

# 4

## INFLATION THEORIES, WAGE-PRICE CONTROLS AND THE BEHAVIOUR OF RELATIVE PRICE CHANGES

### Introduction

Inflation is a process of continuously rising prices or, equivalently, of a continuously falling value of money<sup>1</sup>. Two important controversies are currently being waged in the economic world as to what causes inflation. Both involve a conflict between fundamentalists and the neo-Keynesian, the shorthand for the school of economists which has dominated British economic policy since the war. The first argument is about whether inflation is monetary in origin, or whether it results from the operation of mechanical factors, like world prices or the supposed ability of powerful unions (and businesses) to push up wages and prices respectively.

In the following pages we provide a brief description of the economic theories of inflation, the changing emphasis on wage-price controls to counteract inflation, and we trace the behaviour of relative price changes during the period of control. This theoretical discourse, followed by empirical evidence, is intended to show that at an aggregate level operation of the Price Code had been effective to hold down the level of increases in output prices relative to increases in current input prices. This has been possible due to the historical cost-based pricing adopted for the operation of the price control, which the proponents<sup>2</sup> of "normal price hypothesis" found to explain successfully the behaviour of manufacturing prices in the U.K. during the decade and a half preceding 1970—a period of much lower input price increases compared to the environment of the 1970s.

No personal involvement in any estimation of the price path based on an *a priori* model of the behaviour of the industrial prices such as the "normal price hypothesis" had been engaged in by the researcher. He has, however, discussed in this chapter the result of a recent econometric study based on the above hypothesis which confirms the impact of price controls as well as the effect of historic cost-based pricing, as can be observed from a much simpler analysis of published indices of input-output prices, and analysis of unit cost data published by the Price Commission.

### **Economic Theories of Inflation and Wage Price Controls**

At any given time, the value of total production in an economy equals the income generated in the process of production—income in the form of wages and salaries, interest, rent and profit. The classical cause of inflation is excess demand in the economy, i.e. more goods and services are being demanded by consumers, investors and government than the economy can produce at full productive capacity. In other words, at any given time society has limited resources available to it, and these can produce at full capacity only so many goods and services. If the demand on those resources emanating from all sectors exceeds that potential, there will be a scrambling for goods and services, and indirectly a scrambling for resources, pushing up the prices. This type of price increase is known as *demand-pull inflation*.

The question is : how is this excess demand financed? It is associated with government overspending, while not matched by tax collection and public sector borrowing and is ultimately met by printing money. The money spent by the government ends up in the hands of private businessmen and workers, for it is private business and individuals that supply the goods and services to the government. This is what starts the process. With the added purchasing power (multiplied by the banking system) private individuals and businessmen would try to match and outbid the government in its control over resources. This over-heating of the economy initially manifests itself in overtime working, longer delivery lags and inventory reductions. The secondary response is the marking up of wages and prices at a faster rate. In a complex industrial economy, the output of one stage is the input of subsequent stages

and initially rising prices and wages are transmitted through the economy as an increased cost to others. This induces further rounds of price and wage increases. A persistence of this process will activate a third stage in the transmission mechanism, namely: "an upward revision of inflation expectations which, if held firmly enough, will lead firms and unions to raise wages and prices by the amount of which others are expected to raise theirs—regardless of the current state of demand"<sup>3</sup>.

The monetary demand-pull theory is strongly supported with empirical evidence ; "...there is a strong correlation between the rate of monetary expansion and the rate of inflation some ten to twelve quarters *later*. There is no such strong correlation in the opposite direction"<sup>4</sup>.

The second type of inflation, known as *cost-push inflation*, refers to price increases pushed from below by unions pressing for higher wages and management for higher profits. It occurs because firms and unions are not pure competitors, rather they possess varying degrees of market power. Known as price-makers (instead of price-takers in a competitive market) they do not merely adjust to market prices, but by their very action they affect these prices. In this perspective, inflation is the result of a battle over income distribution, with income recipients all attempting to raise their share of national income. Simple raising of claims does not generate more output, the conflicting demands are "resolved" by a rising price level. This view is sometimes reconciled with the monetary view by assuming that because of concern over maintaining full employment, the monetary authorities simply ratify whatever claims are imposed by increasing the money supply, passively<sup>5</sup>.

Regarding the monopoly power of labour unions and industrial producers, Friedman argued that their existence may be one of the factors that, by a variety of devices, affects the course of monetary policy. "But in this respect it is just one of many influences. What produces inflation is not trade unions, nor monopolistic employers, but what happens to the quantity of money. Anything else that affects the quantity of money will have the same effect"<sup>6</sup>.

Further, it is argued that while demand-pull inflation generally implies full employment, the cost-push variety can co-exist, because

of 'administered prices', with unemployment and recession. This latter proposition seems to have been borne out by the lessons of the early seventies which were found to be in contradiction to the "Phillips Curve" trade-off relationship between unemployment and inflation. The strong relationship between inflation and unemployment had ruled economic policy for nearly two decades, with governments deliberately either moving to raise unemployment and lessen inflation or accepting a degree of inflation as the price of full employment.

According to Galbraith, the modern corporation does not seek mainly to maximise profits, but to attain smooth and steady growth. It may be far more willing to cut prices when demand is rising and unit costs falling, than when the market sags and profits are threatened. Based on this downward stickiness of wages and prices, Galbraith and his followers have been advocating a "permanent system of wage and price controls, at least covering those industries dominated by a few large companies"<sup>7</sup>. It is difficult to accept this proposition for two reasons. First, as has been argued by Friedman, such 'administered pricing' may be capable of raising relative wages and prices, and insofar as the government has a full employment policy, may also temporarily raise price levels to a new level, "but it does not produce continuing inflation"<sup>8</sup>. Secondly, whatever the source of inflation, one does not see how in the face of high factor-cost increase, prices could be reduced or price increases restrained for products in general, with the exception of a few with high technological content.

It is being increasingly accepted that post-war "demand management" by governments based on the assumptions of Keynesian economics, of which the Phillips Curve was an empirical extension, did work well up to the mid-1960s in the U.K. because of special circumstances. Up to this time, Friedman explained, the apparent success of policy was due to Britain's link, via a fixed exchange rate, to a world economy dominated by the United States which did not begin to pursue Keynesian policies until the mid-1960s<sup>9</sup>. From then on these conditions ceased to exist, hence the pursuance of full employment policies under changed conditions resulted in growing balance of payment problems, and continued high inflation, as well as high unemployment. Relatively higher levels of employment,

it was suggested, under these changed conditions could be achieved by policies directed towards the structure of the labour market and not with "demand management policies"<sup>10</sup>.

The Federal Republic of Germany is a clear example of the use of a tight monetary policy as opposed to price controls. They have, as a matter of policy, operated without price controls and have minimised government interventions since 1949. The German Federal Bank has always pursued a tight monetary policy, and the trades unions have been very moderate in their wage demands believing that if they pushed them too far this would raise marginal costs and cause reduced output and high unemployment. It is interesting to observe that Germany enjoyed the lowest rate of inflation amongst the nations of Western Europe and North America, even in the climate of the 1970s.

While the debate as to what causes inflation continues, the role that is being assigned to wage-price controls is limited to the moderation of "inflationary expectations" in the short run only<sup>11</sup>. There also seems to be a growing concern for "micro-economics"—the various small details of what actually happens in the economy—at the level of firms rather than broad macro-economic forces as the key to predicting events<sup>12</sup>. As has been commented by Professor Hague, this is possibly going in the right direction in terms of the most important contribution to the theory of the firm in recent years, by Simon, Cyert and March. The work of these people at the Carnegie-Mellon University in the U.S.A. emphasized the way businessmen usually run their businesses—through a system of budgetary control. This process is more likely to result in "satisficing" objectives rather than the "profit maximising" behaviour which economic theory traditionally assumed. Satisficing firms pursue a multiplicity of objectives, altering course only when one or more such objective fails to be met. Limiting conditions, or otherwise, arise from the changing environment which cannot be experienced uniformly by all the firms in a country nor even within an industry sector. Therefore, beyond the short-term role of influencing expectations, the rationale for comprehensive price controls does not seem to exist.

In the U.K. the state of very low real profitability and investment had created an overall impression in which price control in some

form was being advocated only as a political *quid pro quo* to obtain moderation in wage claims. Even Sir Campbell Adamson, Director General of the C. B. I., admitted that although the present Price Code subsidised consumption and discouraged investment, the connection in the public's mind between pay and price controls was such that he believed it would not be possible to get acceptance of a tough policy on pay restraint if all supervision on prices were to be removed<sup>13</sup>.

The next phase of control, which was to be operated in the U.K. for one year was intended to be general supervision on the substantially altered profit margins control of Stage V. Concentration, within this general supervision, was on the cases of "excessive" price increases, while overseeing the gradual withdrawal of price controls, which actually began in Stage V. Following Stage V however, the 'inquiry criteria' listed in the new prices policy had emphasized that the new Price Commission should have regard to the, 'earnings of profits which give a real rate of return on capital employed, sufficient to meet the cost of finance, including compensation for the business risk, and to sustain investment in expansion, innovation and technical improvements'<sup>14</sup>. This reflects a considerable shift in emphasis towards the right direction, but much would depend on how 'profits' would be measured.

### **Relative Price Changes and Price Control**

Relative price changes, including their connection with inflation, represent a central problem in corporate financial management and planning. The distinction between relative price changes and inflation has been characterised by a great deal of confusion. Economists have often been criticised, especially in the United Kingdom, for using the word 'inflation' in more than one sense<sup>15</sup>. A recent I.E.A. Conference took 'inflation' to mean a rise in the price level as measured by some price index<sup>16</sup>. The rate of inflation therefore would refer to a rise in that index expressed as percentage of the value of the index on the base date. An index purporting to show the change in the general level of prices would contain the weighted average of all price changes taking place in an entire economy in any given interval of time. Relative price changes, on the other hand, indicate the changes taking place in the individual prices,

similarly measured, relative to each other. The relationship between the price of steel, for example, and the price of wheat is a relative concept. Therefore, the rise in the general level of prices consists of a multitude of different price changes and typically would conceal a wide degree of dispersion about the rate of inflation.

The impact on business firms of what is very often referred to as inflation, is essentially a question, therefore, of the behaviour of the specific prices of the firm's factor inputs relative to the prices at which it can sell its goods and/or services<sup>17</sup>. The main factor inputs for most manufacturing firms usually include materials and components, wages and salaries, fuel and power, and a number of different categories of overhead and capital expenditure.

Since inflation started to accelerate, the use (and misuse) of statistical indices has become increasingly widespread. But as indexing became a national pastime, there was a growing awareness of the limitations of general price indices<sup>18</sup>. For example, when the price of leaf tobacco rose by 20% in 1974, no general cost index represented, even remotely, the situation in which a cigarette company found itself. For this reason, to measure the impact of relative price changes on a company's costs and prices, one really needs to use a company specific index constructed from data internally generated<sup>19</sup> or developed from published statistical series<sup>20</sup>. There are indications that the use of such indices by companies has increased substantially during recent years. In response to a questionnaire survey, by the researcher, 46 out of 50 large firms said that they were operating a procedure for monitoring cost increases of individual products on certain formal bases.

Some idea of the order of magnitude of the increase in relative price changes affecting the costs and revenues of companies in the manufacturing sectors may be obtained from the three official statistics. The officially published indices of wholesale prices are of two kinds. One set of indices traces the behaviour of the prices of materials and fuels purchased by broad sectors of the industry, whereas the other set records the behaviour of the prices of the output of broad sectors of industry sold in the *U.K. home market*. The third set of indices measure the change of wages and salaries of

U.K. employees. Indices 1 and 2 together represent approximately the behaviour of 75% to 85% of the cost of manufacturing industry, the rest being the cost of capital consumption (depreciation), interest cost and the cost of certain bought-in goods and/or services.

### **Materials and Fuel Costs**

From the first set of indices two types of variations in the prices of materials and fuels purchased by the broad sectors of the manufacturing industry may be computed. Type one is the year-on-year percentage change in prices for the same sector, and type two is the variation between sectors, i.e. differences in percentage changes between sectors in a particular year. For the manufacturing industry the compound annual average rate of increase over the three-year period 1973-1975 was 30.22%, whereas the range of the geometric mean rate of change of input prices of seven sectors widened from 20.07% to 33.37%. In 1974 the prices of materials and fuels purchased increased by as high as a percentage of 53 for the paper and board sector and as low as 13% for the textiles sector. The corresponding increase in unit cost for materials and fuels must have varied considerably among companies in the different sectors. Although a material cost increase was entirely allowable, the adverse effect of some delay in passing it over might have been higher for some sectors relative to others. Besides, the use of FIFO principles of stock valuation resulted in higher levels of under-charging of costs and consequent overstatement of conventional profits for those sectors which experienced relatively higher rates of increase in the price of raw materials and fuels.

### **Wages and Salary Costs, Productivity and Output**

Changes in wages and salary cost to different industries was computed from the index numbers of average earnings for all employees. The percentage changes measure increases in total earnings over time, and so do not provide an accurate measure of the increase in unit labour costs without taking into consideration changes in productivity and output. "The productivity of a nation's work force and the compensation paid to workers, are intricately intertwined with the marketability of the output produced both at home and abroad. Gains in labour compensation which exceed increases in



output per hour of labour expended, lead to rising unit labour costs unless offset by falling costs of other factors. The result might be shrinking profit margins, rising prices, or some combination of both<sup>21</sup>. By comparing indices of output produced per hour worked and labour cost per unit of output in manufacturing industries for twelve industrial countries from 1960 to 1974, Goldstein found that only the United Kingdom experienced a faster rate of growth in unit labour costs than in labour productivity—an average annual change of 5.7% compared with 3.7% respectively. No doubt the difference between the two indices widened sharply after 1970.

Besides the delay factor imposed by the Price Code, there was a provision for productivity deductions in respect of increases in labour cost per unit, to offset the supposed gains in productivity. Productivity in manufacturing increased by about 8% in 1973 but in 1974 it remained constant and was declining in 1975. On the other hand, manufacturing output increased by 8.203% in 1973, but it decreased by 2.437% and 6.198% in 1974 and 1975 respectively. Over the three years the geometric mean rate of change was -0.144<sup>22</sup>.

In its report, March-May 1974, the Price Commission saw the prospects for prices and profits as follows: When manufacturing output was rising, as it was last year at 8% or 9% on the year, and productivity by nearly as much, an increase in wage rates of 13% could be absorbed without too much effect on prices. If wage rates were now to rise by 15% or 20% per annum and the increase in output falls to 2% (first quarter of 1974) the effect could only be an unacceptable rise in prices, or a dramatic fall in profits, or both. It was observed that for all manufactured products the percentage increase in output prices jumped up to 23.28% and 24.14% in 1974 and 1975, whereas profit margins (shown elsewhere) fluctuated at their lowest points (50%-62%) of reference levels<sup>23</sup>.

The index numbers of average earnings for all employees showed accelerating rates of increases in average earnings for all the industry sectors. It was observed that the range of variations over time within an industry as well as between industries in the average rates of increase over the three years was quite small. This was to be expected from the nature of the collective bargaining experienced during

the period ; however, the rates of acceleration slowed down considerably in 1976 because of the (£ 6 per week increase) agreement entered between the Government and the Trades Union Congress.

The effect of input price increases, increases in average earnings and declining productivity and output and price control may be observed from the following table. Table 1 shows the magnitude

TABLE 1 : MANUFACTURING INDUSTRY

Year	Incremental Price-Cost Ratios 1970=100				
	Index of materials and fuels purchased	Index of wages and salaries per unit of output	Index of wholesale prices of output	Col (3) ÷ Col (1)	Col (3) ÷ Col (2)
	1	2	3	4	5
1968	91.5	83.1	89.9	98.3	108.2
1969	95.0	88.4	93.4	98.3	105.6
1970	100	100	100	100	100
1971	104.6	108.6	109.0	104.2	100.3
1972	109.2	112.9	114.8	105.1	101.6
Av. 1968-1972	100.06	98.6	101.42	101.3	102.8
1973	164.5	122.5	123.2	85.3	100.6
1974	215.3	149.1	152.0	70.6	101.9
1975	235.5	197.1	188.7	80.2	95.7
Av. 1973-1975	198.4	156.2	154.6	78.0	99.0

of the deteriorating relationships between input-output prices in the manufacturing industry during the period of price control comparative to the reference level period.

It may be observed that the rates of increase in output prices in the home market had fallen short of the rates of increase in input prices during the period of control in comparison with the average performance during the preceding five years.

In columns 4 and 5 a ratio of greater than 100 indicates that output prices were increasing at a higher rate than the increase

in input prices, a situation which should lead to an expansion of the "price-cost margin" over the period 1968-72. On the other hand the "price-cost margin" during the control period 1973-75 contracted, as shown by the figures of 78 and 99 in columns 4 and 5, indicating that output prices did not keep pace with input prices. It may be argued that the contraction of "price-cost margin" during this period was not peculiar to the U.K. as these periods (1973-1975) have seen dramatic increases in the prices of oil and other raw materials all over the world. For this reason it is helpful to make some international comparisons.

OECD<sup>24</sup> in its year-end publication in both 1975 and 1976 published the trend of input/output prices in seven major countries, including Britain. It was shown that the average rate of increase in materials and fuels, etc., were higher than the average rate of increase in output prices in all these countries during the 1973-75 periods. At no time, however, did the unit labour cost increase exceed the increase in output price, whereas since the middle of 1974, this had been happening in the U.K. in the home market<sup>25</sup>.

### Cost and Price Changes

At a formal level and in relatively more detail, the following table compares costs and prices annually between 1967 and 1971 and on a quarterly basis from 1972. In computing costs the weightings of unit labour and basic material costs were obtained on the basis of most recent input/output tables. These were 70% for wages and 30% for materials and fuels in 1972. Using this as a base, appropriate weighting for each year since 1967 was calculated by taking into account the rates of increases in cost of materials and labour. On the assumption of a typical production cycle of three months the cost figures were lagged by one quarter. The 16.2% rise in costs implied by the official statistics for the fourth quarter of 1976 is therefore shown against the first quarter of 1977. These changes in costs, prices and their differences during the period under review is shown in Table 2.

It may be observed again that between 1967 and 1972, the industry's prices generally rose more quickly than costs. "Since the beginning of 1973, however, profit margins appear to have been substan-

tially eroded. Rising inflation; industries' inexperience in pricing for it; weak volume; and *severe price controls* were undoubtedly the

TABLE 2 : U. K. MANUFACTURING IN HOME MARKET<sup>26</sup>

		Costs (%) Change	Prices (%) Change	Difference in Percentage Points
1967		0.4	1.1	+0.7
1968		2.5	4.0	+1.5
1969		4.5	3.8	-0.7
1970		7.9	7.1	-0.8
1971		6.1	9.1	+3.0
1972	1	2.2	5.5	+3.3
	2	3.3	4.4	+1.1
	3	1.4	4.8	+3.4
	4	4.7	6.5	+1.8
1973	1	13.4	6.6	-6.8
	2	9.4	5.8	-3.6
	3	12.7	7.4	-5.3
1974	4	18.7	9.4	-9.3
	1	23.7	15.7	-8.0
	2	36.2	24.0	-12.2
	3	33.4	25.6	-7.8
1975	4	30.3	27.7	-2.6
	1	31.6	27.4	-4.2
	2	23.8	25.1	+1.3
	3	26.4	23.9	-2.5
1976	4	26.6	20.7	-5.9
	1	21.4	17.6	-3.8
	2	19.9	15.1	-4.8
	3	18.7	15.4	-3.3
1977	4	16.4	17.5	+1.1
	1	16.2	19.9	+3.7

main factors behind this trend.<sup>27</sup> Further, it was noted that since the middle of 1976, these had been reversed, the effect of which had already begun to be reflected in the positive differences between price changes and cost changes in the fourth quarter of 1976 and the first quarter of 1977 (Table 2).

#### Selling Prices of Output and Unit Cost Increases

The behaviour of changes in the costs and prices of manufacturing as presented in the foregoing, confirms that the U.K. manufacturing

industry in general had not been able to advance its selling prices at the same percentage rate as that at which its input costs were rising since the imposition of control in 1973. For the sector as a whole, the average compound annual increase in wholesale prices was computed at 18.28% over the 1972-75 period. As already mentioned, the magnitude of the increase in materials and fuels was 30.22%, and the increase in average earnings of all employees was 18.67%. All this evidence indicates that real profit margins had been eroded, although the exact magnitude of the erosion could only be determined by the behaviour of fixed cost elements depending on the level of output and cost increases affecting them. The determination of the exact lag structure is also a problem, but taking the period as a whole (April 1973-August 1976) there could be no doubt that on average significant erosion in real margins occurred. The following section presents an analysis of the extent to which it occurred due to price controls, and other factors, as mentioned in the preceding paragraph.

To obtain a more relevant and complete picture of the behaviour of cost and price changes within the field of control, unit cost data published by the Price Commission is presented in Tables 3, 4 and 5. These tables contain data on unit cost increases, (allowable as well as non-allowable); resulting price increases based on notifications, and finally increases in output prices in the home market, for the manufacturing industry as a whole and two other sectors. The unit cost data analysed by the Price Commission were taken from a sample of notifications made on the grounds of increased costs, and dealt with during the Report period, excluding cases rejected or withdrawn. The turnover of all such notifications in subsectors were used as weights to find the averages for the sectors. It should, however, be pointed out that increases in costs were not directly comparable with the resulting price increases during the report period, because in some cases an earlier price increase had been applied for and obtained, and other applications were based upon a part of the increase in allowable costs only. Therefore, resulting price increases, as shown in the following tables, were always lower than increases in allowable costs, except in one period (as shown in Table 5) when they were equal. Further, it was observed that Price Commission's own index of resulting price increases (from its base in March 1973) appeared to

work successfully as a leading indicator of changes in the movement rather than the magnitude of changes in producers' prices in the home market. There was a lead-lag relationship of approximately three months between the movement of price increase based on the Price Commission's index and the Wholesale price index of output sold in the home market.

TABLE 3 : MANUFACTURING INDUSTRY

	% increase in total cost per unit	% increase in non- allowable cost per unit	% increase in allowable cost per unit	% Price increase resulting	% increase in output prices in the home market
June-Aug, 1973	10.2	1.0	9.2	5.4	4.7*
Sept-Nov, 1973	9.5	0.8	8.7	7.0	8.6*
Dec '73-Feb '74	11.6	0.4	11.2	11.1	7.4
March-May, 1974	9.0	0.6	8.4	7.6	7.6
June-Aug, 1974	10.7	1.2	9.5	8.5	4.8
Sept-Nov, 1974	8.2	1.2	7.0	6.1	5.6
Dec '74-Feb '75	11.0	0.9	10.1	9.8	6.7
March-May, 1975	7.1	0.8	6.3	6.1	6.5
June-Aug 1975	5.9	0.7	5.2	4.9	3.3
Sept-Nov 1975	10.8	0.6	10.2	9.1	2.1
Dec '75-Feb '76	5.2	0.2	4.6	4.0	4.2
March-May 1976	4.9	0.3	4.6	4.3	3.6
June-Aug 1976.	6.5	0.4	6.1	5.6	4.0
Cumulative increase June 1973-Aug 1976 (% points).	110.6	9.1	101.1	89.5	69.0

\* Based on April '73. Remainder on end to end of the three-month period, e. g. Feb '74 or, Nov '73.

Source : Price Commission Reports, Appendix 4B & Monthly Digest of Statistics, HMSO.

In Tables 3, 4, and 5, it may be observed that the cumulative increases in total cost per unit during the period June 1973-August 1976, were 110.6, 95.1 and 100.1 per cent points for the manufacturing industry, food and drink, and engineering, vehicles and metal sectors respectively, whereas cumulative increases in output prices in the home market were 69.0, 70.4 and 68.9 per cent points. So, relative to unit cost increases, price increases fell short by 41.6, 24.7 and 31.2 per cent points respectively for the industry groups mentioned above. However, these figures underestimated the magnitude of the relative

TABLE 4 : FOOD AND DRINKS SECTOR

	% increase in total cost per unit.	% increase in non- allowable cost per unit.	% increase in allow- able cost per unit.	% Price, increase resulting.	% increase in output prices in the home market.
June-Aug, 1973	14.9	0.8	14.1	5.5	6.4*
Sept-Nov, 1973	9.3	1.0	8.3	6.7	12.5*
Dec '73-Feb '74	7.1	0.3	6.8	6.0	7.6
March-May, 1974	8.5	0.5	8.0	6.7	3.6
June-Aug, 1974	9.6	0.7	8.9	7.5	4.6
Sept-Nov, 1974	8.2	1.0	7.2	6.0	8.6
Dec '74-Feb '75.	8.0	0.9	7.1	7.0	8.7
March-May, 1975.	6.3	0.4	5.9	5.7	4.1
June-Aug, 1975	4.0	0.7	3.3	3.2	2.4
Sept-Nov, 1975	6.3	0.6	5.7	3.9	2.3
Dec '75-Feb '76	4.2	0.6	3.6	3.1	3.5
March-May 1976	3.4	0.3	3.1	2.9	2.3
June-Aug 1976	5.3	0.4	4.9	3.7	3.8
Cumulative increase June 1973-Aug 1976 (% points).	95.1	8.1	86.9	67.9	70.4

\* Based on April '73. Remainder on end to end of the three-month period, e. g. Feb '74 or, Nov '73.

Source : Price Commission Reports, Appendix 4B & Monthly Digest of Statistics, HMSO.

TABLE 5 : ENGINEERING, VEHICLES AND METALS SECTOR

	% increase in total cost per unit.	% increase in non- allowable cost per unit	% increase in allow- able cost per unit	% Price increase resulting	% increase in output prices in the home market
June-Aug, 1973	6.7	1.3	5.4	5.2	3.8*
Sept-Nov, 1973	7.6	1.0	6.6	5.8	7.5*
Dec '73-Feb '74	8.4	1.0	7.4	7.0	5.2
March-May, 1974	9.9	1.1	8.8	8.5	6.4
June-Aug, 1974	10.1	1.3	8.8	8.4	5.5
Sept-Nov, 1974	8.2	1.5	6.7	6.2	6.0
Dec '74-Feb '75	9.2	1.3	7.9	7.9	6.8
March-May, 1975	7.8	1.0	6.8	6.7	6.0
June-Aug, 1975	6.5	0.6	5.9	5.6	4.4
Sept-Nov, '75	6.4	0.7	5.7	5.3	3.2
Dec '75-Feb '76	5.6	0.6	5.0	4.5	4.3
March-May '76	6.7	0.4	6.3	5.8	3.7
June-Aug, '76	7.0	0.4	6.6	5.8	4.1
Cumulative increase June 1973-Aug 1976 (% points).	100.1	12.2	87.9	82.7	68.9

\* Based on April, 1973. Remainder on end to end of the three-month period, e. g. Feb 1974 on Nov. 1973.

Source : Price Commission Reports, Appendix 4B & Monthly Digest of Statistics, HMSO.

shortfall, because output price increases included the effects of increases permitted under various special provisions of the Code, e.g. investment relief. The data indicates that the "price-cost margin" of the two latter sectors were squeezed relatively less than that of the manufacturing industry. Between the two sectors it appears that the "price-cost margin" of the engineering and vehicle sector was squeezed more than that of the food and drink sector. Data analysed by the Price Commission showed that as a percentage of reference levels profit margins of the food and drink sector were, on average, higher



than those of the engineering, vehicle and metals sectors<sup>28</sup>. But the comparatively better performance of the food and drinks sector could equally be due to comparatively *higher levels of stock appreciation*. One important factor that contributed to the differing shortfall of increases in price in relation to cost was the increase in non-allowable costs. The cumulative magnitude of non-allowable cost increases was 9.1, 8.1 and 12.2 per cent points for the manufacturing, food and drink, engineering, vehicles and metals sectors respectively. That still left 32.5, 16.6 and 19.0 per cent points of the relative shortfall for these sectors respectively, measuring the differences between cumulative increases in allowable cost and output price increases.

Recognising that a small part of the variation in these shortfalls were due to varying rates of utilisation of the special provision of the Code, this would still leave unexplained a portion of the shortfall of market prices relative to allowable costs. As already indicated at the end of the last section, this portion of the relative shortfall could have been caused either from delays in recognising cost increases, notifying price increases based on the increased cost and implementing the resulting price increases, or weak market forces, or both. The overall picture which could be drawn from this was that while price controls prevented the industry from passing cost increases on in higher prices, a planning-budgeting system within a company and market forces outside could have made a substantial difference in the actual experience of companies in different sectors of the manufacturing industry.

As indicated at the end of the previous section (cost & price changes), with the substantial relaxation of the Code in Stage V, industries' experience in pricing under inflationary conditions and comparatively improved demand conditions, had already set in motion the process of recovering the cost which remained unrecovered so far. Given that unit costs (in Tables 3, 4 and 5) were computed according to conventional historic cost methods, it appears that industry would need to cover a lot of ground in passing the backlog of costs before it could strike a balance between current costs and current prices. In achieving this, much would, of course, depend on the future level of cost increases and demand conditions in home and abroad.

### Predicting Price Changes within the Nordhaus & Godley (N & G)

#### Research Framework : A Review

The view of the manufacturing industry's pricing behaviour which N & G assumed to be correct, was that the "output price is set by taking a constant percentage over average normal historical current costs" and was not affected by "capacity utilisation" due to cyclical variations in demand. In order to test the validity of this variant of the "normal price hypothesis", they adopted the following procedure to construct a predicted price series for the U. K. manufacturing industry, excluding food, drink and tobacco.

- a. Quarterly series was obtained for the period 1953-1969 for all the components which make up current unit costs—labour, materials, fuel, services and indirect taxes. Capital costs and taxes on profits were omitted.
- b. "Normal" unit costs were obtained by purging the relevant series of reversible cyclical components.
- c. It was assumed that firms use historical cost pricing, with the cost base equal to the sum of costs of different inputs, the cost of each category calculated at the time of purchase. A *lag profile* was derived in order to determine the distributed lag between cost and price changes. It extended over eight quarters.
- d. Output prices were then predicted by the following equation :  

$$P_t = (\text{1963 mark-up}) \times (\text{Historical normal unit cost})_t$$

The "1963 mark-up" was the ratio of total value of output in 1963 to total historical normal current costs in 1963. "Historical normal unit cost" was the sum of the lagged components of cost, where the components were estimated unit costs when output equals normal output. The weights and lags on the different cost items were imposed solely on the basis of *a priori* consideration. "When the predicted and actual series are confronted, the behaviour of our predicted prices traced out the actual pattern of price behaviour surprisingly well in view of the procedures used. The major discrepancy is the prolonged fall in the mark-up, particularly during the period from 1961 to 1969"<sup>29</sup>.

Nordhaus & Godley believed the fall in profit margin might be explained by the inclusion of other costs and taxes, the role of competition from abroad and other factors such as nationalisation of steel and the imposition of incomes policies, but they left the testing of these alternative hypotheses for the future. As for their main hypothesis, they tentatively concluded that for the non-food manufacturing industry the normal price hypothesis was correct, i.e. demand did not contribute, in either a systematic or a significant way, to determining the behaviour of actual prices.

Recently Jeremy Cox<sup>30</sup> undertook a research for, and under the auspices of, H. M. Treasury as part of their ongoing programme of economic investigation in price behaviour. Cox attempted to extend the work of Nordhaus & Godley up to the year 1975, and also included 'incomes policy' as a variable. His other variables were pre-constructed for use on the Treasury Macro-economic Model. The conclusion of the study was that the "Nordhaus and Godley method of price forecasting, as amended, predicted quite accurately until the end of 1973, after which it was found to become somewhat conservative"<sup>31</sup>. When the relationship between the predicted prices and the incomes policy variable was estimated on actual prices the result was a small, but just significant, negative coefficient on incomes policy. The coefficient on policy variable was found to be more significant if 1974 and 1975 were omitted from the estimation process. However, it was suggested that this effect had been produced more by the acceleration in the rate of inflation, combined with a vast increase in the money supply in these years rather than by any failure of incomes policy<sup>32</sup>. The conclusion of the above study on the effectiveness of the incomes policy, although found to be statistically significant, an appreciation of the inadequacy of the model to predict price changes under conditions of rising inflation might be obtained from the magnitude of the under-predictions as shown below. The following table shows the pattern of the changes in the two series, where P indicates actual wholesale output price index and  $\hat{P}(t)$  is the predicted series.

It may be observed that from the fourth quarter of 1973 the predicted price index began to fall short of the actual index of wholesale prices of manufacturing other than food, drink and

Year	Quarter	P	$\hat{P}(t)$	$P - \hat{P}(t)$
1973	1	121.400	122.296	-0.896
1973	2	123.500	105.852	-2.352
1973	3	127.300	127.477	-0.177
1973	4	132.100	130.556	1.544
1974	1	142.200	133.087	9.113
1974	2	153.400	140.537	12.863
1974	3	161.900	151.398	10.502
1974	4	170.700	163.338	7.362
1975	1	182.800	169.952	12.848
1975	2	192.100	181.060	11.040
1975	3	199.402	192.086	7.316
1975	4	205.613	198.124	7.489

tobacco. Whereas our analysis in the previous section of this chapter showed that increases in prices fell short of the increases in costs during these periods, the behaviour of the two indices presented above indicate apparently contradictory outcomes. But the reasons for the under-prediction might be explained as follows: it could partly be due to shift and shortening of the actual lag structure between cost increases and price increases, compared to the one used in the model and it could partly be due to the progressiveness that developed with rising inflation in those elements of costs which were excluded from the model, such as capital costs and taxes. Most importantly it confirmed what has long been believed and has already been indicated in Chapter 1—that historical cost-based pricing results in underpricing of sales in times when prices rise more rapidly. Whereas the level of under-prediction of the ex post forecast based on the model showed the imperfect effect of historical cost pricing in anticipating future trends, it also showed the extent by which industry pricing behaviour had been changing, even though price control compelled companies to follow that system as a basis for pricing until 1st August 1976. In its last report, however, the Price Commission recognised the problem by suggesting that “but for price control many companies would undoubtedly have moved from FIFO to something approaching LIFO or replacement cost”<sup>33</sup>. How far companies, in the absence of control, would actually have changed the basis of recognising cost increases would remain an empirical question. From the nature of competition experienced by

companies in the manufacturing industry, especially its food and drink sector, and the increasing use of sophisticated management control and planning system<sup>34</sup>, there are reasons to believe that the process of changes in that direction would have been faster<sup>35</sup>. This had been confirmed, among other things, from the responses received from company officials on a questionnaire survey carried out by us. The background and the result of the survey are briefly presented in the following sections.

### **A Survey of Company Officials on the Operation and Effects of the Price Code**

The use of the survey method to ascertain the experience, attitude and intentions of company executives with respect to various socio-economic phenomena is widespread<sup>36</sup>. The CBI survey of industry asked members for details of the effects of the 1974/75 profitability and liquidity crisis, for which price controls were identified as partly responsible. This and other surveys indicated that many firms had to reduce stocks ; investment plans were cut ; production and employment suffered<sup>37</sup>. In the 1974 NEDO survey, companies identified the Price Code as the highest ranking "specific current constraint on trading profits and related internal cash flow". Finally, the National Institute of Economic and Social Research (NIESR) carried out a survey between March-May 1976, among manufacturers and distributors on the working and effects of the Price Code, their attitude towards it and suggestions for its reform<sup>38</sup>. It was found that since the onset of the recession, market conditions rather than price controls were determining the current price levels. The Price Code, however, was widely blamed for contributing to lower profit margins, particularly in its earlier stages ; this was mainly because of the productivity-deduction, lack of pricing flexibility, and delays in obtaining price increases<sup>39</sup>.

### **The Questionnaire**

The questionnaire was designed to elicit only 'yes/no' replies ; some of them were followed up by a request to provide specific instances/examples, and reasons.

The questionnaire was addressed to finance directors of one hundred and seventy-five Category I and II companies in the manufacturing

industry, using jointly the financial lists of Manchester Business School and the list of Category I companies published in the Price Commission Reports. Of these, fifty-five questionnaires were returned, and five of these were discarded on the grounds that they were incomplete<sup>40</sup>. Thus the discussions of the results of this survey was based on completed returns from fifty companies<sup>41</sup>. Because of the limited number of returns no attempt was made to provide any breakdown of the replies on the basis of categories and industry sectors.

### Result in Summary

The overall result of the survey indicated basically the same pattern in the nature and effects of Price Code as was identified by the NIESR survey. These were : almost all of the companies were using some formal procedures for monitoring cost increases of their individual products, about half of them in cash flow terms and the other half in conventional accounting. The operation of the Code entailed an additional commitment of resources, interfered with pricing policies through inflexibility and delays, held down price increases and therefore reduced profit margins. Demand and competition were also restraining price increases, especially during Stage IV. The resulting reduction in cash flow earnings was met mostly from borrowings, reduction in inventory levels, reduction and postponement of replacement and new investment etc. Investment relief would have been utilised more effectively had it been available to cover investment in working capital also. The relaxations in the Stage V Code were considered sufficient to improve both profitability and liquidity if market conditions were improving. The views expressed on the next phase of the control were that the majority of firms would like to have direct control on prices abolished and replaced by an indirect net profit margin control only.

## Footnotes

1. D. Laidler and M. Parkin. "Inflation : A Survey". *Economic Journal*, December, 1975.
2. Nordhaus & Godley. "Pricing in the trade cycle". *Economic Journal*, September, 1972.
3. Michael Parkin. "Where is Britain's Inflation Going ?". *Lloyds Bank Review*, July, 1975.
4. *Ibid.*
5. J.B. Mitchel. "Wage and Price Controls : Past and Future". *Pittsburg Business Review*, Winter, 1976.
6. Milton Friedman. Unemployment vs Inflation. I. E. A. Occasional Paper 44, 1975.
7. *News Week*, May 1976.
8. M. Friedman; *op.cit.*
9. David E.W. Laidler. "Unemployment vs. Inflation"; *ibid.*
10. *Ibid.*
11. D. C. Hague. "Inflation Theory and Anti-Inflation Policy". *Journal of World Trade and Law*, Sept./Oct., 1976.
12. Arthur Okun & William Nordhaus. *News Week*, May 1976.
13. Bernard Cox, *op. cit.*
14. *The Financial Times*, 23rd. February, 1977. "A New Prices Policy". The Government's Consultative Documents, on the next phase of control to come into force in August, 1977.
15. D. C. Hague, *op. cit.*
16. *Ibid.*
17. G. H. Lawson and P. Raimond. "Background to the one-year Budget...". *Management Accounting*, January, 1976.
18. George R. Berman. "Constructing and using company cost index". *Business Quarterly*, Summer 1976.
19. *Ibid.*
20. Chrisvoss. "Development of Specific Indices for Measuring Inflation". *Business Quarterly*, Winter,, 1975.
21. Ken Goldstein. "International Productivity and Labour Costs". *The Conference Board Record*, February, 1976.
22. Based on Index of Industrial Production. *Monthly Digest of Statistics*, C.S.O.
23. See page 45 in Chapter 3.
24. OECD. *Economic Outlook*, December 1975/76.
25. *Economic Trends*, C.S.O.

26. Keith Percy, "Profit Margins and the Price Code". Market Review, June, 1977. Phillips and Drew
27. *Ibid.*
28. Appendices 7b and 7c. Price Commission Report, June-August, 1976.
29. Nordhaus & Godley, *op. cit.*
30. Jeremy Cox. "Pricing in a Market Economy". Unpublished dissertation, Business Studies Honours, 1977, Kingston Polytechnic, School of Business.
31. Cox, *ibid.*
32. *Ibid.*
33. Price Commission Report, March-May, 1977, p. 12
34. Discussed in chapter 5.
35. For example, it was reported that although companies like Unilever were following LIFO systems, they could not actually realise allowable price increases, because their competitors were following FIFO and hence charging comparatively lower prices.
36. CBI Industry Survey, Financial Times Survey of business opinion and many other official or quasi-official surveys.
37. CBI, "Road to Recovery", 1976.
38. Richard Evely. "The Effects of the Price Code", National Institute Economic Review, No. 77, August 1976.
39. *Ibid.*
40. It may be mentioned in this connection that ten letters were received from companies arguing, sometimes quite irately, as to why they should not be participating in the study. In most cases they expressed frustration at the futility of their participation in similar studies in the past.
41. Only one reminder was issued.