

ACCOUNTING FOR INFLATION AND ITS IMPLICATIONS FOR MANAGEMENT

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Q. Why should an actuary consider this subject?

A. He must have regard to it

- as an investor or an adviser to investors,
- as a manager or an adviser to managers, and
- as an individual better able than most to understand one of the fundamental problems facing our economic system.

I have come to the view that historic cost accounting must bear at least part of the responsibility for the stagflation in Western economies in recent years.

Actuaries are trained to measure like with like – deaths are related to the population from which they are drawn, interest is related to the investment from which it is earned, and so on. Accounting for manufacturing or any other processes (including services and financial transactions) must be carried out in a unit of measurement; the unit used must be a unit of real value.

Traditional historic cost accounting uses the dollar of value at date of purchase – however long is the period for which that value is held. During a period of inflation the use of historic costs to determine selling prices and profits means that shareholders' funds are kept constant in money terms and hence represent a declining value in real terms; moreover the total funds required to support a constant level of production increases with inflation and this increase is met by further borrowing. Eventually the ratio of borrowed funds to total assets will be so high as to force a reduction in the level of production or the liquidation of the company. This is not a remote or far-fetched result; it is an inevitable consequence of the management use of conventional accounting over a period during which prices increase by a significant multiple.

The purpose of this paper is to describe briefly the most significant aspects of the work which has been done under five headings: Cash flows; Management strategy; The accounting principle, Income tax; Wider implications.

Cash Flows

Most of the public comment on the impact of inflation on companies relates to the effect of inflation on apparent profits – there has not been much comment on cash flows. But the flow of cash through a company is the life blood on which its continued existence depends; a company whose cash flow does not generate sufficient retained funds will have to reduce production and might even be forced into liquidation at a value to shareholders which is much less than its realistic value on an orderly winding-up, or its value as a going concern with an adequate cash flow. Borrowing merely postpones the day of reckoning.

A simple example can be used to illustrate the vital information provided by an analysis of cash flows. The balance sheet and income account show the results for an apparently profitable company which operated through 1975, using historic costs to determine selling

prices and dividends. Physical levels of production and stock remained constant. The opening and closing balance sheets are set out in Table 1. The income account is shown in column (1) of Table 2 together with the change in balance sheet items in column (2). The sum of these two items in column (3) gives the cash flow and shows the source of funds and their application. (See next page).

The shareholders' funds have increased by \$30 from \$1,100 to \$1,130 over the year, compared with an increase of \$190 in borrowed funds from \$940 to \$1,130, while the physical level of operation of the company is unchanged. If inflation continues and the company's physical level of operation is kept constant in future with the pricing and dividend policy based on historic costs, it will be found that the increase in borrowed funds will outstrip the increase in shareholders' funds, i.e. the proportion of the company's operations financed by borrowing will continue to increase.

Management Strategy

The increase in borrowed funds could have been reduced during 1975 in this example by one or more of the following steps open to the company-

- deferring purchase of new plant
- reducing stocks
- reducing debtors
- increasing creditors
- reducing dividends
- increasing accumulated profits

If the investment in new plant is necessary then its deferral, in reality, has only a marginal effect in the long run. The marginal effects are the interest costs saved offset by the increase in purchase price and the costs of any inefficiency resulting from the delay. The purchase of new plant should be decided on the grounds of whether or not it is necessary, not on the grounds of apparent reduction in funds required in the short term. (It is accepted that if funds are not available then purchase must be deferred).

A reduction in stocks may well be attainable without any loss of efficiency. If so, it should certainly be done – but this too is really independent of the impact of inflation. If it is possible to reduce stock by one-third, say, in this example the funds released of \$350 are sufficient to offset further borrowing for two years. In the third year of continued inflation the need to borrow would emerge again. Therefore a reduction in stocks gains only a temporary reprieve from the effects of inflation. Similar comments apply to the reduction of debtors or an increase in creditors: *each source is available only once and with continued inflation the need for funds will emerge again after a time.*

A reduction in dividends will in most companies not be a significant source of extra funds. In the long run the reward to shareholders must represent a reasonable return on their investment so that a reduction in dividends can

TABLE 1 Balance Sheet at 31 December (Historic Costs)

	1974	1975		1974	1975
	\$	\$		\$	\$
Share Capital	1,000	1,000	Plant	1,000	1,050
Accumulated profits	100	130	Stock	1,000	1,150
Provision for Dividends	80	85	Debtors	500	580
Provision for Income Tax	80	85			
Borrowed funds	940	1,130			
Creditors	300	350			
	<u>2,500</u>	<u>2,780</u>		<u>2,500</u>	<u>2,780</u>

Note: For this example, inflation at the rate of 15% has been assumed for 1975.

TABLE 2 Income Account and Cash Flow for 1975

Income Account for 1975 (1)	Change during 1975 in Balance Sheet Items (2)	Cash flow during 1975(3)
\$	\$	\$
Gross sales	Less increase in debtors	
3,800+	80-	3,720+
Less cost of sales	Plus increase in creditors	3,150-
3,200-	50+	
	Less increase in stock	150-
Less depreciation	200-	150-
200-	Plus depreciation	
	200+	
Less interest charges	Less new investment in plant	250-
100-	250-	250-
Less expenses		100-
100-		100-
(progressive total equals profit before tax)		
200+		
Less provision for tax	Plus increase in tax provision	80-
85-	5+	80-
Less provision for dividend	Plus increase in dividend provision	80-
85-	5+	80-
	Plus increase in borrowed funds	190+
Less profit carried forward	190+	190+
30-	Plus increase in profit carried forward	0
30-	30+	0
Remainder	Total change	0
0	0	0

only be a temporary expedient. Any reduction in dividends will increase the profit carried forward thereby reducing the need for borrowed funds. On the other hand the company will have to make greater profits in future to maintain the return on shareholders' funds. An increase in profit carried forward can also be achieved by making a greater profit; in this example either by an increase in the product selling price or a reduction in expenses (where the reduction in expenses is not passed on to customers in reduced selling prices).

The inevitable conclusion from the whole of the foregoing is that *the only permanent solution to the problem of limiting the demand for borrowed funds is to maintain a sufficient margin in the product selling price.* In this example, to reduce the demand for borrowed funds by \$50 it is necessary to increase the gross sales by \$87 before further tax of \$37 is paid (in the following year) on the \$87 increase in product selling prices. (Income tax is 42.5% of the profit, i.e. the additional tax is 42.5% of \$87).

Therefore if management strategy is to contain the need to raise borrowed funds whilst maintaining a constant level of physical production, the only long term strategy available is to set a sufficient margin in the product selling price.

It is true that inflation has provided a spur to management to re-examine the efficiency of each operation; stock levels, credit policy and expenses have all come under close scrutiny. However, any reduction in these items is only a temporary measure, not a permanent solution to the demand for increasing funds employed under continuing inflation.

There is no guide above to the degree to which product selling prices should be increased. The increase is a function of the philosophy underlying the accounting principles adopted in assessing accounting profit and hence in fixing product selling prices.

The Accounting Principle

The major part of public discussion has been related to matters of detail. The principles of the two main alternatives proposed for inflation accounting may be compared with the traditional basis as follows:

- (1) The *traditional basis* maintains the dollar amount of shareholders' funds at a constant value. (This value is supported by assets at historic book values, so that some – usually undisclosed – increase in share – holders' funds does arise in real terms). A direct consequence of this approach is that the increase in book values of assets must in the long run be supported by additional borrowings, fresh capital or retained profits.
- (2) The *shareholders' funds basis* maintains the real value of shareholders' funds after recording all assets and liabilities at current values. This means that a company is required to increase its total borrowed funds at the rate of inflation. The value of shareholders' funds and the total value of the assets all increase at the same rate where all items are affected equally by the rate of inflation so that with a constant

level of production the real position of the shareholders is maintained. (This basis is similar to the Constant Purchasing Power Exposure Draft).

- (3) The *asset-maintenance basis* records assets and liabilities at current values and provides that no increase in borrowed funds should be required to maintain constant production in times of inflation. Since money liabilities do not increase in value with inflation this means that the whole of the increase in value of the total assets of the company accrues to the shareholders. (This basis is, in principle, that proposed in the Current Value Exposure Draft and is in effect similar to the proposals of Mathews and Sandilands).

The application of the alternative accounting methods to the simple example given above would lead to different product selling prices in each case. It was shown above that a selling price set on the traditional accounting with a traditional income tax basis resulted in an increase in borrowed funds of \$190. A selling price set on the asset-maintenance basis would produce no increase in borrowed funds, while a selling price set on the shareholders' funds maintenance basis would produce an increase of, say, 15% of \$940 or about \$140. (These values are intended to illustrate the relationships that apply between the different bases).

The increase in product selling price required to limit the increase in borrowed funds depends also on the income tax basis. If the dividend and profit carried forward are retained at the level shown, the increases in product selling prices required are shown in Table 3, assuming a tax rate of 42.5 cents in the dollar. This table shows the product selling price and income tax payable during 1975 for each combination of accounting basis and income tax basis.

Table 3 shows that a net accounting profit after tax can be kept at \$115 for each accounting basis in conjunction with each taxation basis. Product selling prices and income tax payable are both reduced if the income tax basis shows a lower profit than the accounting basis; conversely if the taxation basis shows a higher profit than the accounting basis, the product selling prices and the income tax payable are both increased.

Competition and regulatory controls permitting, management strategy should be to increase the product selling prices sufficiently to yield the desired profit level after tax, regardless of the tax basis. If the income tax basis is not altered and the asset-maintenance basis is adopted for accounting, it is shown in Table 3 that the product selling prices must be increased from \$3,800 to \$4,130, an increase of 9% in this example.

Income Tax

National revenue can be raised in many ways – property taxes, value added taxes, etc. – so that an income tax need not necessarily be charged. However, if income tax is levied, it should be levied on a logical and fair basis which does not distort management decisions.

Since management objectives include the making of

TABLE 3

Accounting basis for selling price and published accounts	Accounting item	Income Tax Basis			Increase in borrowed funds (after tax)
		Traditional (historic cost)	Maintenance of shareholders' funds	Maintenance of assets	
Traditional (historic cost)		\$	\$	\$	\$
	Gross sales	<i>3,800</i>	3,763	3,715	190
	Historic profit	<i>200</i>	163	115	
	Accounting profit	<i>200</i>	163	115	
	Taxable profit	<i>200</i>	113	75	
	Income Tax	<i>85</i>	48	(loss)	
	Accounting profit (after tax)	<i>115</i>	115	115	
Maintenance of shareholders' funds	Gross sales	3,887	3,850	3,765	140
	Historic profit	287	250	165	
	Accounting profit	237	200	115	
	Taxable profit	287	200	25	
	Income Tax	<u>122</u>	<u>85</u>	(loss)	
	Accounting profit (after tax)	115	115	115	
	Maintenance of assets	Gross sales	4,130	4,093	3,990
Historic profit		530	493	390	
Accounting profit		340	303	200	
Taxable profit		530	443	200	
Income Tax		<u>225</u>	<u>188</u>	85	
Accounting profit (after tax)		115	115	115	

Note: 1. No credit has been taken in the product selling price for tax losses where these arise.

2. The values in italics relate to the situation shown in Tables 1 and 2.

a profit it is desirable that the income tax basis, in principle, be the same as the management definition of profit. Current conditions are causing management to reconsider an appropriate accounting basis and at the same time the income tax basis is under review.

One of the fallacies of discussions on this subject is the calculation of the "cost" of introducing the income tax changes by reference to the latest year's information. This approach overlooks the fact that different tax rules would have led to different management decisions being taken and hence to a different level of profit than would otherwise be the case.

Returning to Table 3, a company which is currently operating in the top left-hand corner (i.e. traditional/traditional) may change to an accounting basis and a tax basis both of which are designed to maintain shareholders' funds. This change causes an increase in product selling

prices of \$50 in \$3,800 if the accounting profit after tax is to be maintained; the income tax remains at \$85 as it was before. In other words a change in the tax rules, if accompanied by a corresponding logical change in management strategy, keeps income tax revenue at its former level.

The real risk seems to be that the asset maintenance basis will be accepted for tax purposes, when many managers will accept an accounting basis which maintains the real value of shareholders' funds. From Table 3 it can be seen that such a manager can reduce product selling prices to \$3,765, make an apparent tax loss and still produce the required profit (after tax) after maintaining shareholders' funds in real terms. If this happens the loss of tax revenue will far exceed the estimates which have been made.

The point of difference in principle between an ac-

counting basis which maintains assets and one which maintains shareholders' funds is that the latter basis effectively includes in income the loss of purchasing power of net money debts. Taken alone, this item is difficult to understand and represents an intangible measure of notional income; and this leads to the obvious objection that one should not be taxed on notional income. However, this objection is not valid, for the same effect in principle can be achieved another way.

Interest charges on money debts are currently at high levels because lenders are attempting to recover loss of capital purchasing power through interest charges. Currently that total interest charge is allowed as a deduction from profit of the borrower and is treated as taxable income in the hands of the lender. If such interest charges entered into the tax calculation of the borrower only to the extent that the interest charge exceeded the deemed loss in purchasing power for the year then the major difference between the asset maintenance basis and the shareholders' fund maintenance basis is eliminated. Viewed in this way the adjustment ceases to be illogical. If the same adjustment is allowed in the tax treatment of the income of the lender then a consistent result is achieved for both lender and borrower.

Wider Implications

Money values are unlikely to remain stable for long period in the future. The rate of inflation will vary from time to time; it may be at a low rate for long periods but changing money values are likely to be a permanent problem. Even with quite low levels of inflation there are distortions involved in traditional methods of accounting. It is important that a basis of accounting be adopted which copes with changing money values.

Any method of accounting can only be approximate so that the best solution is achieved if the rate of inflation can be kept to low levels. Therefore from a national point of view it is important that any basis of accounting for inflation, either for product selling prices and dividends or for income tax, should be a method which will tend to reduce the rate of inflation or at least not increase it.

One of the problems generated by the discussion of inflation accounting is the greater awareness of the impact of inflation on companies which has led to product selling prices being increased with a greater frequency. Thus a "round" of price and wage increases is completed more often each year.

In each "round" of price increases the relative positions of each sector of the community are altered. The ultimate position of each sector depends on the mechanism by which each price increase is governed. The consequences for all other sectors will flow from that long term position.

The ultimate consequence of selling prices based on traditional accounting is that the increase in funds required to maintain a company's operations is obtained either from increased borrowing until a reduction in production is forced on the company, or by retained profits (after a very high level of income tax is levied in real terms).

The ultimate consequence of an unadjusted asset maintenance basis for both product selling prices and income tax is that no additional borrowed funds are needed to maintain production, so that the significance of the borrowed funds is reduced and the whole of the appreciation of total assets accrue to shareholders.

Neither of these extreme consequences is desirable. The logical ultimate consequence is that shareholders' funds be maintained in real terms. This basis will only apply if the position of fixed money debts (and assets) is recognised.

Relief to lenders of fixed interest funds in respect of the purchasing power component of interest charges is essential if there is to remain an incentive to the community to save through banks, building societies and life assurance. Unless this adjustment is made for both borrowers and lenders the shareholders of companies with high levels of net money debts and assets of real value are potentially a particularly favoured class if the asset-maintenance proposals are adopted.

Conclusion

The long term consequences of the standards adopted for inflation accounting are particularly significant – ranging from the risk of company failure if historic cost accounting is applied to product pricing, income tax and dividends through to the privileged treatment of shareholders if the Asset-maintenance basis is adopted (i.e. a basis along the lines of that suggested by the Sandilands Committee in the U.K. or the Mathews Committee in Australia).

Actuaries should be able to understand the need to account for all transactions in real terms and to maintain shareholders' funds in real terms – and to do no more nor any less than that.

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For a further exposition on this subject, see "Accounting for Inflation and its implications for Management" – The Institute of Actuaries of Australia and New Zealand – Transactions 1975.