perceived to be a deficiency of international reserves.

## INTERNATIONAL RESERVES

When the residents of a country import goods and services or invest in capital assets abroad, payment must be made in a manner acceptable to the exporters. Gold, currencies of other countries which the exporters are willing to accept, and the exporting country's domestic currency are international means of payment. The amounts of gold and internationally acceptable currencies (other than a country's domestic currency) which a nation has at its disposal for making final payment to foreign exporters are its international reserves.[2]

### *Under Fixed Exchange Rates*

Until the early 1970s, most countries had agreed upon the relative values of their currencies and acted in foreign exchange markets so as to attempt to preserve these relationships between currency values.[3] Under this system of fixed relative values for national currencies, central banks bought and sold reserve assets at prices fixed in terms of their own domestic currencies. For example, suppose a particular country was maintaining the international value of one unit of its currency at one U.S. dollar. If importers in this country demanded dollars to pay for foreign goods and services, their own central bank would exchange dollars for domestic currency on a one-for-one basis. If this central bank's holdings of dollars were insufficient to satisfy the importers' demand for dollars, it could obtain additional dollars by purchasing or borrowing them from another central bank. Direct purchases resulted in an exchange of gold or some internationally acceptable currency for U.S. dollars. In turn, the dollars were sold to domestic importers for domestic currency. The central bank's holdings of international reserves would thereby be reduced.

Thus, a deficit in a country's balance of payments (for example, due to a current account deficit not being offset by a capital account surplus) implied a decline in its central bank's holdings of international reserves, since balance-of-payments deficits were settled by flows of international reserves from deficit

[1] "OPEC Might Switch to S.D.R.s If Dollar Plummets, Official Says," *New York Times*, August 4, 1977, "Kuwait Wants OPEC To Switch From Dollar To SDR-Based Pricing," *Wall Street Journal*, August 4, 1977, and Gary R. Gray, "SDRs and the Oil Price," *New York Journal of Commerce*, December 10, 1977.

[2] The importance of gold as an international reserve asset has declined significantly since the early 1970s. During 1976, official gold balances accounted for less than 20 percent of total international reserve assets. For a discussion see Hang-Sheng Cheng and Nicholas P. Sargen, "The Changing Role of Gold in the International Monetary System," Federal Reserve Bank of San Francisco *Business Review* (Winter 1974-75), pp. 5-15. The foreign currency component of international reserves also includes central banks' holdings of marketable securities denominated in foreign currencies.

[3] National currencies are bought and sold in foreign exchange markets. The price of one currency in terms of another is the exchange rate between the two currencies. Throughout this paper it is assumed that exchange rates were fixed as single values. Currency values were in fact generally allowed to fluctuate within ± 1% of a fixed single value. For a discussion of the par value exchange rate regime which existed until March 1973, see Helmut W. Mayer, "The Anatomy of Official Exchange-Rate Intervention Systems," *Essays in International Finance*, no. 104 (Princeton: Princeton University, May 1974).

to surplus nations.[4] The one exception to this was when the deficit nation's domestic currency was internationally acceptable. When the domestic currency of a particular nation was acceptable to foreign exporters, importers in that country could use their local currency to pay for foreign-made goods. In addition, the currency could also be used to purchase capital assets abroad. As a result, that country could pay for an increasing amount of imports by increasing its domestic money supply. In this case, however, importers could continue to pay for foreign goods and securities with their domestic currency only so long as foreign exporters remained willing to accept that currency.

## *Under "Cleanly Floating" Exchange Rates*

If a country allows its currency to "float cleanly", then the value of that currency in terms of other currencies is established by the supply and demand conditions arising from all foreign exchange market transactions undertaken by the private sector (and those actions of governments undertaken for purposes other than affecting exchange rates). When individuals or businesses require foreign currency to pay for foreign goods or capital assets, they can purchase that currency with their domestic currency in foreign exchange markets. An increased demand for the foreign currency results in a rise in the number of units of domestic currency required to purchase one unit of the foreign currency (the "price" of the foreign currency rises).

Such market-determined changes in the relative values of national currencies would automatically prevent the appearance of balance-of-payments deficits and surpluses. This is because the exchange rate would adjust until the amount demanded for a currency equalled the amount supplied, with no central bank becoming a net absorber or supplier in foreign exchange markets. For example, as a country's currency declines in value relative to other currencies, the prices of foreign goods in terms of that nation's currency rise. Consequently, imports tend to decline. At the same time, prices of the country's goods in terms of foreign currencies fall, thus tending to increase exports.[5] Hence, the nation's imports fall and its exports rise, thereby reducing (and ultimately eliminating) the downward pressure on the currency.[6]

Since balance-of-payments deficits and surpluses would not emerge under a "cleanly floating" exchange rate system, accumulation of international reserves to settle balance-of-payments deficits would be unnecessary and the level and growth of international reserves unimportant.[7] However, exchange rates are seldom allowed to "float cleanly".

## *Under "Managed" Floating Exchange Rates*

Since the early 1970s an increasing number of countries have allowed the international values of their domestic currencies to be determined, to varying extent, by the supply and demand conditions prevailing in foreign exchange markets. Central banks, however, often intervene in foreign exchange markets to smooth day-to-day changes in the relative values of their currencies.[8] Government intervention occurs when a central bank either buys or sells its national currency in foreign exchange markets for the *sole* purpose of influencing its currency's relative

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[4]The balance of payments is defined here as the sum of all international transactions *excluding* those of monetary authorities. For an explanation of the current and capital accounts, see Donald S. Kemp, "Balance-of-Payments Concepts — What Do They Really Mean?" this *Review* (July 1975), pp. 17-21.

[5]For example, suppose the current value of one British pound is two U.S. dollars. Goods priced at two dollars in the U.S. would be priced at one pound in the United Kingdom (ignoring transport costs, tariffs, etc.). If the U.K. imports more from the U.S. than it exports to the U.S., the dollar value of the pound will decline. This results from an increased demand for U.S. dollars in the foreign exchange market. As British importers increase their demand for U.S. dollars, the "price" of the dollar in terms of pounds will rise — i.e., the number of dollars which can be "purchased" for one pound will fall. Suppose the value of one pound declines to one dollar. The goods priced at two dollars in the U.S. are now priced at two pounds in the U.K. Conversely, goods priced at one pound in the U.K. would have been initially priced at two dollars in the U.S. After the decline in the pound's relative value, the price of such goods in the U.S. would have declined to one dollar.

[6]As the downward pressure on the currency abates, investors become more willing to invest in that country. Thus, capital movements also help to stabilize the exchange rate.

[7]For example, see Raymond F. Mikesell and Henry N. Goldstein, "Rules for a Floating-Rate Regime," *Essays in International Finance*, no. 109 (Princeton: Princeton University, April 1975), p. 15. They also indicate that, even under a floating rate system, nations might continue to maintain balances of reserve assets.

[8]Because of leads and lags in the adjustment of trade patterns (and possibly capital flows) to changes in exchange rates, an economy in disequilibrium would oscillate back toward an equilibrium position. These oscillations, if not smoothed, would entail avoidable costs in terms of resource use. However, private sector speculation could provide these smoothing effects as well as, and possibly better than, government intervention. See Milton Friedman, "The Case for Flexible Exchange Rates," in *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), pp. 157-203, and Geoffrey E. Wood, "The Witteveen Facility," *IMF Supplementary Financing Facility*, U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, 95th Cong., 1st sess., October 13, 1977, pp. 76-79.

value.[9] To the extent that central banks intervene in foreign exchange markets, both the level and growth of international reserves remain important.

Prolonged one-way government intervention results in the relative values of various currencies being different from the values which would result if exchange rates were allowed to "float cleanly". Since relative currency values are thereby prevented from fully adjusting to changes in international capital flows and in importers' demand for, and exporters' supply of, foreign currencies, balance-of-payments deficits and surpluses still persist. The persistence of a balance-of-payments deficit implies that the deficit country's central bank is purchasing its domestic currency with reserve assets (that is, foreign currencies) in foreign exchange markets.[10] This course of action reduces the supply of a deficit country's currency in foreign exchange markets. The "price" of the currency in terms of other currencies is thereby prevented from declining sufficiently to reduce the deficit. Such purchases can continue only so long as the deficit country's holdings of international reserves do not run out (or so long as they can be supplemented by borrowing).

Thus, under the current "managed floating" exchange rate system, balance-of-payments deficits can be responded to by a combination of reserve flows and exchange rate changes. To the extent that a deficit country chooses to "support" its currency (that is, prevent its currency's relative value from declining sufficiently to fully correct the deficit), balance-of-payments deficits are financed (but *not corrected*) by outflows of reserves.

## *Transition from Fixed to Floating Exchange Rates*

Under the system of fixed exchange rates, which existed prior to the early 1970s, the values of many currencies were fixed in terms of either the U.S. dollar or the British pound sterling.[11] The values of the dollar and sterling, in turn, were fixed in terms of gold. Since the U.S. and U.K. governments guaranteed other central banks that dollars and sterling could be converted into gold, central banks in general regarded their dollar and sterling balances as being "as good as gold". Thus, dollar and sterling balances were used to supplement gold as international reserves.

The supply of international reserves, for the most part, depended upon continuing U.S. balance-of-payments deficits. The United States bought foreign goods and capital assets with dollars, which were then accumulated by foreign central banks. These dollar balances were subsequently used by various foreign central banks to finance their own balance-of-payments deficits. The world supply of international reserves was thus largely dependent upon the domestic economic policies of the United States. Reductions in the U.S. deficit would ". . . dry up the largest source of additions to reserves."[12]

While other central banks were willing to accept dollars as reserve assets, foreign holdings of dollars could not expand sufficiently to satisfy foreign central banks' demand for reserves without a continuous U.S. balance-of-payments deficit. The United States could not continue running balance-of-payments deficits, however, without casting doubt upon the ability of the U.S. Government to maintain the fixed relative value of the dollar.[13] This would ultimately reduce confidence in the dollar as an international reserve asset.

The elimination of the U.S. deficit and a corresponding reduction in the growth of international reserves during the last half of the 1960s led to increasing uncertainty as to how future increases in the demand for reserves could be satisfied. It was against this background that the International Monetary Fund (IMF) member countries decided to create an international reserve asset.[14] The supply of, and con-

[9]Such intervention can be difficult to identify. For example, if a national government purchases military equipment abroad or makes a payment under a foreign aid program, supply and demand conditions in the foreign exchange market will change. These are not interventionist policy actions, unless they are timed to affect the exchange rate.

[10]The size of the current U.S. balance-of-trade deficit is due in part to the purchase of U.S. dollars by foreign central banks. In effect, other central banks' intervention in foreign exchange markets prevents the dollar's foreign exchange value from declining sufficiently to discourage U.S. imports and encourage U.S. exports.

[11]By August 13, 1971, only 5 of the 118 International Monetary Fund member countries had notified the Fund that their currencies were "floating". The major "floating" currencies at that time were the Canadian dollar, German mark, and Dutch guilder.

[12]Margaret Garritsen de Vries, *The International Monetary Fund 1966-1971*, vol. I (Washington, D.C.: International Monetary Fund, 1976), p. 26.

[13]For an extended discussion of this analysis, see Robert Triffin, *Gold and the Dollar Crisis* (New Haven: Yale University Press, 1960), and John Williamson, "International Liquidity: A Survey," *Economic Journal* (September 1973), pp. 685-739, especially pp. 735-38.

[14]The IMF is an international institution among whose purposes are to "promote international monetary cooperation . . . facilitate the expansion and balanced growth of international trade . . . shorten the duration and lessen the degree of disequilibrium in the international balances of payments

fidence in, this new asset would be independent of any one country's domestic economic policies.

## ROLE OF SDRs

The new type of reserve asset which was created to help improve the functioning of the international payments system was the Special Drawing Right, which came into existence in 1969.[15] SDRs were created as bookkeeping entries and were essentially given to all IMF member countries electing to receive them. These bookkeeping entries were designed to be transferred directly between central banks in settlement of balance-of-payments deficits, with the IMF guaranteeing their value in terms of a fixed amount of gold. Actual holders of SDRs have included only the central banks and Treasuries of IMF member countries which have agreed to accept them, and the IMF itself. Private institutions (such as commercial banks) and individuals (such as importers and exporters) cannot hold SDRs.

### *SDR as a Reserve Asset*

International transactions were being conducted within a system of generally fixed exchange rates at the time the SDR facility was established. The SDR was created to provide an alternative source for meeting increases in the demand for reserves. By allocating SDRs, the world supply of reserves could be augmented while the U.S. balance-of-payments deficit could be corrected. Elimination of the U.S. deficit would ensure confidence that the prevailing foreign currency value of the dollar could be maintained. The fixed exchange rate system could thus be preserved, with the SDR becoming the main reserve asset.

With changes in the supply of SDRs requiring the approval of 85 percent of nearly all IMF member countries' voting power, the supply of reserves could be placed under multinational control.[16] Since the total supply of reserves would be largely independent of any one country's policy decisions, excessive increases in reserves and the resultant inflationary pressures could, it was hoped, be avoided.[17]

The accomplishment of these objectives depended upon the SDR significantly reducing the importance of both gold and the U.S. dollar as reserve assets. If, on the other hand, central banks' holdings of SDRs did not comprise the bulk of reserve assets, significant changes in total reserves could not be accomplished by changing the supply of SDRs.

The large U.S. balance-of-payments deficits in the early 1970s, however, rendered the purposes for which SDRs were created irrelevant. The huge amounts of dollars accumulated by foreign central banks resulted in a significant reduction in confidence in the ability of the U.S. to maintain the fixed value of the dollar. As central banks' willingness to hold dollars as reserve assets declined, they attempted to purchase other currencies and gold with dollars. The resulting large increases in the supply of dollars in foreign exchange markets brought the entire structure of fixed exchange rates under increasing pressure and eventually became a major factor in the movement toward a system of relatively flexible exchange rates.[18]

### *Quantitative Effects of SDRs on International Reserves*

Although the SDR has become generally accepted as an international reserve asset, the quantitative impact of SDRs upon total international reserves has been relatively minor. Following their initial allocation in 1970, SDRs accounted for about 3 percent of total international reserves; following the second and third allocations in 1971 and 1972, SDRs accounted for about 5 percent and 6 percent, respectively, of total world reserves.[19] Since no further allocations of

of members." See IMF *Survey*, Supplement on the Fund (Fall 1976), p. 1.

[15]A detailed account of the evolution of SDRs is presented by de Vries, *International Monetary Fund 1966-1971*, pp. 11-250. Also see Martin Barrett, "Activation of the Special Drawing Rights Facility in the IMF," Federal Reserve Bank of New York *Monthly Review* (February 1970), pp. 40-46.

[16]Only those members participating in the SDR scheme can vote on allocations and cancellations of SDRs. As of April 30, 1977, only eight of the 130 IMF member countries were *not* participating in the SDR facility. The 14 participating countries classified as "industrialized" held about 60 percent of total votes, with the U.S. alone holding 21 percent.

[17]For a discussion of the inflationary impact of reserve growth during the early 1970s, see David I. Fand, "World Reserves and World Inflation," Banca Nazionale del Lavoro *Quarterly Review* (December 1975), pp. 347-69.

[18]For an analysis of the collapse of the fixed exchange rate system, see John Williamson, *The Failure of World Monetary Reform, 1971-74* (London: Thomas Nelson and Sons Ltd., 1977), pp. 1-52.

[19]SDRs were allocated, to those IMF member countries which elected to receive them, in proportion to the size of each country's quota. Upon becoming a member of the IMF, a country must agree upon the size of its quota. Twenty-five percent of the quota is deposited in the form of an international reserve asset (usually gold or U.S. dollars). The remaining 75 percent is deposited in the form of the country's domestic currency. These quotas then form a pool of IMF members' currencies from which one member can borrow another member's currency. The specific SDR allocations were: SDR 3.41 billion on January 1, 1970 (each participant received 16.8 percent of its quota), SDR 2.95

SDRs have been made since 1972, the total amount of SDRs in existence has remained at 9.31 billion. As total international reserves have risen continuously since 1972, the proportion accounted for by SDRs has progressively declined, representing only about 4 percent of the total during 1976.

SDRs were allocated (with the intention of increasing the amount of international reserves) during a period in which total international reserves, particularly the foreign currency component, were rising very rapidly. During the same three-year period in which SDRs were allocated (1970-72), the United States ran substantial balance-of-payments deficits. Foreign central banks accumulated large amounts of dollars, further increasing their holdings of international reserves. The foreign exchange component of international reserves (primarily dollars) more than doubled over the 1970-72 period, as total world reserves rose by more than 50 percent. Thus, foreign currency holdings have become the largest component of international reserve balances, and the SDR has never assumed the role of main reserve asset that was envisaged for it.

## *SDR as a Unit of Account*

In recent years, the SDR has been increasingly used as an international unit of account. The SDR has been chosen, or is under consideration, as the reference value for establishing prices of certain internationally purchased services (air fares and canal tolls). Proposals for pricing internationally traded basic commodities, such as petroleum, in terms of SDRs have also been made as a result of the variability of the U.S. dollar's value in foreign exchange markets.

The "basket" method currently used by the IMF to establish the value of the SDR is the reason for its use as a unit of account in transactions not involving the IMF.[20] Since mid-1974, the daily value of the SDR has been computed as a weighted average of the U.S. dollar values of sixteen currencies.[21]

The value of the SDR in terms of any one currency has normally fluctuated less than the exchange rate between specific currencies. During the two years ending November 1977, for example, month-to-month changes in the dollar value of the SDR remained within a band of 2 percentage points. In contrast, the U.S. dollar values of the Canadian dollar, German mark, Japanese yen, and pound sterling fluctuated within bands of about 5.5 percent, 5 percent, 6 percent, and 8 percent, respectively. This relative stability of the value of the SDR, as compared to the dollar, makes it an attractive alternative to the dollar as a basis for pricing internationally traded goods and services during periods in which the relative value of the dollar is falling (or is volatile).

Pricing basic commodities in terms of SDRs, rather than in terms of the U.S. dollar, can be one way for countries exporting such commodities to reduce fluctuations in the over-all value of their export earnings. Denominating the prices of exported commodities (such as oil) in terms of SDRs rather than dollars would restrain the decline in the value of export revenues in terms of a currency other than the dollar when the dollar's value in foreign exchange markets is declining. (On the other hand, a link between the SDR's dollar value and the prices of exported commodities would also moderate a rise in the value of export revenues in terms of a currency other than the dollar during periods in which the dollar's foreign exchange value is rising.) However, since SDRs cannot be used as a means of payment between traders, conversion of a price denominated in SDRs into a currency-equivalent price would be necessary before payment could be made.

## *SDR-Foreign Aid Link Proposal*

Proposals for linking foreign aid to SDR creation are designed to provide financial assistance to developing countries.[22] The essence of such proposals is that the IMF allocate significant amounts of SDRs to developing countries. These countries could then use SDRs to finance balance-of-payments deficits arising from the large volume of imports (capital goods, for example) required by their various development programs. The effect of an SDR-development assistance link would ultimately be to transfer resources (that is,

billion in 1971 (10.7 percent of quotas), and SDR 2.95 billion in 1972 (10.7 percent of quotas). The U.S. received a cumulative allocation of SDR 2.3 billion, about 25 percent of the total allocated.

[20]Transactions involving the IMF are denominated in SDRs.

[21]Prior to July 1, 1974, the value of the SDR had been fixed at 0.888671 gram of fine gold. Under the current method of valuing the SDR in terms of a "currency basket," the U.S. dollar, German mark, British pound sterling, and Japanese yen receive a combined weight of over 60 percent. For an example of the actual calculation of the U.S. dollar value of one SDR, see IMF *Survey*, July 8, 1974, pp. 209, 213-14.

[22]For a recent discussion of the link proposal, see Committee on Reform of the International Monetary System and Related Issues, "Report of Technical Group on the SDR/Aid Link and Related Proposals," *International Monetary Reform* (Washington, D.C.: International Monetary Fund, 1974), pp. 95-111.

goods and services) from the industrial nations to the developing countries. It is therefore unlikely to be accepted so long as the industrial countries resist increasing direct resource transfers to the developing nations.

## SUMMARY

The trend toward a system of "managed floating" exchange rates has limited the SDR's importance as a reserve asset. The SDR was created under a system of generally fixed exchange rates and was designed to function under that system. Under the fixed exchange rate system, balance-of-payments deficits were settled by flows of reserve assets between central banks. As the system of floating exchange rates has evolved, the role of official international reserves in general has changed. The primary use of international reserves under a "managed floating" exchange rate system is in central banks' foreign exchange market intervention policies. Since SDRs cannot be held by commercial banks and traders (the major nongovernment foreign exchange market participants), central banks cannot directly use SDRs to influence exchange rates. Rather, SDRs must be converted, usually with IMF guidance, into an internationally acceptable currency before being used to affect exchange rate movements.

However, a proposed amendment to the IMF's Articles of Agreement is designed, in part, to strengthen the SDR as a reserve asset. Basically, the amendment would allow a wider range of holders of SDRs and more freedom in their use of SDRs. This could be a first step toward achieving the IMF's objective of ". . . making the SDR the principal reserve asset in the international monetary system."[23]

Because it is valued in terms of a "basket" of currencies, the SDR has gained some importance as a unit of account for international transactions. The value of privately arranged international bank deposits, loans, bond issues, and sales of goods and services can be linked to fluctuations in the SDR's relative value. The current use of the SDR as a unit of account in privately arranged international transactions is, however, quite limited.[24]

Although it has gained some attention as an international unit of account, the SDR's role in international transactions remains minor. So long as the world maintains a "managed floating" system of exchange rates, there should be no desire for international reserve growth on the scale the SDR was intended to provide.

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[23]IMF *Survey* (Fall 1976), p. 8.

[24]For discussions of the SDR's limitations as an index for valuing international transactions, see C. Frederic Wiegold, "SDR in 2 Years Has Failed to Win Acceptance As a Cushion Against Exchange Fluctuations," *American Banker*, September 14, 1977, pp. 1, 22, and Gerald Kramer, "What are SDR's?" *Columbia Journal of World Business* (Fall 1976), pp. 53-59.

# Outlook for Food and Agriculture

CLIFTON B. LUTTRELL and NEIL A. STEVENS

THE nation's food and agricultural situation in 1978 is predicted to be one of larger food production, a somewhat slower rate of food price increase, and about the same net farm income as in 1977. The increase in food output will result from the relatively large crops of grains, oilseeds, and sugar harvested last year, coupled with larger beginning stocks than a year ago. The rising supply of grain and other feedstuffs has led to lower feed prices which, in turn, have increased the spread between feed costs and livestock prices, and provided incentive to increase output of livestock products.[1]

## PRODUCTION AND COSTS OF FOOD

Large supplies of both crop and livestock derived foods are the dominant features in the outlook for food in 1978. Three consecutive years of high farm production of the major food and feed grain crops imply a larger volume of most food products and more moderate price increases in 1978 than in 1977. The costs of food processing and marketing services — costs such as energy, packaging materials, labor, retailing, and transportation — will continue to rise, but the average price for food products at the farm is expected to remain about the same or be less than last year. Rising demand for food will continue to create upward pressure on food prices, but the increases are expected to be relatively moderate. Grocery store food prices are expected to average 4 to 6 percent more in 1978 than in 1977, which is slightly less than the increase reported for last year.

Given rising demand and a small increase in the quantity supplied, there will be a modest increase in per capita consumption of food this year as compared with a slight decline last year (see Table I). Per capita consumption of meats is expected to remain about the same or slightly greater than last year. On the other hand, some increase in per capita consumption of crop food is anticipated, especially in consumption of vegetables and noncitrus fruits, as a result of the generally larger crops.

Table I

FOOD EXPENDITURES AND CONSUMPTION

| Year | Percent of Disposable Income Spent on Food[1] | Per Capita Food Consumption (Index 1967 = 100) Animal Products | Crop Products | Total Food |
|---|---|---|---|---|
| 1960 | 20.2% | N.A. | N.A. | N.A. |
| 1970 | 17.3 | 102.3 | 103.0 | 102.7 |
| 1971 | 16.4 | 103.9 | 103.0 | 103.6 |
| 1972 | 16.3 | 103.7 | 104.4 | 104.1 |
| 1973 | 16.3 | 99.3 | 105.7 | 102.2 |
| 1974 | 17.0 | 102.0 | 103.6 | 102.8 |
| 1975 | 17.0 | 100.1 | 104.5 | 102.1 |
| 1976 | 16.8 | 104.1 | 107.2 | 105.5 |
| 1977[2] | 16.7 | 104.1 | 106.2 | 105.1 |

N.A. Not available.

[1]Total food consumption, excluding alcoholic beverages.

[2]Forecast.

Source: USDA, *National Food Situation* (September 1977); Agricultural Outlook (November 1977).

Some further decline in the proportion of income spent on food is likely to occur in 1978. Last year the share of income spent on food declined slightly, to 16.7 percent, from 16.8 percent in 1976 and 17.0 percent in 1975.

In many respects, the outlook for food prices this year is similar to that of a year ago. Large production of most crops in 1976 and the prospect for an increase in livestock production were expected to keep increases in retail food prices well below the increase in overall consumer prices in 1977. This prospect was upset in the first half of 1977 by the severe winter freeze in the vegetable and citrus growing areas, and by the unusually large price increases for coffee and other imported foods. As a result, retail food prices increased at a 12 percent annual rate from the fourth quarter of 1976 to the second quarter of 1977, compared with a 7 percent rate for prices of consumer items other than food.

[1]These and other projections made by the United States Department of Agriculture (USDA) at the National Agricultural Outlook Conference last November are summarized in this report. This Conference, sponsored by the United States Department of Agriculture, is held annually near the end of the year, to disseminate the latest domestic and international developments in agriculture and food.

Some of the factors which boosted retail food prices in the first half of 1977 began to disappear in the second half of the year. Supplies of fresh vegetables returned to normal in late spring, and prices began to fall. Coffee prices also began to decline at mid-year as the prospect for increased coffee supplies brightened. With declines in the price of coffee and vegetables, average retail food prices increased at a 4 percent rate from the second to the fourth quarter of 1977, while consumer items other than food continued up at a 6 percent rate.

## *Larger Supply of Crop Foods*

Relatively large cereal, fruit, and vegetable crops in 1977 provide the basis for large supplies of crop foods through much of 1978. Total U.S. crop production was about 4 percent higher in 1977 than 1976 and 17 percent above the poor harvest in 1974. With large stocks of many crops carried over from the 1976 marketing year, stocks available for consumption in 1978 are well above levels in other recent years.[2]

***Cereal and Bakery Foods*** — Production of the major cereal crops of wheat and rice was down somewhat last year, but higher beginning stocks boosted the amount available in the current marketing year to 10 percent above a year earlier. The stock of rice is down somewhat, but it is still the second largest on record. Nevertheless, the export demand for these crops has been rising in recent months, and in early December, prices for both were well above a year ago. Hence, somewhat higher cereal food costs are in prospect. Upward pressure on retail prices of cereal and bakery goods will also result both from increased processing and marketing costs, and the higher grain prices.

***Vegetables*** — Processed vegetable stocks are up somewhat this year; raw tonnage of 7 major vegetable crops in 1977 rose by 18 percent from 1976, with tomatoes and sweet corn showing the largest increases. However, carryover stocks of processed vegetables fell more than usual as a result of the freeze last year, and the total stocks of canned vegetables are up only about 2 to 4 percent this year while stocks of frozen vegetables are down about one percent.

Vegetables grown primarily for fresh consumption in 1977 were nearly equal to the 1976 level, but the seasonal variation in the availability of supplies was greater than usual. As a result of last winter's freeze, fresh vegetable prices at the retail level rose 30 percent above a year earlier in the first quarter of last year, then fell to only 8 percent above the year earlier level by the third quarter. Assuming normal growing conditions for this winter's vegetable crop, prices will probably average considerably below that of the first half of 1977. Potato supplies are relatively large. Last year's fall harvest was only one percent below the 1976 record crop. Average prices of potatoes during the winter are expected to be about the same as a year earlier.

***Fruits*** — Smaller supplies of fruits, along with strong demand, point toward higher average prices than last year. The citrus crop is currently expected to be 6 percent below a year ago, due to the effects of last winter's freeze on the Florida orange crop. The supplies of frozen orange juice concentrates may be only moderately below that of last year, however, as the juice yield is expected to return to near normal this year from last year's very low level.

The supply of noncitrus fruit is slightly above the year ago level. The 1977 crop was about the same as a year earlier. The canned supply will also be about the same as last year. The supply of *frozen* noncitrus fruits will be up moderately, as cold storage stocks at the beginning of this season were one-fifth larger than a year ago, and the frozen stocks of apples, cherries, and strawberries are up sharply from levels of a year ago.

***Fats and Oil*** — Fats and oil supplies will be up in 1978 due to the larger U.S. soybean crop and high production of other sources of oils, such as palm, cottonseed, and sunflower seeds. Soybean oil prices in early December, however, were about 10 percent above year ago levels, well above USDA expectations. As a result, oil prices for the year probably will average well above the 18 cents per pound USDA estimate.

***Sugar*** — Sugar supplies for 1978 were boosted by another relatively large crop both in the U.S. and abroad. World sugar production was up 3 percent in 1977, or about 4 million metric tons greater than estimated consumption, and a further buildup in world stocks is expected in 1978. The rising world sugar production and the consequent decline in the world price have led to considerable pressure from domestic producers for the Government to support domestic sugar prices at higher than world price levels. The Food and Agricultural Act of 1977 calls for the support of sugar

[2]Marketing year begins June 1 for wheat, barley, and oats; August 1 for rice; and October 1 for corn and sorghum grain.

prices at 52.5 percent of parity, but not less than 13.5 cents per pound.[3] The support price is expected to result in a rise in domestic raw sugar prices by about 2 to 2½ cents per pound. As a result, wholesale and retail sugar prices are expected to increase this year despite the relatively large supplies, and sugar consumption is expected to decline somewhat.

***Beverages*** — Coffee prices have declined in recent months in contrast to the sharp increases in 1976 and the first half of 1977. Increases in world coffee production with, perhaps, little change in demand is expected to lead to a further decline in coffee prices in 1978. As a result of the earlier increase in coffee prices, U.S. coffee consumption fell from over 3 pounds per person per quarter in early 1976 to less than 2 pounds per person in the third quarter of last year.

### *Increased Output of Livestock Products*

***Meats*** — Total meat production, consisting primarily of beef, pork, and poultry products, is expected to increase more than 2 percent in the first half of 1978 from a year earlier. This gain is expected to come from substantial gains in pork and poultry production. The expected trough in the number of cattle, however, will result in less slaughter of cows and calves and a smaller total output of beef. The output of very high quality (grain fed) beef will be up somewhat.

Upward pressure on retail beef prices resulting from the reduced supplies will be substantially offset by increased supplies and somewhat lower prices for pork and poultry. The price for hamburger meat, however, is expected to average somewhat higher than last year relative to other meat prices, since a decline in the slaughter of cows and grass fed beef would reduce considerably the amount of beef normally processed into hamburger.

***Milk and Eggs*** — Milk production in the first half of 1978 is expected to be higher than in the first half of 1977, perhaps as much as 3 percent. Despite increased dairy output, however, the 1978 retail prices of dairy products will average 5 to 6 percent above last year as a result of higher Government price supports. Egg production in the first half of the year is expected to be up about 2 percent from a year ago. This represents little change in production per person. During the first half of the year, however, prices to consumers are expected to remain below the levels of a year ago, as per capita consumption of eggs has fallen steadily for several decades.

[3]Parity is the relationship between farmers' current purchasing power and their purchasing power during a selected base period.

## OUTLOOK FOR AGRICULTURE

Little or no change in net farm income is projected for 1978. This is based on the relatively larger quantities and somewhat lower average prices for crops, larger government payments to producers, and some increase in livestock and livestock product sales leading to a somewhat larger gross income. Production expenses, however, will continue to rise and about offset the increase in gross incomes.

Realized net farm income rose sharply from $13.2 billion in 1971 to a record $29.9 billion in 1973 (Table II). During this period, competition for United States farm products was enhanced by a sharp increase in export demand and larger Government food subsidies to lower income groups. In addition, a number of supply restricting factors, such as wage-price controls, environmental regulations, and unfavorable weather, contributed to a rapid increase in farm prices and higher farm incomes. Farmers, however, soon responded to the higher prices by increasing production, which depressed prices to the point where farm incomes declined to $20.8 billion in 1975, and have held near that level since then. On a per farm basis, nominal income declined to an estimated $7,391 in 1977, the lowest since 1972.

Table II

REALIZED NET FARM INCOME

| Year | Total | Per Farm | Real Net Income Per Farm[1] |
|---|---|---|---|
| 1950 | $12,836 | $ 2,273 | $2,273 |
| 1955 | 11,090 | 2,383 | 2,142 |
| 1960 | 11,121 | 2,806 | 2,281 |
| 1965 | 11,857 | 3,533 | 2,696 |
| 1970 | 14,145 | 4,797 | 2,974 |
| 1971 | 13,236 | 4,561 | 2,709 |
| 1972 | 17,804 | 6,225 | 3,579 |
| 1973 | 29,943 | 10,607 | 5,749 |
| 1974 | 27,741 | 9,925 | 4,843 |
| 1975 | 20,810 | 7,521 | 3,362 |
| 1976 | 21,908 | 8,001 | 3,384 |
| 1977[2] | 20,000 | 7,391 | 2,934 |
| 1978[2] | 20,000 | 7,463 | N.A. |

N.A. Not available.

[1]Based on 1950 dollars using consumer price index.

[2]Projected.

Source: USDA, *Farm Income Statistics* (July 1977), *Outlook 78*, "World and U.S. Agricultural Outlook," and *Farm Numbers* (December 29, 1977).

Table III

DISPOSABLE PERSONAL INCOME
OF FARM AND NONFARM POPULATION

| Year | Per Capita Income from All Sources: Farm Population[1] | Per Capita Income from All Sources: Nonfarm Population | Farm as Percent of Nonfarm |
|---|---|---|---|
| 1950 | $ 840 | $1,447 | 58.1% |
| 1955 | 848 | 1,759 | 48.2 |
| 1960 | 1,086 | 2,014 | 53.9 |
| 1965 | 1,692 | 2,480 | 68.2 |
| 1970 | 2,510 | 3,390 | 74.0 |
| 1971 | 2,710 | 3,629 | 74.7 |
| 1972 | 3,223 | 3,866 | 83.4 |
| 1973 | 4,665 | 4,267 | 109.3 |
| 1974 | 4,308 | 4,662 | 92.4 |
| 1975 | 4,492 | 5,103 | 88.0 |
| 1976 | 4,518 | 5,552 | 81.4 |

[1]Includes all income received from farm and nonfarm sources, such as wages, salaries, professional income, rents from nonfarm real estate, dividends, interest, royalties, unemployment compensation, and Social Security payments.

Source: USDA, *Farm Income Statistics* (July 1977).

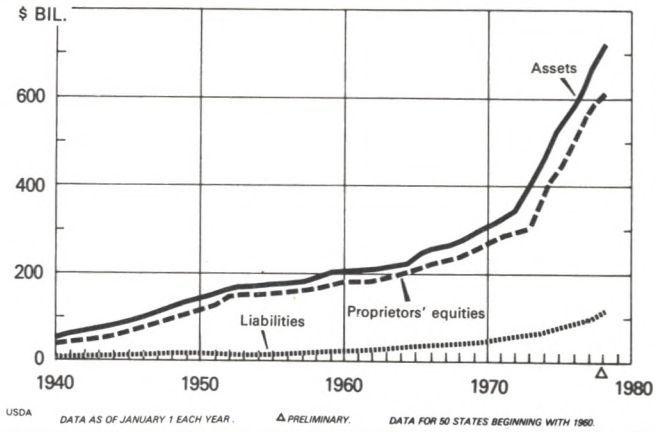
The disposable personal income of the farm population has moved in similar fashion to that of farm net income, rising sharply in 1972 and 1973, but declining since 1973 (Table III). Last year the disposable personal income per capita of the farm population was about 81 percent of that of the nonfarm population, slightly less than in 1972, but well above the average of earlier years.

The projection of somewhat lower average prices for crops in the current marketing year (1977-78) is based on the relatively large supply of most major crops. The relatively large current supply and the lower prices for those crops used for feed is expected to contribute to a rising output of livestock products later in the year. While domestic demand for farm products is expected to continue to rise, export demand will probably be down despite some recent improvement in prospects for Soviet grain purchases. The decline is the result of generally good harvests in Western Europe. The total volume of exports will probably equal that of 1976-77, but the value is expected to decline by 5 to 10 percent.

## *Farm Finance*

Despite the decline in net farm incomes since 1973, the financial situation of farmers remains relatively strong. Proprietors' equities (value of land, buildings, and other assets less debt) have continued to increase and are expected to rise another 6 percent this year

BALANCE SHEET OF THE FARMING SECTOR




(see accompanying chart). Equities have more than doubled since 1970, rising from $262 billion to an estimated $611 billion at the beginning of this year. However, debt to asset ratios have begun to increase.

Total farm assets are expected to increase about 7 percent this year. Since 1970, farm assets increased from $315 billion to $730 billion, a rate of 11.1 percent per year, about the same rate of increase as farm equities.

Farm debt is expected to rise about 12 percent this year to a total of $133 billion at year's end. From January 1970 to January 1977 farm debt rose at a somewhat slower rate than the value of farm assets, 9.8 percent, compared with 11.4 percent, respectively. Consequently, debt to asset ratios declined. Last year (1977), however, debt to asset ratios began to increase as debt rose 16 percent, compared with a 9 percent increase in assets, and this year debt is again expected to rise faster than assets, further increasing the ratio. Farm debt is expected to total 17 percent of assets at the close of the year, compared with 16.3 percent at the beginning, and 15.2 percent at the beginning of 1977. The ratio of farm debt to assets was 18.9 percent in 1940, but it declined sharply during World War II and totaled only 9.2 percent of assets in 1950. It rose to 11.8 percent in 1960, and to 16.8 percent in 1970.

While the prospective 1979 debt to asset ratio of farm proprietors will not reach the relatively high pre-World War II levels, the rising debt to asset ratios, and a leveling off of net farm incomes and cash flow points to a decline in the debt paying ability of farm borrowers. Consequently, commercial banks and other lenders to farmers may realize rising delinquencies among such borrowers in 1978 and in future years.

Table IV

CROP PRODUCTION AND QUANTITIES AVAILABLE DURING MARKETING YEAR

| Crop | 1975-76 Production | 1975-76 Total Supply[1] | 1976-77 Production | 1976-77 Total Supply[1] | 1977-78 Production | 1977-78 Total Supply[1] |
|---|---|---|---|---|---|---|
| Feed Grains (million short tons) | 203.3 | 220.6 | 212.4 | 231.7 | 221.9 | 255.1 |
| Corn (million bushels) | 5,797 | 6,156 | 6,216 | 6,614 | 6,367 | 7,246 |
| Oats (million bushels) | 658 | 882 | 562 | 770 | 759 | 927 |
| Sorghum grain (million bushels) | 760 | 795 | 724 | 776 | 779 | 870 |
| Barley (million bushels) | 384 | 476 | 377 | 506 | 405 | 531 |
| Wheat (million bushels) | 2,135 | 2,572 | 2,147 | 2,814 | 2,027 | 3,140 |
| Rice (million hundredweight) | 128 | 135.1 | 117 | 153.9 | 99.1 | 138.8 |
| Soybeans (million bushels) | 1,546.1 | 1,731.1 | 1,264.9 | 1,509.5 | 1,716.3 | 1,819 |
| Cotton (million bales) | 8.3 | 14.1 | 10.6 | 14.3 | 14.4 | 17.4 |
| Burley Tobacco (million pounds) | 638 | 1,733 | 664 | 1,830 | 651 | 1,865 |
| Flue-cured Tobacco (million pounds) | 1,415 | 3,067 | 1,316 | 3,214 | 1,119 | 3,185 |

[1]Total supply equals production plus beginning stocks.

Source: U.S. Department of Agriculture.

## *Crops*

Large supplies of most crops are available as a result of record corn and soybean crops in 1977 and a relatively large wheat crop — only 6% below the 1976 record crop (Table IV). The cotton crop of 14.4 million bales was the largest since 1972.

## *Feed Grains*

Feed grain production rose by about 4 percent in 1977, reflecting the record corn crop of 6.4 billion bushels, compared with 6.2 billion in 1976.[4] In addition to the larger feed grain crop last year, carryover stocks have been increasing from the relatively low levels of early 1975-76, when only 16.8 million short tons or 8 percent of production was carried over from the preceding marketing year.[5] At the beginning of this year stocks of feed grain totaled 32.9 million tons. When these stocks are added to the 1977 crop, 255 million tons are available for domestic use and export in the 1977/78 marketing year.

The demand for feed grains is affected both by incentives for domestic feeding of livestock and by export demand. Domestic use of feed grains for feeding purposes is expected to total 131 million tons — up about 6 percent this year from the relatively low level of last year. Domestic feeding dropped sharply with the relatively high feed prices in 1974 and has remained relatively low since then. Hence, the 123 million short tons fed in 1976-77 was well below the average amount of grain fed during the years from 1965 through 1974, and the 131 million ton estimate this year is still well below the 153 million tons fed in 1973-74.

Export demand for feed grain continues at a relatively high level compared with most recent years. Exports in the current year are expected to total 55.5 million short tons, about the same as in each of the past 2 years. Foreign sales of these crops have risen from an insignificant amount prior to World War II to become a major component of total United States farm exports. Exports of feed grain accounted for more than one-fourth of production last year and are expected to about equal that level this year. The value of feed grain exports totaled $4.8 billion in 1975, almost one-fourth the value of total United States farm exports and about 5 percent of total United States exports of all commodities.

Feed grain prices in late November averaged about 5 percent below levels of a year earlier. The decline in prices received by many farmers, however, was more than 5 percent during the harvest season since storage facilities were not available in some localities and farmers could not take advantage of the price support loans. Nevertheless, an average farm price of about $2.10 per bushel is projected for corn this season, which is somewhat below the 1976-77 average of $2.20 per bushel.

[4]In 1976 corn accounted for 82 percent of all feed grain production; oats for 4.2 percent; barley for 4.3 percent; and sorghum grain for 9.5 percent.

[5]Marketing year begins October 1 for corn and sorghum, and June 1 for barley and oats.

## Food Grain

With the largest June carryover of wheat since 1963, coupled with a near record 1977 crop, more than 3 billion bushels is available for domestic use and export in the current marketing year. This is a record — more than 10 percent above that available a year ago. The 1977 crop was the third crop in succession in excess of 2 billion bushels. Production in the 3 years 1972-74 averaged only 1.7 billion bushels.

The demand for wheat reflects its use for both food and livestock feed. When wheat prices decline to near feed grain prices, wheat is used as a substitute for feed grain in livestock rations. Hence, with the large stock and relatively low price immediately following the 1976 harvest, wheat feeding rose sharply to 150 million bushels during the June-September months. But, last summer feed grain prices fell sharply and wheat prices rose. Consequently, the feeding of wheat to livestock slowed. Wheat feeding for the year is expected to total only about 220 million bushels. Domestic use of wheat for food is projected at 558 million bushels, about one percent more than last year, and exports at 1,100 million bushels, about 10 percent more than a year ago. Most of the projected increase in exports is the result of unfavorable wheat crop developments in the Soviet Union, Argentina, and Canada. Canada's wheat crop fell by about 20 percent, Argentina's by about 40 percent, and the U.S.S.R.'s by about 7 percent from the previous year.

Wheat prices declined last summer to their lowest level since 1973, but as the world crop prospects worsened and large quantities began to move into the Government loan program the price began to rise. By December, wheat prices were about $0.50 per bushel above the summer low.[6] The loan rate on wheat is $2.25 per bushel, which will provide a floor on wheat prices.

The rice crop was 15 percent less last year than in 1976. Beginning stocks were up somewhat this year, but the total supply of 139 million cwt. is about 10 percent less than a year ago. Both domestic and export demand for rice remains strong. Rice used for domestic food, which accounts for about one-fourth of the crop, is expected to rise moderately. The uptrend in industrial use (by brewers) will continue, and export commitments are well ahead of prior years. Exports generally account for more than 50 percent of production, and total usage is expected to be in excess of the 1977 crop. As a consequence, carryover stocks at the close of the current marketing year will be down from last year's level.

With the somewhat reduced supply and rising demand for rice, the season's average price is expected to be well above the $6.63 per cwt. of last year. The national average Government price support loan rate for the 1977 crop is unchanged from a year ago — $6.19 per cwt., but with rough (unmilled) rice selling at $10.20 per cwt. in November, little is likely to be placed in the loan program.

## Soybeans

The 1977 soybean crop, estimated at 1,716 million bushels, was about 35 percent above the 1976 crop. This, added to a carryover of 103 million bushels, provides a total supply of 1,819 million bushels, about 20 percent more than a year ago and about 5 percent more than in 1975-76.

Demand for soybeans is expected to continue strong, but with the larger supply, prices will probably average less than in 1976-77. Domestic soybean crushings are forecast at 845 million bushels, compared with 790 million in 1976-77. Exports, which have accounted for more than one-third of each crop since 1969, will also be up to an estimated 610 million bushels, compared with 564 million in 1976-77. Prices for the 1977 crop of soybeans were expected by the USDA at the Outlook Conference to average slightly below $5 per bushel, compared to about $7 per bushel a year earlier. However, the recent strengthening in soybean prices points to a somewhat higher average than was anticipated. The CCC loan rate on the 1977 crop of soybeans is $3.50 per bushel, but with the market price in early December at $5.70 per bushel, few soybeans will move into the loan program.

## Cotton

The sharp increase in cotton production in 1977 (14.4 million bales compared with 10.6 million in 1976) boosted the supply to 17.4 million bales, the highest since 1973-74. Consumption of United States cotton has fallen over the years, reflecting the competition from synthetic fibers, and some further decline in cotton use is expected this year. Domestic use plus exports of United States cotton fell from 14.4 million bales in 1966 to 11.5 million bales in 1976. Domestic consump-

[6]Part of the recent increase in wheat prices and in the price of other crops may reflect the possibility of a set-aside acreage program this year as provided in the Food and Agricultural Act of 1977. The Secretary of Agriculture may require as a condition of purchases from, and loans and payments to farmers, that acreage, normally planted to crops designated by the Secretary, must be cut by the amount of set-aside or diversion.

tion plus exports is expected to fall slightly again this year. Consequently, next summer's carryover may total 5 to 6 million bales, compared with 2.9 million bales last summer.

Cotton prices have dropped sharply from last season's record of $0.65 per pound average. Strict Low Middling 1 1/16 inch cotton in early December sold at about $0.48 per pound. The CCC loan rate for the 1977 crop, which tends to provide a floor price, is 44.63 cents per pound, and has been set at 44 cents per pound for the 1978 crop.

## Tobacco

The Government support prices for tobacco have been sufficient for several decades to provide incentive for greater production than consumers are willing to use at the support price level. Hence, acreage controls and marketing quotas have been used to allocate marketings among the various producers. The current supply of burley, the major tobacco grown in the Eighth District, is 2 percent above that of a year ago despite a 2 percent decline in the 1977 burley tobacco crop. The legal formula requires that price supports go up 7 percent next year for eligible tobacco.

## Livestock

A further increase in the volume of livestock and livestock product marketings is expected this year, and little change is likely in the average prices for such products from year ago levels. The mix in the products, however, will be different from 1977, as beef production will probably decline and pork and poultry production will increase. Overall, there is greater incentive for feeding livestock than a year ago. Livestock prices are currently somewhat higher than a year ago, and feeding costs have generally declined. The leading protein supplements (soybean and cottonseed meal) cost livestock feeders only about 80 percent as much as a year ago.

## Beef Cattle

The forecast of a decline in the volume of beef cattle marketings in 1978 is predicated on a substantial reduction in slaughter of steers and heifers directly off the pasture. It is believed that such slaughter will be down by a third or more from a year ago, since there is greater incentive to increase cattle herds and cattle feeding this year.

The number of cattle on farms and ranches began to decline in 1975 from a peak of 131.8 million on January 1 (Table V). This peak followed an increase in cattle numbers at the rate of 3.3 percent per year during the previous 5 years. During the rapid herd buildup stage a larger number of female cattle were held back in the herds, thereby reducing the number of females available for feedlots and slaughter. For example, the number of cattle slaughtered in 1973 was less than the number slaughtered in 1970 despite the fact that there were about 5 million more cattle on farms in early 1973. Since early 1975, however, the number of cattle has declined at a 3.8 percent rate, and fewer female calves have been held back for herd building. Hence, since 1975 a larger proportion of cattle was marketed annually than during the herd building phase of the cattle cycle.

Table V

CATTLE INVENTORY JANUARY 1, AND SLAUGHTER DURING YEAR

(millions of animals)

| Year | January 1 Inventory | Slaughter | |
|---|---|---|---|
| | | Cattle | Calves |
| 1950 | 78.0 | 18.6 | 10.5 |
| 1955 | 95.6 | 26.6 | 12.9 |
| 1960 | 96.2 | 26.0 | 8.6 |
| 1965 | 109.0 | 33.2 | 7.8 |
| 1970 | 112.4 | 35.4 | 4.2 |
| 1971 | 114.6 | 35.9 | 3.8 |
| 1972 | 117.9 | 36.1 | 3.2 |
| 1973 | 121.5 | 34.0 | 2.4 |
| 1974 | 127.7 | 37.3 | 3.2 |
| 1975 | 131.8 | 41.5 | 5.4 |
| 1976 | 128.0 | 43.2 | 5.5 |
| 1977 | 123.0 | 42.0 | 5.7 |
| 1978[1] | 117.5 | 39.0 | 3.6 |
| 1979[1] | 116.0 | | |

[1]Projected.

Source: USDA, *Outlook 78: Outlook for Livestock and Meat*; and *Agricultural Statistics*, 1976 and 1972.

Some increase, however, in the number of cattle on farms is expected to occur this year as farmers have greater incentive to rebuild herds. Prices of feeder cattle and calves increased somewhat last year and are expected to increase further this year, averaging in the $45.00 to $50.00 per hundred pounds range. The margin for feeding cattle has improved with the lower priced feed and somewhat higher prices in prospect for slaughter cattle. Thus, the outlook is for some increase in cattle feeding and slaughter of fed cattle, and a sizable reduction in slaughter of other cattle.

## Hogs

Hog producers fared somewhat better than cattle producers in 1977. Hog prices were relatively favorable as feed costs declined in the second half of the year. However, this improvement in earnings has provided incentive for further expansion of pork production this year as indicated by farrowing intentions. Pork production this spring is expected to be up 12 to 14 percent from year earlier levels, and a much larger pork slaughter is expected in 1978 than last year. Average prices are projected in the $31 to $34 per hundredweight range, or well below the 1976-77 average.

Feed costs for hog producers in 1978 are expected to average less than a year ago, but with the decline in hog prices, producers will probably be operating on narrower profit margins.

## Poultry

Both broiler (young chickens of heavier breeds) and turkey producers are expected to expand output in 1978 in response to the generally favorable animal-feed price relationships. Young chicken meat continues to provide a rising proportion of the nation's total meat consumption, accounting for 14.2 percent of all meat consumed in 1965 and 16.5 percent in 1976. Broiler production was 90 times larger in 1977 than in the mid-1930s, and another increase of 3 percent or more is projected for 1978.

As a consequence of lower priced feed and the quick response by chicken producers to feed-chicken price relationships, chicken prices in 1978 are likely to average somewhat below those of 1977. The response of turkey producers to feed prices will be similar to that of chicken producers; hence, rising production and lower prices are in prospect.

## Eggs

Egg production was estimated at 5.35 billion dozen in 1977, down one percent from a year earlier. Egg production has declined sharply in recent years, and was down about 8 percent last year from the 1972 level. However, with the lower feed prices, egg producers are expected to increase output about 2 percent above year ago levels in the first half of this year and by a somewhat smaller percentage gain in the second half. Consequently, egg prices this year will likely remain below the levels of a year ago, especially in the first half of the year.

## Milk

Milk production has trended upward since 1975, and some further increase is expected this year. Production in 1977 was estimated at 123 billion pounds, up from 120.4 billion pounds a year earlier. With the lower feed prices, dairy cattle feeding in recent months has been relatively heavy, and output per dairy cow was up about 3.5 percent last October from a year earlier.

The average price received by farmers for milk last year was above year earlier levels after the first quarter of the year. The average of $10.10 per hundred pounds in October was 14 cents per hundred pounds above the price a year ago. With the higher Government support prices this year, milk prices are expected to average well above 1977 levels. Government purchases through price support operations removed the equivalent of 6 billion pounds of milk, almost 6 percent of total production, from the market in the first 10 months of 1977.[7] In contrast, only a quarter of a billion pounds was removed through such operations in the previous year. Government purchases are expected to continue at a high rate at least through the spring grazing season since demand and supply conditions will keep the market price below the support price level.

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[7]Such surpluses are donated to various outlets including military or veterans hospitals, schools, child care centers, and foreign government and private welfare agencies.

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