BUSINESS PRICING AND INFLATION

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in collaboration with Sam Aaronovitch and Peter Samson

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Preface

This book originated in a research project undertaken by Sam Aaronovitch and myself on price behaviour in British manufacturing industry over the period 1963 to 1975. In the early part of the project we were assisted by Sadick Johaadien who collected much of the data used. Peter Samson, as research associate, assembled further data, and undertook much of the vast amount of econometric estimation involved. He also contributed much to the general development of the research programme.

The ideas expressed in this book were subject to much discussion between Sam Aaronovitch, Peter Samson and myself, and in that sense this book represents the joint work of the three of us. It was decided, however, that in light of our current interests and activities that I should take responsibility for writing up the results of our research programme in the form of a book. The inputs of the other two are acknowledged by the inclusion of their names on the title-page. But, whilst they agree with the broad thrust of what is written, they do not necessarily agree in every detail.

We are grateful to the Social Science Research Council for financial support (under grant no. HR 4921/2) which enabled Peter Samson to be employed for two years as a research associate. I am grateful to Basil Blackwell Publishers Ltd, for permission to draw extensively on the joint paper with Sam Aaronovitch entitled "Price Change and Oligopoly" which appeared in the *Journal of Industrial Economics*, vol. 30, and to Chapman and Hall Ltd, for permission to draw extensively on the joint paper with Sam Aaronovitch and Peter Samson entitled "The Influence of Cost and Demand Changes on the Rate of Change of Prices" which appeared in *Applied Economics*, vol. 14.

M.C.S.

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INTRODUCTION

In recent years inflation has often been presented as a major, if not *the* major economic problem facing many industrialised capitalist countries. During the 1970s, the rate of price inflation averaged an annual rate of over 13 per cent in the UK, nearly 8 per cent in the USA and 9 per cent in the OECD area as a whole. These rates of inflation were considerably above those experienced in the 1950s and 1960s, when the typical rates of inflation were more like 2 to 4 per cent per annum. Governments often appeared to be evicted from office through a failure to control or reduce inflation, whilst others were elected on the promise of controlling inflation. Increasingly, Western governments have pursued restrictive fiscal and monetary policies, with the declared aim of the reduction of the rate of inflation. Judged by the results in terms of inflation, these policies have been singularly unsuccessful, with at the time of writing, the lowest rate of inflation in the UK since 1973 being 9 per cent (in 1978) and 5.8 per cent in the USA. Alongside these deflationary policies, unemployment has been high and rising. In the United Kingdom it has been above 5 per cent of the labour force since 1975, and had reached 14 per cent by mid-1982. In the United States with unemployment statistics derived in a different manner, unemployment has remained generally above 6 per cent. Across the OECD area, unemployment averaged under $3\frac{1}{2}$ per cent in the first five years of the 1970s, rose to nearly $5\frac{1}{4}$ per cent in the second five years and then to nearly 6 per cent in 1980 and over 7 per cent in 1981.

Despite the widely-expressed concern over inflation and economic policies focused on the reduction of inflation, inflation close to a double figure rate has remained. In this study we examine in depth one part of the inflationary process, namely changes in the price of goods. This is undertaken in part to seek answers to the question of why inflation has persisted. But before we come to the detailed discussion of price changes,

we need to set out the general context within which prices and their formation are discussed.

The discussion of the causes of inflation and its consequences in developed capitalist economies cannot meaningfully be isolated from the discussion of other aspects of such economies. Views on the operation of such economies must inform discussion on inflation. It may often appear that most discussion by macroeconomists, whether of the monetarist or Keynesian persuasion, does proceed in virtual isolation from a wider consideration of the operation of the economy. This often leads to a consideration of the cost of inflation without much consideration of causes and a stress on a simplistic link between the rate of increase in the money supply and the rate of price inflation. But, the implicit assumptions in most macroeconomics include that of perfectly competitive product markets and labour markets. Out of that assumption comes the view that price changes depend on the level of excess demand (which is the Walrasian adjustment mechanism) and the expected price changes. In the labour market, this is summarised in the expectations-augmented Phillips' curve, that wage changes are related to unemployment (used as a negative proxy for excess demand for labour) and expected price changes.

The general background against which we discuss inflation has two major features. First, an oligopolistic structure is assumed. By this we mean that in most industries a few firms dominate price decisions, and that many wage bargains are struck between employers (and their organisations) and trade unions. Second, money is largely "credit money", that is money which is an asset for the holder but a liability for the bank or other financial institution. Here money "comes into existence along with debts" (Keynes, 1930). In this chapter we explore some of the consequences of these two features.

The distinction between the theory of perfect competition and the associated excess demand theory of price change and the theories of price formation (based on theories of oligopoly, monopoly, etc.) is a theme which runs through the book. In the next chapter, we explore the differences between the two approaches in many dimensions before narrowing down to consider the implications and differences for inflation and price change.

One of the central purposes of this book is to report on empirical investigations into the proximate determinants of price changes in 40 British manufacturing industries over the period 1963 to 1975. These empirical results are summarised and discussed in Chapters 3 and 4. In those chapters we also discuss the results of other investigations into the

determinants of price changes. The nature of the theories of price change is surveyed in Chapter 2. From that survey we can indicate how the theories can be subject to empirical validation and the problems involved. However, these theories of price change and the associated theories of price determination have to be placed in context and that is the main purpose of this chapter. We can also indicate how the evidence reported later can be used to throw some light on the Keynesian–monetarist and other debates within macroeconomics.

DEBATES WITHIN MACROECONOMICS

The resurgence of the neo-classical pre-Keynesian macroeconomics in the guise of monetarism can be linked in part with the increased rates of inflation in capitalist economies from the mid-1960s onwards. It is clear, without implying anything about the direction of causation, that any significant inflation will be associated with continuing increases in the money supply. Thus it is almost inevitable that a period of inflation would renew interest in money and monetary policy after the period of relative neglect by the then prevailing Keynesian orthodoxy. But the monetarist counter-revolution has involved much more than merely stressing monetary policy rather than fiscal policy.[1] Much emphasis has been placed within the monetarist approach on the stability of the private sector of the economy, and that stability rests heavily on price flexibility (Modigliani, 1977). The Keynesian explanation of unemployment rests at some point on a failure of prices and wages to change relative to each other and relative to the money supply so as to restore full employment. When the necessary adjustment involved a fall in wages and/or prices, the argument was used that as a practical matter reductions in wages and prices were slow to occur. But in the context of generally rising prices, changes in relative prices can often take place without reductions in absolute prices. Thus inflationary experience weakened the rationale for the price rigidity required by the Keynesian analysis to explain unemployment.[2]

Friedman (1970) argued that the difference between Keynesian and monetarists could be summarised within the IS–LM framework (implicitly seen as accepted by both schools of thought) by saying that Keynesians assumed a fixed price level, whilst monetarists assumed a fixed level of output. Under a Keynesian regime, the economy was seen as adjusting to external shocks by output and employment changes, whilst prices remain unaffected (specifically by changes in the level of

output). Under a monetarist regime, the response to external shocks would be prices changing in order that full employment would be restored, thereby determining the level of output. It would perhaps be better to pose the question as to whether the price level is to be regarded as exogenously determined (relative to the economic factors included in the model) or whether the price level does respond to economic factors such as the level of demand.

The literature on the reappraisal of Keynesian economics (e.g. Clower, 1965; Barro and Grossman, 1976) has stressed the notion that following changes in the composition of demand, prices and wages were slow to adjust, whilst the monetarists assumption has usually been that prices and wages adjust rapidly and full employment quickly restored. It is not only a question of the speed of adjustment. For when prices do not adjust instantaneously to clear markets, then consideration must be given to what happens in disequilibrium. In Figure 1.1, demand and supply curves are drawn for a market. When the price is as p_1, then supply exceeds demand, and it is usually assumed that the quantity actually traded in these circumstances would be dictated by demand, i.e. at Q_1. Then the suppliers are not able to sell the amount anticipated (which at price p_1 would be Q_2), and their actual revenue ($p_1 Q_1$) would be less than anticipated ($p_1 Q_2$). If this were a product market, then the firms faced with lower than anticipated revenue may respond by reducing production in subsequent periods, and in doing so reduce their demand for inputs from other firms and for labour. If this were a labour market, then household income is lower than anticipated, and consumer expenditure could be expected to fall. In either event, there would be a deflationary bias introduced into the economy. The disequilibrium situation could have arisen from many reasons, including sudden shifts in the composition of demand. But the deflationary bias in markets where price is above equilibrium is not compensated by reflationary biases in other markets where the price is below equilibrium. The deflationary process which follows from disequilibrium may be absorbed by stocks. For example, a shortfall in household income may not lead to a fall in consumer expenditure if there are stocks of money and other wealth held by the households which they can use to finance expenditure.

CONFLICT AND INFLATION

Much of the above debate takes for granted that markets are perfectly competitive with talk of demand and supply curves and functions and

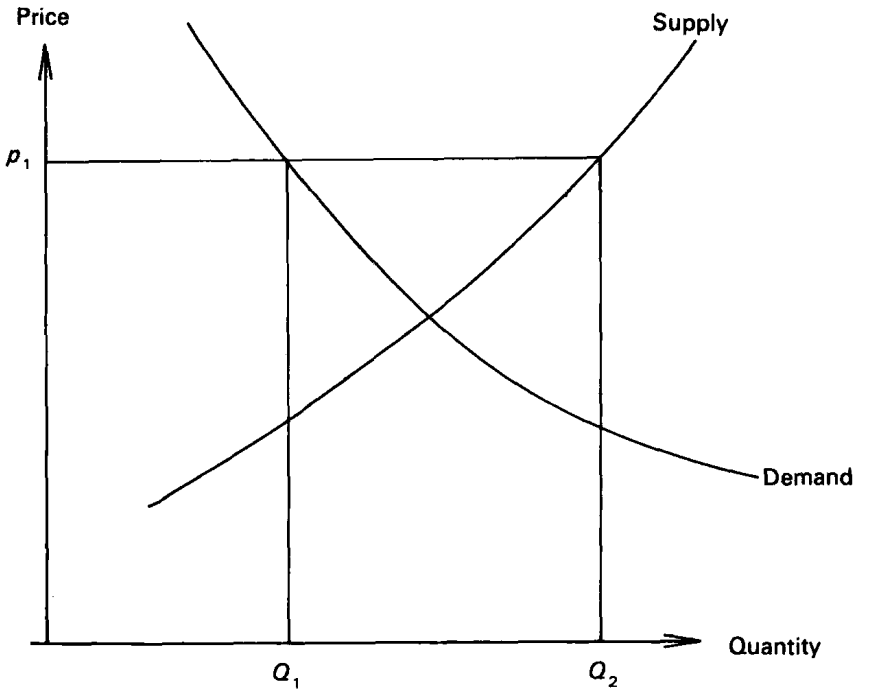

FIGURE 1.1 *Demand and supply curves*

the assumption that economic agents are price-takers. We discuss some of the problems with a perfectly competitive approach in the next chapter in theoretical terms and in Chapter Three in empirical terms. In Chapter Two, we argue that most theories of price determination (and hence of price change) depart from this competitive view, and regard firms as price-makers. Further, firms can be viewed as fixing price as a mark-up over costs, where the determinants of the mark-up depend on which theory is used. Indeed, it can be argued that almost all studies at the micro-level on pricing have focused on questions such as whether the mark-up is constant or not (with respect to demand), on which costs are taken into consideration, etc. and take for granted that firms do not operate, in any meaningful sense, in a perfectly competitive market. Exceptions to this would be studies concerned with the primary commodity and financial markets. But for industrial prices and the like, mark-up pricing of some description is usually presumed. In terms of macro-economics, the presumption of mark-up pricing rather than prices set in competitive markets is a significant change. Before

considering that, it should be made clear that theories of mark-up pricing include not only theories such as full-cost pricing where the mark-up is constant, but also the many other theories where price can be interpreted as a mark-up over costs. For the present we write this as $p = m(q, Z).C(q)$ where m is the mark-up function, which may depend on output (q) and other factors (Z) and C is the average costs which are marked up and which may vary with output.

This approach to pricing has many features of importance, and we highlight a number here (and return for further discussion in the next chapter). First, it is clear that prices are based on costs, and indicates that the pricing procedure envisaged operates through the estimation of costs to which a mark-up is applied. The mark-up is not necessarily constant, a point which is discussed at length in the next chapter.

Secondly, the mark-up yields an excess of price over average costs, and a surplus is generated for the firm. An important element covered by the surplus is the reported profits of the firm. Thus, at least in the short run, this indicates that an important ingredient in the determination of profits is the degree to which firms are able and desire to achieve a mark-up of price over costs. This leads to, in the short-run, the determination of profits is unhitched from notions of marginal productivity of capital and of recompense for thrift.

Thirdly, the mark-up has clear implications for the real wage. Writing total (marked-up) costs as $w.L + f.F$, where w is wage, L is labour inputs, f price index of non-labour inputs and F their volume, the price equation given above can be re-written to give:

$$w/p = (Q/mL) - (fF/pL)$$

Thus, the real wage is strongly conditioned by the mark-up (m), labour productivity (Q/L) and the cost of non-labour inputs (f/p).

Fourthly, the volume of profits is dependent on both the mark-up and the level of output, with the latter dependent on the level of demand in the economy. In turn, the level of demand is likely to be strongly influenced by expenditure on investment. Attempts to raise the volume of profits (by, for example, raising the mark-up) would be counter-productive unless expenditure on investment rises to maintain the level of demand. Thus, the realisation of profits requires that expenditure on investment is at an appropriate level.

Fifthly, the effect of demand on prices is seen as likely to be small. Firms are pictured as facing a level of nominal demand, which they divide up into price and output, depending on their costs and their

objectives. A rise in demand would be expected normally to lead to a rise in output and in price. Price would be constant with respect to output if the mark-up function and average costs were constant with respect to output. It is often assumed that the determinants of the mark-up (e.g. the elasticity of demand) and average costs are relatively insensitive to output changes. This would lead to the belief that a change in the level of demand would mainly filter through into output changes rather than price changes (for a more formal analysis see pp. 22–36 below).

It can be seen from above that the price mark-up mechanism has implications for the real wage and for profits. The latter are not fully determined by the mark-up price mechanism for, *inter alia*, the level of output has to be determined. The level of output prices, and thereby the real wage and profits, depend on the cost of imported inputs. A full consideration would also need to bring government activity into the picture, particularly in terms of taxation.

Four broad groups can be identified in this type of approach – workers striving for real wages, firms for profits, and the foreign sector for revenue from imported inputs and the government for tax revenue. There will be a conflict between these four groups for sharing out real income. There will also be important conflicts within each of the groups, but here we focus on the inter-group conflicts. Each group makes claims on national income, and there is no strong reason why the claim should always be compatible. But the "reconciliation" of the claims of these four major groupings can come through many routes. The claims of the foreign sector may be varied through changes in the exchange rate, import substitution etc. Workers and owners of firms may offset attempts to increase taxation by trying effectively to shift the taxation on to others. Two particular routes for "reconciliation" are of significance here. The first is that efforts are made by groups to persuade others that their claims are too high. The clearest examples of this in the British context has been the use of income policies and other exhortation by governments to persuade or compel workers to accept lower wages. The second route is through changes in the level of demand. Broadly speaking, we have seen above that the volume of profits depends on output, and also that the mark-up can also depend on output. If that is the case, then the volume and share of profits in revenue varies with the level of output and of demand. So far as workers are concerned, their demands for real wages may be modified by the level of unemployment, which in turn depends on the level of output and demand. Thus the level of output could be seen as establishing a "reconciliation" between the

claims for profits and those for real wages. Models in this spirit are presented in Rowthorn (1977) and Sawyer (1982a), (1982b).

Inflation is then seen as arising from, in the first instance, attempts by one or more groups to increase their share of income. One group's income rise is another group's cost rise (and real income decrease). The groups suffering the cost rise are likely to respond by seeking to raise their own prices (whether product price, wages, taxation, etc.) and thereby restore their own income (in real terms), raise costs for others. The continuation of inflation once it has become established may arise from the expectation of future inflation. But we would stress that each economic agent is a small cog in a large wheel, and suffers from cost rises which appear to that agent to necessitate price increases. For example, for an individual firm profits are relatively small proportion of sales revenue (of the order of 20 per cent) and hence a rise in costs which was not offset by a price rise would have a disproportionate effect on profits. Suppose that costs account for 80 per cent of sales revenue, and rise by 10 per cent; if the price of output remains unchanged profits would fall by 40 per cent, whilst a 5 per cent rise in price would still leave profits down by 15 per cent in money terms and down 20 per cent in terms of the proportion of sales revenue. Thus at the level of the firm the experience of inflation is seen as rises in costs which need to be passed on as price rises if profits are to be protected. This focuses on the *experience* of, rather than the *expectation* of, inflation as a reason for the persistent of inflation. We could add, though, that the expectation of future inflation may encourage firms to raise their prices in response to cost increases in that they would then believe that since other firms' prices are rising the demand for their own output would be less effected than otherwise. Similar types of argument would apply to workers.

The triggering of an upsurge in inflation can arise from many directions. In the British context, attention has often been paid by attempts by the government to increase their share of taxation (e.g. in the late 1960s), and by the foreign sector (e.g. the OPEC oilprice rise). The imposition of higher taxation and import prices leads to a fall in post-tax real wages which can trigger off attempts to restore their value by higher money wages. The higher money wages, as well as higher imported input prices and taxation, would lead to higher prices as firms attempt to defend their profit margins.

This essentially conflict theory of inflation focuses on the struggle over income shares between workers, firms, government and the foreign sector. But the continuation of inflation relies on the notion that each economic agent will strive to pass on cost increases as price increases in

order to maintain the real value of their income. The continuation of inflation will generally also require the continued expansion of the money supply. Some price rises may be absorbed without a corresponding rise in the money supply, and hence the velocity of circulation rises. But continued inflation without a corresponding rise in the money supply would require continued rises in the velocity of circulation, and this we take to be unlikely.

However, we view the money supply as largely endogenous and developing in response to the demand for money. There are two important features of the money supply relevant here. First, money is largely credit money (that is money which is a credit balance with a bank). This means that whilst money is an asset so far as the holder of the credit balance is concerned, it is a liability so far as the bank is concerned. Further, the creation of money occurs alongside the creation of loans and debts. For example, a loan made by a bank creates a favourable balance in the bank account of the individual borrower (which is passed on to others as it is spent). The borrower has the favourable bank balance (which is an asset to the borrower) offset by the debt to the bank. Thus "money does not enter the system like manna from heaven – or from the sky via Milton Friedman's helicopter. Nor is it simply the creature of the central bank's policies" (Moore, 1979).

The second feature of money is that its precise definition is difficult to make, and the boundaries of the money supply respond to the demands for money. Thus attempts by government to control one definition of the money supply (e.g. sterling M3) at a level below the demands made for that definition would be anticipated to lead to the expansion of the close substitutes for that particular definition of money.

The endogenous nature of credit money and the fact that production takes time and needs to be financed interact in our explanation of one part of the inflationary process. When a firm increases expenditure on inputs, then that increased expenditure must be financed. The increased expenditure may arise from a desire to expand output which requires an increased volume of inputs or from the requirements of paying higher prices for the inputs. In either case, the firm has to increase borrowing from banks or to run down their liquid assets to finance the increased expenditure. The use of the increased borrowing option would lead to increases in the money supply. In both cases if the firm reaps higher revenue (whether from increased output or higher prices) then they will be able to continue to finance higher expenditure in the future. The increase in the money supply, in response to higher input prices, is a necessary feature of inflation (except in cases where there is "excess"

liquid assets, when effectively increased velocity of circulation can accommodate the increased prices) in permitting firms to make increased payments for inputs, which leads in turn to increased price for output.

Thus at the level of the firm, an increase in input prices leads to an increased requirement for money (to finance the purchase of inputs) and to an increased supply of money. If the increased supply of money were not forthcoming then some combination of reduced purchase of inputs and of lower (than otherwise) increases in input prices is required.

This view also indicates that once inflation is established within the economy, it becomes difficult to dislodge. For, to state the obvious, the slowing down of price and wage increases for a particular firm or group of workers will require that at the time of implementation the profits of that firm or the real wages of the workers will decline. This arises from the retrospective, rather than prospective, nature of the approach outlined here. This stands in contrast with the more conventional monetarist approach which often suggests that the costs associated with lowering the rate of inflation are the "costs" of revising downwards inflationary expectations and the loss of output and employment which are associated with those downward revisions. In our approach the costs are larger because there is redistribution of income as well as the loss of output involved in forcing the rate of inflation downwards. The loss of output is seen as greater in that changes in demand are seen as having little impact on wage and price change. It is *changes* in demand, not *lower* demand, which reduces inflation.

COSTS OF INFLATION

The conventional approach to inflation has tended to stress the distinction between anticipated and unanticipated inflation. It is argued that anticipated inflation does not in the main affect real outcomes (in terms of output, employment, relative prices), since that inflation has been anticipated and incorporated into the decision-making process. Unanticipated inflation is seen as having real effects (where, for example, it is often argued that price inflation above that anticipated stimulates output),[3] creating difficulties for decision-making and redistributing income in an "arbitrary" fashion. The costs of anticipated inflation are then seen as arising from changes in the demand for money. The argument is basically that the demand for money (in real terms) depends (negatively) on the nominal rate of interest. For whilst money yields a zero rate of interest other financial assets yield a positive