Inflation-adjusted saving and sectoral balances

This note presents revised and updated estimates of sectoral saving and financial balances adjusted for the effects of price inflation on monetary assets and liabilities.[1] *It also considers alternative methods of computing the adjustment for inflation,*[2] *with some illustrative numbers for the public sector.*

Methodology

In the earlier Bank work on inflation adjustment it was argued that, to measure 'true' or 'real' income, estimates of income in the national accounts should be adjusted to reflect the effect of inflation not only on provisions for the maintenance of physical capital (depreciation at replacement or current cost and stock appreciation) but also on the real value of monetary assets and liabilities fixed in nominal terms. In periods of high inflation, nominal interest rates tend to rise, even if only partially, to compensate creditors for the fall in the real value of their assets. Thus, actual interest payments and receipts comprise both an inflation compensation element, equivalent to the partial redemption of a loan, and a 'true' or 'real' interest payment.

Measurement of the income and saving of the nation as a whole is relatively little affected by this, because of the small balance of *net* monetary assets held abroad by the domestic sector (and the corresponding small net interest flows).[3] The main effect of inflation on nominal flows between creditors and debtors is to distort the conventional measures of the *sectoral* allocation of income and saving. The issue of indexed government bonds (initially available only to pension funds) and of indexed national savings securities—the so-called 'granny bonds' and index-linked SAYE—have illustrated the problems of consistent treatment of nominal interest flows and the nominal revaluations of indexed instruments in the national accounts. To maintain consistency with the treatment of interest on conventional government bonds, measured debt interest flows in the income and expenditure accounts (and thus in the public sector financial deficit) include the periodic uprating of principal on indexed instruments.[4]

Inflation-adjusted measures of income, saving and the sectoral balances estimated by the Bank treat the inflation compensation element of interest, and the uprating of indexed principal, as maintenance of real capital, not as part of 'real' income. The precise definition of the contribution of the return on monetary assets to 'real' income for this purpose is the amount which an individual could consume without any change in the real value of his net monetary assets. The adjustment is obtained by applying the actual rate of inflation to the *nominal* value of the outstanding stock of net monetary assets (see Table A) and deducting the result from the conventional measure of income. This provides a rough adjustment for general inflation only: no allowance is made for changes in the *relative* price of different assets (non-monetary as well as monetary) or for changes in the market value of assets as a result of changes in real interest rates. Table B shows inflation-adjusted saving—the difference between 'real' income and actual consumption—for all broad sectors. 'Real' sector balances are obtained by deducting actual net capital expenditure (including stockbuilding) from inflation-adjusted saving.

An implication of the Bank's measure of saving adjusted for inflation is that this measure can change sharply with fluctuations in *ex post* real interest rates. (The averages for a period of years are probably more significant than figures for individual years.) In particular, it is doubtful whether behaviour responds to the fluctuations in inflation-adjusted income associated with abrupt changes in *ex post* real interest rates. A more forward-looking measure of income would bring into account the *expected* change in the future market value of debt instruments as well as interest coupon payments, and would deduct inflation gains and losses calculated using the market value rather than the nominal value of monetary assets and liabilities. Recent estimates on this basis[5] have nevertheless yielded inflation adjustments for the public sector which are fairly close to those obtained by the (nominal value) Bank method.

It is quite possible, however, that holders of financial assets take a yet more forward-looking view, and that a more appropriate concept for measuring behaviour may be *permanent* (inflation-adjusted) income—the amount that an individual could consume this period *and* expect to continue consuming (in real terms) in all future periods.

(1) This note updates the estimates presented in the June 1981 *Bulletin*, page 232, which were based on the methodology set out in the Bank's Discussion Paper No 6, *'Real' national saving and its sectoral composition*, by C T Taylor and A R Threadgold and summarised in the June 1980 *Bulletin*, page 196. In this note, as in earlier ones, inflation-adjusted magnitudes at current prices are denoted 'real' (in quotes) to distinguish them from magnitudes measured at constant prices, conventionally described as real (without quotes).

(2) These alternative approaches have drawn on work by Professor M H Miller of the University of Warwick, currently on leave at the Bank as Houblon-Norman Fellow.

(3) The effect of inflation on assets denominated in foreign currency will tend to be offset by changes in the exchange rate induced by different inflation rates in the United Kingdom and the rest of the world. In recent years, however, the net foreign currency position of the domestic sector has been in rough balance.

(4) As a cash flow concept, the public sector borrowing requirement (PSBR) does not include these indexed upratings on gilt-edged stocks: there is an 'accruals adjustment' between the public sector deficit and the PSBR to reconcile the two series.

(5) M H Miller, 'Inflation-adjusting the Public Sector Financial Deficit: measurement and implications for policy'. In *The 1982 Budget*, ed J Kay, Blackwells, 1982.

Income on this definition would be the coupons obtained by investing the market value of financial assets in an indexed consol. No such instrument exists, but longer-term indexed debt, currently yielding about $2\frac{3}{4}\%$ per annum to redemption in real terms, is now available and provides much the same information. The appropriate permanent (and inflation-adjusted) income series would exclude actual interest but would include the imputed permanent income obtained by applying the long real rate of interest to the market value of debt. Assuming a constant real long rate of interest,[1] the permanent income stream from debt follows a relatively smooth path (see Table C). During the 1970s, public sector saving computed using this permanent income stream was significantly lower on average than the Bank's 'real' saving measure.

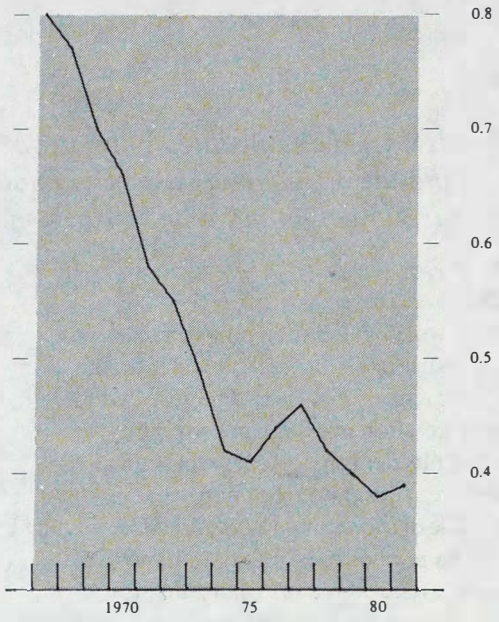
Description of recent trends

Overall, inflation in 1980 and 1981—when the consumer price deflator increased by 12.9% and 10.9% respectively—was lower than the rates of interest in these years: Treasury bill rates averaged 15.7% and 13.4% respectively. *Ex post* real short-term interest rates in these two years were thus positive, having been negative in four of the previous five years. Particularly pronounced during 1981 was the near stability of the deflator for foreign currency assets expressed in sterling terms (see Table A), as sterling depreciated roughly in line with UK inflation. This was in marked contrast with 1979 and 1980 when sterling appreciation coincided with relatively fast UK inflation; in these years 'inflation' losses in sterling terms on foreign currency assets averaged about 25% per annum. Accordingly, the notional gains on net holdings of foreign currency monetary liabilities by domestic sectors were much lower in 1981 than in earlier years.[2]

Within the United Kingdom, substantial inflation gains continue to accrue to the public sector as a large net debtor. But in 1981 the inflation gains did little more than offset net interest payments, whereas in earlier years the inflation gains had tended to exceed net interest payments. In real terms the public sector has been repaying its debt (slowly) in recent years, as it was throughout the 1970s. This is reflected in the trend of the ratio of net public sector debt at market value to income (see chart).[3]

The personal sector's saving in 1981 (as conventionally measured—that is, before providing for stock appreciation and depreciation) was almost £24 billion in nominal terms, implying a saving ratio (as a proportion of conventionally

Market value of public sector net debt as proportion of GDP[a]



(a) Expenditure estimate of GDP at market prices. Figures for market value of net debt (monetary liabilities) are given at the foot of Table C.

measured personal disposable income) of about 14%, a little less than in 1980, but still above the average of under 13% in the 1970s. After allowing for stock appreciation and depreciation and for inflation losses on net monetary assets, 'real' saving has been about £$4\frac{1}{2}$ billion, or 6% of inflation-adjusted income, in each of the last two years. Much of this 'real' saving has been invested in monetary assets, with 'real' monetary assets having grown by about £3 billion in both years. This increase may reflect an attempt to recover inflation losses suffered during the 1970s, when inflation was probably higher than expected. This explanation receives some support from econometric research in the Bank and elsewhere which has sought to explain the behaviour of consumers' expenditure by trends in inflation-adjusted disposable income, and by a desired ratio of net liquid assets to income.

The company sector—taking industrial concerns, banks and other financial institutions together—achieved a further small improvement in its 'real' financial position in 1981. But, as discussed in the note on profitability and company finance (page 243), high real short-term interest rates in 1980 and 1981 tended to reduce inflation-adjusted (equity) income of industrial and commercial companies compared with 1979.

(1) The precise rate assumed does not greatly affect the result.

(2) Not all net monetary liabilities to the rest of the world by domestic sectors are expressed in foreign currency. There has been rough balance in net foreign currency positions of the domestic sector in recent years, although the separate estimates for the overseas sector do not wholly confirm the domestic sector estimates.

(3) Over this period the market value of net public sector debt has been typically about 85% to 90% of the nominal value (see Tables A and C).

Table A
Notional loss/gain on real value of net monetary assets/liabilities by sector: 1970–1981

£ billions

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979(a)	1980(a)	1981(a)
Sectoral net monetary assets (+)/liabilities (−) mid-year estimates												
Personal sector	39.4	43.3	45.7	47.8	52.9	58.7	65.8	73.9	81.3	93.6	110.6	122.3
Company sector	− 5.5	− 8.0	− 8.8	−10.7	−14.8	−15.6	−14.4	−13.8	−11.8	−15.1	− 24.0	− 24.9
Public sector(b)	−38.0	−39.1	−40.8	−42.5	−45.7	−52.9	−63.8	−72.5	−78.2	−85.8	− 95.1	−108.5
Total domestic sector	− 4.1	− 3.8	− 3.9	− 5.4	− 7.6	− 9.8	−12.4	−12.3	− 8.8	− 7.2	− 8.5	− 11.2
Overseas sector	4.1	3.8	3.9	5.4	7.6	9.8	12.4	12.3	8.8	7.9	8.0	8.5
Change in consumers' expenditure deflator (Q4-Q4) (per cent)	*7.2*	*8.0*	*7.7*	*9.7*	*20.2*	*23.4*	*14.3*	*12.4*	*8.5*	*16.8*	*12.9*	*10.9*
Notional loss on net monetary assets (gain on net monetary liabilities)(c)												
Personal sector	− 2.8	− 3.5	− 3.5	− 4.6	−10.7	−13.7	− 9.3	− 9.2	− 7.0	−15.8	− 14.3	− 13.3
Company sector	0.4	0.6	0.6	0.8	3.0	3.3	1.5	1.9	0.9	3.2	3.9	2.4
Public sector	2.7	3.2	3.1	4.0	9.3	11.9	7.5	9.4	6.7	14.5	12.2	12.0
Total domestic sector	0.3	0.3	0.3	0.3	1.5	1.5	− 0.3	2.0	0.6	1.9	1.7	1.1
Overseas sector	− 0.3	− 0.3	− 0.3	− 0.3	− 1.5	− 1.5	0.3	− 2.0	− 0.6	− 2.0	− 1.5	− 0.4
Deflator for foreign currency assets (Q4-Q4) (per cent)	*6.9*	*8.7*	*− 1.9*	*0.1*	*19.8*	*11.0*	*− 7.5*	*11.8*	*6.1*	*25.7*	*24.6*	*− 0.8*

(a) Bank estimates. The sectoral estimates of net monetary assets in these years are not wholly consistent.

(b) Since December 1978, gold in the official reserves has been valued taking account of market prices, and is hence treated as a non-monetary asset from that date.

(c) The notional loss or gain is not equal to the product (sign reversed) of sectoral net monetary assets/liabilities and the change in the consumers' expenditure deflator, because of the different deflator used for foreign currency denominated monetary assets and liabilities (shown above). For such assets and liabilities, the rate of change of the consumers' expenditure deflator is taken net of the percentage change in the effective exchange rate (expressed in terms of foreign currency per unit of sterling).

Table B
'Real' saving and financial balances: 1967–1981

£ billions

	Annual averages				1979(a)	1980(a)	1981(a)
	1967–1969	1970–1972	1973–1975	1976–1978			
Personal sector							
Saving:(b)							
Nominal	1.3	1.9	5.1	8.0	14.6	18.7	17.4
'Real'	−0.3	−1.4	−4.6	− 0.5	− 1.1	4.4	4.2
Financial balance:							
Nominal	0.7	1.1	4.5	6.7	12.5	17.7	16.2
'Real'	−0.8	−2.2	−5.1	− 1.8	− 3.2	3.4	2.9
Company sector							
Saving:(b)							
Nominal	1.8	2.6	2.8	6.9	6.8	2.5	1.9
'Real'	2.0	3.1	5.2	8.3	10.0	6.4	4.4
Financial balance:							
Nominal	−0.2	0.2	−1.1	0.5	− 2.9	− 2.4	− 1.9
'Real'	−0.1	0.8	1.3	1.9	0.3	1.4	0.6
Public sector							
Saving:(b)							
Nominal	1.7	2.0	−1.1	− 3.5	− 5.3	− 6.7	− 6.6
'Real'	3.3	5.1	7.4	4.4	9.2	5.6	5.4
Financial balance:							
Nominal	−1.3	−0.4	−5.1	− 7.5	− 8.1	− 9.7	− 7.5
'Real'	0.3	2.6	3.3	0.4	6.4	2.5	4.5
Total domestic sector							
Saving:(b)(c)							
Nominal	4.9	6.5	6.8	11.2	16.1	14.5	12.7
'Real'	5.0	6.8	7.8	12.1	17.9	16.3	13.9
Financial balance:(d)							
Nominal	−0.8	0.9	−1.7	− 0.3	1.5	5.7	6.9
'Real'	−0.7	1.2	−0.6	0.5	3.4	7.4	7.9

(a) Provisional and/or Bank estimates.

(b) After providing for stock appreciation and capital consumption at replacement cost and plus net capital transfers.

(c) Equals dis-saving of overseas sector plus errors and omissions.

(d) Equals financial deficit of overseas sector plus errors and omissions.

Table C
Public sector saving: an alternative measure

£ billions

Saving + /dissaving −

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1 Nominal saving, excluding net interest payments	4.9	4.1	2.7	2.6	2.3	1.1	1.9	3.4	1.1	2.5	3.1	4.6
2 Net interest payments (−)	− 1.8	− 1.8	− 2.0	− 2.3	− 3.2	− 3.8	− 5.0	− 5.7	− 6.3	− 7.9	− 9.8	−11.2
3 Notional gain on net monetary liabilities (from Table A)	2.7	3.2	3.1	4.0	9.3	11.9	7.5	9.4	6.7	14.5	12.2	12.0
4 'Real' saving (1+2+3)	**5.7**	**5.4**	**3.8**	**4.3**	**8.4**	**9.2**	**4.5**	**7.0**	**1.5**	**9.1**	**5.6**	**5.4**
5 'Permanent income' net interest payments (a)	− 0.9	− 0.9	− 1.0	− 1.0	− 1.0	− 1.2	− 1.5	− 1.8	− 1.9	− 2.1	− 2.3	− 2.6
6 'Permanent' saving (1+5)	**3.9**	**3.1**	**1.7**	**1.6**	**1.3**	**− 0.1**	**0.4**	**1.6**	**− 0.8**	**0.4**	**0.8**	**2.0**
Memorandum item: market value of public sector net monetary liabilities (−)	*−34.1*	*−33.7*	*−35.5*	*−36.1*	*−35.7*	*−43.7*	*−55.1*	*−65.7*	*−69.2*	*−77.6*	*−85.3*	*−95.2*

(a) An assumed constant long-term real interest rate of 2½% applied to market value of debt.