CHAPTER 6
SHORT-RUN VARIATIONS IN COMPANY PROFITS[1]

by Kenneth Coutts

Much applied research has been done in this country and in the USA on industrial price formation, the fruits of which are a comparatively good understanding of the short-run determinants of prices. Although there are differences of detail, these studies generally confirm that prices move closely with standard unit costs.[2] Yet a curious deficiency of the existing literature has been the failure, with few exceptions, to see the implications for the determination of profits over the business cycle, which are the *necessary counterpart* of the view that prices are cost-determined.

This chapter will show that short-run variations in profits are explained, and can be predicted with reasonable accuracy, by demand fluctuations, once account is taken of the necessary implications which follow from the hypothesis of 'normal cost pricing'. Accordingly, an explicit profit equation is derived in the first section and its properties analysed. The second section presents some statistical evidence of the performance of the profit equation for UK company data. In the concluding section a brief comparison is made with alternative approaches.

Profits and the 'normal price hypothesis'

In this section we derive an expression for company gross trading profits (as conventionally defined before depreciation and stock appreciation), derived from a very small number of behavioural assumptions about how prices are determined and how stocks are valued. It is assumed that firms set prices as a mark-up on historic normal unit costs of production and that the size of mark-up is invariant to short-run fluctuations in demand for the product[3]. By unit cost of production is meant both variable costs (e.g. labour and materials), and certain fixed costs (e.g. rents and local authority rates). The concept of cost is 'full cost' (c.f. Hall & Hitch [12]) rather than variable cost alone (such as used by Kalecki [13]). By normal cost is meant the cost of operating at some normal level of capacity utilisation. Actual costs will differ from normal costs principally because labour costs and productivity vary with the degree of capacity in use. By historic cost is meant strictly the cost at the time of buying in of materials or of the laying down of work in progress. It corresponds to the convention of valuing stocks at historic cost (i.e. on a FIFO valuation). The concept will also be used less precisely to mean the 'book value' cost, since the book valuation convention used by firms may not be historic cost in the strict sense, but may be intermediate between historic cost and replacement cost[4]. Actual unit costs tend to be counter-cyclical relative to normal unit costs partly because of fixed costs, the treatment of labour as a quasi-fixed cost in the short run and the higher productivity attainable at high capacity utilisation.

In what follows we shall assume a manufacturing sector treated as an integrated firm. The value of gross output is measured in a way that excludes intermediate sales within the manufacturing sector. Non-labour costs are all purchases from outside the sector, i.e. they consist of domestic non-manufactured goods and services and imports. Sales are made outside the sector to domestic and export markets.

The normal price hypothesis

$$PD = (1+t)(1+\mu)\widehat{HC} \qquad (1) \quad \text{home sales}$$

$$PX = (1+e)\widehat{HC} \qquad (2) \quad \text{export sales}$$

where PD is the price of domestic sales at market prices, PX is the price (in domestic currency) of exports and t is an indirect tax rate.

The mark-up applicable to domestic sales, μ, being invariant to short-run fluctuations of demand, is assumed to be determined by medium or long-term factors[5]. The export mark-up, e, will in addition depend upon relative cost competitiveness with foreign producers, the exchange rate and border taxes. Historic normal unit costs, $\widehat{HC}$, will lag behind current normal unit costs, $\widehat{CC}$, by a factor, θ, which will depend upon the average production lag, i.e. the time which elapses between the start of the manufacturing process and its completion[6].

$$\widehat{HC} = \widehat{CC}_{-\theta} \qquad (3)$$

[1] This work is an interim report on a project which is financed by the Social Science Research Council. I am grateful for help given by Wynne Godley, Francis Cripps and other members of the Economic Policy Group. Any errors are my sole responsibility.

[2] British studies which have examined this hypothesis include Hall and Hitch [12], Godley [8], Neild [17] and in the United States Schultze and Tryon [21], and Gordon [11].

[3] Evidence in support of the 'normal price hypothesis' in British manufacturing industry is given in Godley & Nordhaus [9] and Coutts, Godley & Nordhaus [4].

[4] Coutts, Godley & Nordhaus [4], Chapter 3, found evidence that the average lag between cost and price changes, for industries within the manufacturing sector, was shorter than that implied by strict historic cost pricing.

[5] See, for example, Wood [22].

[6] Coutts, Godley & Nordhaus [4], pp. 37-41.

where

$$\widehat{CC} = (M' + \widehat{W}' + R') / \widehat{Q} \qquad (4)$$

and M' is the value of materials, and R', other direct costs. Income from employment, W', and gross output, Q, are measured at the normal level of capacity utilisation (indicated by a '$\wedge$' over the variable).

Changes in the book value of stocks

$$\triangle BS' = \widehat{CC}.Q - \widehat{HC}.\ [DA + XA] \qquad (5)$$

where $\triangle BS'$ is the change in the book value of stocks, and DA and XA are domestic and export sales at constant prices, respectively. Firms are assumed to value their stocks at historic cost[7]. Additions to stocks, including, in particular, the value of work in progress, are measured at normal cost. Thus the change in the book value of stocks is the current (normal) value of additions to stocks less the historic cost of finished goods sold out of stock.

Definition of gross output

$$DA + XA + S \equiv Q \qquad (6)$$

Definition of accounting profit

$$\Pi' \equiv PD.DA + PX.XA - CC.Q + \triangle BS' - T' \qquad (7)$$

where T is indirect tax payments (assumed to be an *ad valorem* tax with tax rate t). Equation (6) defines gross output as the volume of sales plus the volume of additions to stock, S. Equation (7) is the conventional definition of profit, Π', appropriate to historic cost accounting principles.

From the above behavioural assumptions and accounting identities an expression for profits is easily derived. Substituting equation (5) into equation (7) and noting that

$$T' = \frac{t}{1+t} PD.DA \qquad (8)$$

we have

$$\Pi' = \left(\frac{PD-\widehat{HC}}{1+t}\right) DA + (PX-\widehat{HC})\, XA + (\widehat{CC}-CC)\, Q \qquad (9)$$

Finally, sustituting (1) and (2) into equation (9) we obtain

$$\Pi' = \left(\frac{\mu}{1+\mu}\right)\frac{PD.DA}{1+t} + \left(\frac{e}{1+e}\right) PX.XA + (\widehat{CC}-CC)\, Q \qquad (10)$$

Equation (10) demonstrates in a simple and elegant way the precise meaning of the statement by Godley & Nordhaus [8]: 'The profits counterpart of the normal pricing hypothesis is that normal gross profits (that is, profits at normal output, employment, etc.) should be a constant fraction of total value of sales'. If output is at its normal level then actual and normal costs coincide; if also the domestic and export margins are constant and the composition of sales at factor cost between home and foreign markets is constant, then profits *inclusive* of stock appreciation will be a constant fraction of sales, regardless of the inflation rate.

But equation (10) also generalises this statement to explain how profits relative to sales will vary with a change in demand, relative competitiveness, the composition of sales and other factors. A number of studies have examined the cyclical behaviour of profits as a proportion of total income or value-added[8], most of which have the purpose of examining the extent to which profits are pro-cyclical in *relation* to other factor incomes. If profits were 'normally' a constant fraction or sales, what would be the appropriate definition of income such that the ratio of profits to income would 'normally' be constant? It follows from the definition of value-added as the difference between final expenditure and the value of materials that the profit to sales ratio is equivalent to profits (including stock appreciation) divided by a term consisting of value-added (profits excluding stock appreciation, wages and other factor incomes) *plus* the value of materials *less* the value of the physical increase in stocks.

A number of important propositions about the measurement and behaviour of profits emerge from a careful examination of equation (10).

1. The first proposition, stated earlier, is that profits are 'normally' a constant share of sales, whatever the inflation rate - a proposition that would be familiar to an accountant. Note that, as equation (9) shows clearly, if output is on trend, profit is the difference between sales of output and, on our assumptions, the *normal* historic cost of that output. This proposition about the *behaviour* of profit must not be confused with a proposition about the *measurement* of profit. Whether or not output is on trend and irrespective of any pricing behaviour, it would still be true that profit is identically equal to the difference between sale price and historic cost of output. 'The profit from the sale of goods in a period is the excess of receipts over what it cost to produce those same goods. The procedure adopted by accountants for measuring this is to add to the expenditures made in the period the opening value of stocks which in effect measures those costs incurred in previous periods with respect to goods sold in the period in question. At the same time, they subtract the closing value of stocks, because this in effect measures those costs incurred in the current period with respect to goods which will be sold in future periods. In this way, the profit realised on the sales of the period is correctly isolated, irrespective of whether the stock is replaced at the same or higher prices' (Godley & Wood [10]).
2. The cyclical character of profits relative to sales is governed by the behaviour of actual relative to normal unit costs. Many studies have confirmed that productivity in manufacturing industry is highly pro-cyclical, with productivity gains being temporarily greater the greater the rise in output (that is, the elasticity of employment with respect to output is less than unity and the immediate response is less than the total response). Since prices are set on the basis of normal costs 'the customer is not asked to pay for the higher overhead per unit and the lower productivity of

[7] Strictly, this assumption applies only if the prices of stocks are rising, because the historic cost convention is to value stocks at cost or realisable value, whichever is *lower*.

[8] See for example the studies by Berman and Cassell [3], Finkel and Tuttle [7], Kuh [15], Okun & Perry [19], and St. Cyr [20].

recessions' (Okun [18]). Neither does the customer benefit from the high productivity of the boom by paying lower prices. Hence profits will rise relative to sales with higher capacity utilisation caused by higher demand, and will temporarily be higher for a given increase in output because of the lag of employment behind output.

3. The cyclical properties of the profit share as given by equation (10) are unaffected by the lag of historic costs behind current costs. For given output, as long as prices are set on historic costs and stocks are valued at historic cost, the profit share will be invariant to the price–cost lag. It must be emphasised however that there is no logical necessity for a firm practising historic cost accounting, with respect to its stock valuation, also to practise historic cost pricing. To the extent that costing conventions for the purpose of pricing (e.g. replacement cost pricing) differ from the conventions adopted for stock valuation, this and the following propositions must be qualified in practice.

4. On the assumptions underlying equation (10), it follows from the above proposition that the profit share is invariant to the general rate of inflation. However, rapid inflation raises a severe financing problem for companies, by altering the relationship between, on the one hand, profitability and, on the other, net cash receipts from trading.

One consequence of the assumption that stocks are valued at historic cost is that stock appreciation can be consistently measured as the difference between current and historic costs. Note that by substituting (6) into (5) and re-arranging terms

$$\triangle BS' = \widehat{HC}.S + (\widehat{CC} - \widehat{HC}).\,Q \qquad (12)$$

We can define the first term on the righthand side of (12) as the value of the physical increase in stocks, S, and the second as stock appreciation, SA', which corresponds approximately to the adoption of current or historic cost accounting respectively.

Using equations (8) and (12), equation (7) may be arranged in the following form:

$$\Pi' = \left(\frac{PD.DA}{1+t} + PX.XA - CC.Q\right) + (S' + SA') \qquad (11)$$

The first term in brackets is the cash profit and the second term consists of an increase in the book value of stocks which, if the firm is to remain in business, must somehow be financed. To say that the accounting profit share is invariant to the rate of inflation is not to deny that inflation may present a serious financing problem, which could on occasion lead to bankruptcy. Whether it does so will depend on the extent to which firms are able and willing to maintain the proportion of their assets which is financed by borrowing. If a firm is unable to borrow to the necessary extent, prolonged inflation may induce it to seek to increase its cash profits by shifting towards a replacement cost pricing policy.

5. The differential profit margin on exports, e, will affect the level of profits to total sales. To the extent that export prices in foreign currency are determined in foreign markets, the export margin will be sensitive to changes in cost competitiveness, because exporters may be unable to pass on fully increases in domestic costs. A devaluation designed to secure an improvement in cost competitiveness may be expected to raise the export margin and therefore profits from exported sales virtually with immediate effect. The volume of exports will, however, respond much less quickly. In principle a similar effect on the domestic margin, μ, might be expected, to the extent that competition with imported manufactured products determines domestic prices. But the effect may not be significant unless imports dominate domestic production[9].

6. It is implicit within the normal price hypothesis that the mark-up, since it is not varied in response to cyclical fluctuations in demand, is set by reference to medium or long-term objectives, so that from one complete cycle to the next, firms should expect to earn 'normal' gross profit. There is no widespread agreement on what determines the long-run profit share, but there is general concurrence that in the long run some degree, at least, of forward or backward shifting of taxes on profits would be expected, and some writers assert that in the long run profits taxes are fully shifted into prices (Wood [22]). The expectation would therefore be that the normal profit margin, $\mu/(1+\mu)$, would be responsive to changes in the burden of company taxation.

Once account is taken of inter-industry profits and sales by relaxing the assumption that the manufacturing sector can be treated as an integrated firm, another factor may affect the observed ratio of manufacturing profits to sales. If, for example, there is increasing penetration of domestic markets by competitive imports, so that manufacturers substitute imported semi-finished components for domestically manufactured components, the aggregate ratio of profits to manufacturing sales will decline. This will be true even if individual firms maintain their profit margins, because profit is no longer generated on those inter-industry sales of intermediate products which have been replaced by imports. If the measurement of sales on the domestic market includes finished imports sold as final demand, increased penetration of such imports will also reduce the aggregate profit margin expressed as a share of total final sales.

The statistical evidence

The basic result which follows as a consequence of normal cost pricing is that profits inclusive of stock appreciation will be a constant fraction of sales, except as modified by the relationship of actual to normal unit costs. Changes in export competitiveness may also be expected to change the relation between profits and total sales; this effect is ignored here but will be investigated in subsequent work. The hypothesis is examined in the following specification:

$$\ln(CPR/BSFC)_t = a_0 + a_1 t + a_2 \ln(XC/XC^*)_t + a_3 \ln(XC/XC^*)_{t-1} + u_t \qquad (13)$$

where $CPR/BSFC$ is the ratio of profits to sales and XC/XC^* is the ratio of actual to trend output. Precise definitions of these variables are given in the notes to

[9]This proposition has been tested for the UK manufacturing sector in Coutts, Godley & Nordhaus [4], but no significant evidence was found to support the view that the domestic price of domestically produced manufactures was affected by manufactured import prices.

Table 6.1. Gross trading profits of companies 1954-1973

Dependent variable	Independent variables						
	Constant	Trend	$\ln(XC/XC^*)_t$	$\ln(XC/XC^*)_{t-1}$	DW	ρ	$\bar{R}^2$
(a) including stock appreciation $\ln(CPR/BSFC)$	2.748 (****)	−0.001 (−10.3)	2.094 (5.2)	−1.670 (−4.1)	1.69	..	0.87
(b) *excluding stock appreciation* $\ln((CPR-CSA)/BSFC)$	2.829 (46.5)	−0.020 (−5.7)	0.397 (0.5)	−0.724 (−0.8)	..	0.54 (1.99)	0.79

(c) Actual and forecast profit shares 1973-1976		1973	1974	1975	1976
CPR/BSFC	Actual	12.66	11.15	8.91	9.67
	Forecast	12.80	11.20	10.73	11.24
	% error	—1.12	−0.49	−16.95	−13.99
(CPR−CSA)/BSFC	Actual	9.16	5.62	5.10	5.55
	Forecast	10.30	9.74	9.63	9.72
	% error	−11.02	−42.31	−47.05	−42.86

Notes:

CPR : gross trading profits of companies.
CSA : companies' stock appreciation.
BSFC : total final expenditure excluding stockbuilding at factor cost less public authorities' current expenditure on wages and salaries.
XC : index of real GDP at factor cost, compromise estimate.
*XC** : exponential trend of *XC*, 1954-73, approximately 2.9% p.a. compound growth.

Figures in parentheses are estimated t-ratios.

**** indicates a computed t-ratio in excess of 100, i.e. a standard error less than 0.027.

ρ is the coefficient of the first-order autoregressive error process.

Sources: National Income and Expenditure 1966-76, CSO 'Blue Books', successive issues, for data prior to 1966.

Table 6.1. A time trend is included to allow for the effect of slowly moving forces on the margin such as changes in the composition of sales. As shown by Godley & Nordhaus [9], King [14] and others, the gross profit margin in manufacturing industry has trended downwards since the 1950s. No attempt is made in this article to test whether the decline is explicable by factors such as the reduced burden of company taxation[10] (particularly in recent years) or increasing import penetration. The effect of cyclical variations in actual to normal unit costs is approximated by using the ratio of actual to trend output. A lagged term is also introduced to capture the feature mentioned earlier, that large changes in output immediately cause large changes in productivity which are not fully sustained subsequently. The expectation would be that the lagged term is negative and less in absolute value than the current term. The disturbance term, u_t, is allowed to be serially dependent. Where departure from least squares estimates was indicated the most suitable alternative hypothesis was that the errors were generated by a stable first-order autoregressive process. Parameter estimates were obtained by the method of maximum likelihood.

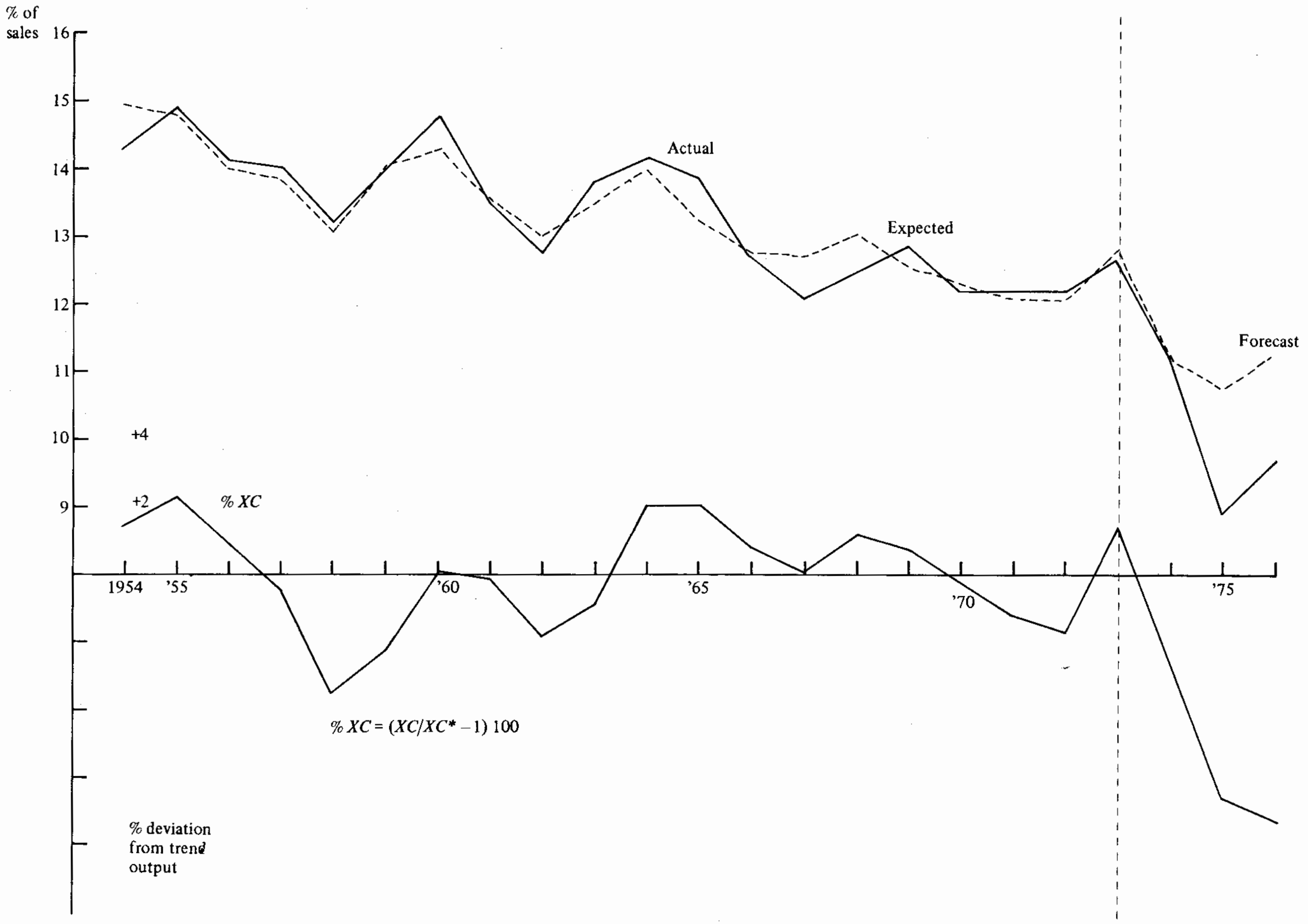
Table 6.1 (a) sets out the econometric results (for profits including stock appreciation) and Fig. 6.1 illustrates the degree of explanation provided by the regression equation. (*NB*, the expected values do not incorporate the autoregressive error process.) The result is remarkably good for the period 1954 to 1973, using annual data on company trading profits, particularly since the company sector includes financial companies for which the underlying price hypothesis is unrealistic.

All the explanatory variables have small standard errors and are significantly non-zero at the conventional levels of hypothesis testing. There is a small significant negative time trend and, as expected, the lagged (XC/XC^*) term is significantly negative and less than the current term in absolute value. It is interesting to note that casual inspection of the diagram reveals no obvious shift in the profit share caused by the devaluation of sterling in November 1967 or since June 1972. If further work were to confirm this observation, it would imply, surprisingly, that companies were prepared to shade domestic margins when export margins increase. The diagram also illustrates a forecast of 1974 to 1976, conditional only on the continuation of the negative trend and the movement of GDP. This is a very severe test, considering that 1975 and 1976 are years of unprecedented inflation and recession by post-war standards. The percentage forecasting errors are large relative to the sample period or to 1974.

For contrast the equation has also been estimated with profits measured exclusive of stock appreciation (see Table 6.1 (b)). The output terms have large

[10] See instead Chapter 5 of Coutts, Godley & Nordhaus [4], which concluded that little, if any, shifting of company taxes into prices occurred in the short run (i.e. within twelve months), but that there was some degree of shifting within three to five years of an announced change in taxes.

Fig. 6.1. Company gross trading profits as a proportion of business sales at factor cost



standard errors; neither term is significantly different from zero at the 5% level and the lagged term, though negative, is larger in absolute value than the current term. The forecast errors from 1973 to 1976 become absurdly large because in those years stock appreciation became such an important element of reported company profits. The hypothesis clearly displays much greater conformity with the cycle when profits are measured inclusive of stock appreciation.

If it is desired to predict profits after deducting stock appreciation, the framework of analysis given above provides a simple procedure for forecasting stock appreciation which can then be deducted from profits inclusive of stock appreciation predicted from equation (10). Recall that equation (12) of the previous section defined stock appreciation as

Table 6.2. Actual and predicted stock appreciation – manufacturing industry (£ million)

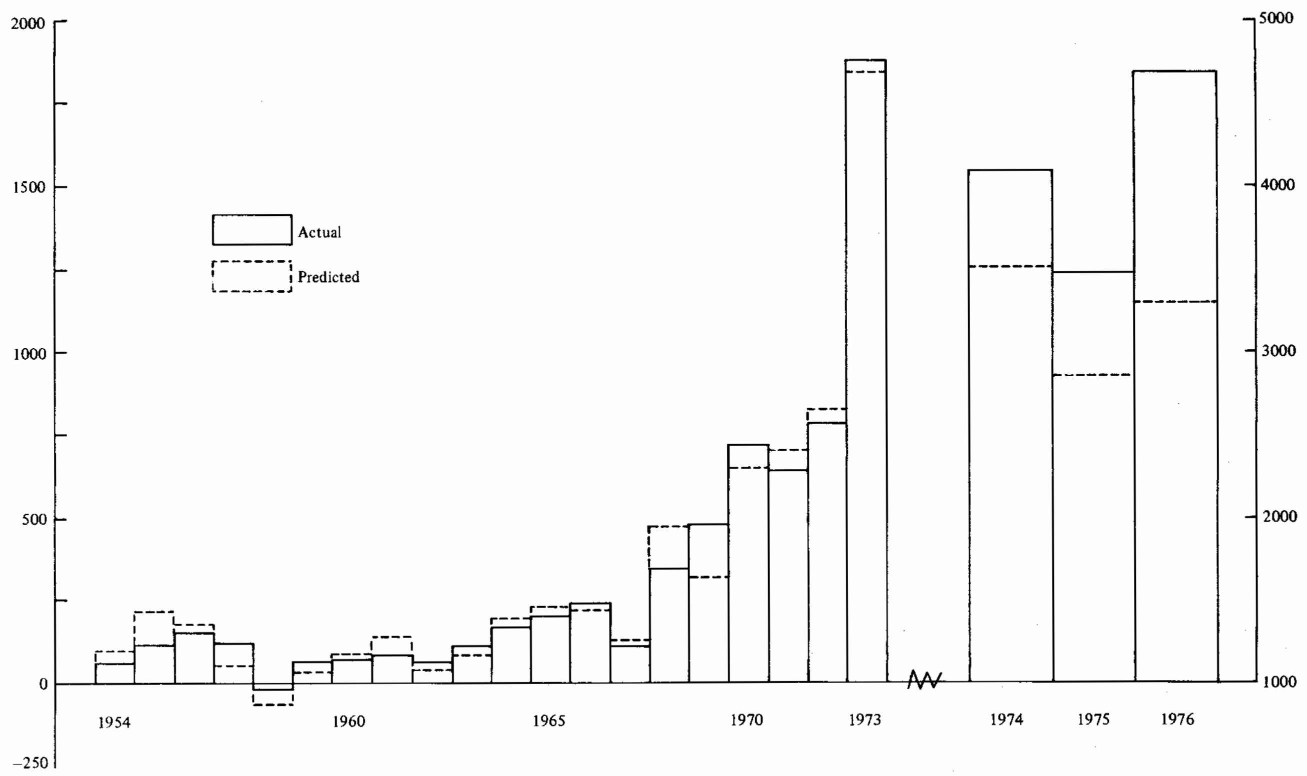
Year	Actual	Predicted	Year	Actual	Predicted	Year	Actual	Predicted
1954	60	92	1964	166	186	1974	4082	3498
1955	113	209	1965	197	223	1975	3468	2825
1956	150	169	1966	237	215	1976	4676	3270
1957	121	50	1967	108	122			
1958	–16	–67	1968	340	466			
1959	62	31	1969	473	313			
1960	68	81	1970	713	643			
1961	81	134	1971	634	692			
1962	60	35	1972	774	817			
1963	110	78	1973	1873	1831			

Notes:
Current and historic normal unit costs of production for 1954-69 were obtained on a quarterly basis from the study of pricing in UK manufacturing by Godley & Nordhaus [9] and converted to annual data. For data from 1969 to 1976, a series of unit costs constructed on similar principles was produced by the author and linked at 1969. Gross output, free of duplication, was proxied as the index of industrial production (expressed as base 1963) multiplied by the benchmark value of gross output in 1963 (£13,442m). The following regression summarises the correlation between actual and predicted stock appreciation.

$$CSA' = -5.97 + 0.995\ CSA^{*\prime} \qquad \bar{R}^2 = 0.977$$
$$(-0.32) \quad (28.19) \qquad 1954\text{-}1973$$

where CSA' is manufacturing industry stock appreciation and $CSA^{*\prime}$ is predicted stock appreciation based on equation (14).

Fig. 6.2. Stock appreciation – manufacturing industry (£ million)



Note: stock appreciation from 1954 to 1973 is measured with reference to the lefthand scale, and from 1974 to 1976 with reference to the righthand scale.

$$SA' = Q\,(\widehat{CC} - \widehat{HC}) \qquad (14)$$

where Q is gross output (free of duplication) at constant base year prices and $\widehat{CC}$, $\widehat{HC}$ are current and historic normal units costs of production respectively. It is therefore possible to predict stock appreciation, conditional only on appropriately measured normal unit costs and output. Fig. 6.2 and Table 6.2 show actual and predicted stock appreciation for the manufacturing sector from 1954 to 1973 and extend the predicted series to 1976. The general result is remarkably good, given the simplicity of the approach. The predicted series over-estimates the extent of negative stock appreciation in 1958 because the equation treats appreciation and depreciation of stocks symetrically, whereas the most common accounting convention used in practice is to value at cost or realisable value, whichever is *lower*. Since 1974 stock appreciation has been extremely high and the predicted series has under-estimated the actual outcomes, particularly in 1976.

It should be stressed that the reliability of profits data is itself open to question for recent years. According to the Central Statistical Office [16], the reliability of company profits is rated as 'category B' i.e. likely to have errors of the order of ± 3% to 10%. Table 6.3 suggests, however, that the reliability has worsened in recent years; figures for company profits as published in the six most recent Blue Books are shown from 1968 to 1971 for the earliest publication and from 1968 to 1976 for the latest. Inspection of these figures indicates some very substantial upward revisions, particularly from 1971 onwards. One way of interpreting the size of revisions is to compare the percentage growth in profits between 1968 and 1972, according to the earliest and latest publications. Profits rose by nearly 25% between 1968 and 1972 according to the Blue Book 1962-1972, but by nearly

Table 6.3. Estimates of gross trading profits of companies (£ million)

Years:	1968	1969	1970	1971	1972	1973	1974	1975	1976
Source:									
Blue Book 1966-76	5245	5668	5930	6695	7469	9233	9962	9677	12455
Blue Book 1965-75	5275	5314	5669	6585	7732	9872	10783	10387	...
Blue Book 1964-74	5275	5159	5447	6092	6928	8714	9706	...	...
Blue Book 1963-73	5275	5159	5227	5775	6663	8476	...	...	...
Blue Book 1962-72	5275	5143	5279	5756	6584	...	...	...	...
Blue Book 1961-71	5061	4967	5161	5769	...	...	...	...	...

Note: . . . = not available for the relevant issue.

47% according to the Blue Book 1965-1975. The figure has since been revised downwards, the estimated percentage increase being now just over 42%. Since the figures for total final expenditure have been revised much less substantially that those for profits, there must be some doubt about the reliability of profit–sales ratios for recent years. If future revisions of this data continue in an upward direction the errors of prediction for 1974 to 1976 given in Table 6.1 may well be smaller than they appear to be at present.

Comparisons and conclusions

Other studies have shown that profits are strongly procyclical in relation to sales or other factor incomes and have attributed this principally to the existence of fixed overheads, including, in the short run, labour costs. While these are important reasons why unit costs tend to be counter-cyclical, the profit to sales ratio also depends crucially upon pricing policy. For example, were prices set strictly as a fixed mark-up on actual historic cost, the profit to sales ratio would be invariant to capacity utilisation, notwithstanding that unit costs vary inversely with capacity utilisation. This proposition is easily checked by reference to equation (10) of the first section.

An alternative approach to the forecast of profits is to derive profits net of stock appreciation as a residual from separate forecasts of value-added and of unit labour cost[11]. It is unimportant in itself whether profits are derived explicitly, as in the present article, or residually, so long as the hypotheses about price behaviour and cost structure are reasonable[12].

Two major disadvantages of the approach arise. The first is that the attempt to explain the price of value-added in terms of a hypothesis about the price of sales ducks the whole issue of stock appreciation[13]. Unless very restrictive assumptions about the composition of gross output are applicable, the procedure will give poor results if the rate of cost inflation is high and therefore stock appreciation is considerable. Secondly, the residual which is forecast is not strictly companies' trading profits, but all factor income other than income from employment. Additional forecasts of items such as rent, income from self-employment and public sector trading supluses are required, plus an estimate of stock appreciation, in order to recover a forecast of trading profits.

This short study of company profits in the UK has shown that, as a proportion of total sales, profits inclusive of stock appreciation normally fluctuate cyclically around a long-term trend in a stable and reasonably predictable manner.

Inflation has not caused the profits ratio to fall, but has affected the liquidity of companies to an extent which depends on the ability and willingness of companies to finance stocks and investment by borrowing. Since the mid-1950s the cyclically corrected pre-tax profits ratio has declined by about 3%; over the same period the burden of company taxation has been considerably reduced and over the last three years the sharp drop in profits and cash flow has been cushioned to a great extent by free depreciation of fixed investment and by the introduction of stock relief against taxation.

A convincing explanation of the factors which determine the long-run profits margin (for example in terms of the shifting incidence of company taxes or the increasing penetration of domestic markets by foreign competition) is very difficult and lies outside the scope of the present study, but it is hoped that further work may provide some answers to these problems.

[11] For example see Kuh [15], Bain & El-Mokadem [1], and Bain & Evans [2].

[12] The CEPG model derives business sector profits after stock appreciation as a residual. But the major cyclical properties of profits are preserved by explaining the price of sales, *not* value added, in terms of costs, and by ensuring a consistent macroeconomic definition of stock appreciation. See Cripps & Godley [5] and Fetherston [6].

[13] Bain & El-Mokadem [1] forecast profits including stock appreciation by first forecasting profits exclusive of stock appreciation and then adding back stock appreciation as though it were an entirely exogenous datum.

APPENDIX

Definitions of variables used in theoretical section

$\Delta BS'$ the change in the book value of stocks
CC current unit costs
DA the volume of domestic sales
e the profit mark-up on exports
HC historic unit costs
M volume of materials
μ the profit mark-up on domestic sales
Π' gross trading profits before deduction of depreciation and stock appreciation
PD price of domestic sales
PX price (in domestic currency) of exports
Q the volume of gross output
R' other direct costs (rents etc.)
S the volume of stockbuilding
SA' stock appreciation
T' indirect tax payments
t indirect tax rate
W' income from employment
XA the volume of export sales.

Note:
a '$\frown$' over a variable indicates the value of the variable at normal capacity utilisation. A prime$'$ over a volume variable indicates measurement at current prices.

Definitions of variables used in empirical section

$BFSC$ total final expenditure excluding stockbuilding at current factor cost, less public authorities' current expenditure on wages and salaries.
CPR gross trading profits of companies (profits arising in the UK).
CSA companies' stock appreciation (profits arising in the UK).
CSA^* predicted company stock appreciation.
XC index of gross domestic product at constant factor cost, compromise estimate.
XC^* expotential trend of XC for the period 1954-73.

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