COMMISSION OF THE EUROPEAN COMMUNITIES

STUDY

ON THE POSSIBLE PART PLAYED BY CERTAIN PRIMARY NON-EMPLOYMENT INCOMES IN THE INFLATIONARY PROCESS IN THE UNITED KINGDOM

prepared for the
Commission of the European Communities
by

Professor D.E.W. LAIDLER
in collaboration with the
University of Manchester "Inflation Workshop"

Series: Medium-term economic policy – Volume 6

SUMMARY OF THE STUDY BY PROF. LAIDLER

It is largely accepted the action only on prices and salaries is insufficient to realise growth without inflation.
It therefore appears to be necessary to complete in the future policy measures by a policy regarding also the evolution of primary non-employment incomes.
In order to prepare the elaboration of such an action the present study tries to analyze the possible part played by certain primary non-employment incomes in the inflationary process in Great Britain. This study has been recommanded to the Commission by the Medium Term Economic Policy Committee on its session of April 26, 1972.

The study has been executed under the responsability of Professor D.E.W. Laidler by a group of scientists of the University of Manchester. After a short introductory chapter Mr. Bob Scapens, John Arnold and Bryan Carsberg analyse and explain the different techniques for measuring business profits. The relationship between the profitability of banks and financial intermediaries and the rate of inflation are analysed by Mr. Michael Parkin and Zannis Res.
Mr. M.T. Sumner has been treating the relations between fiscal policy and inflation.
A special treatment was given to nationalised industries. Mr. Robert Millward has examined the price and incomes policy in this sector in the post-war period.
The interrelations between inflation and the transport and housing market have been treated respectively by Mr. P.C. Stubbs and W.J. Tyson and by Mr. D.E.W. Laidler himself. Finally Mr. Richard Harrington has been analysing the relationship between inflation and professional earnings. The last chapter gives an over-all view on the interactions between the different sectors analysed and states the conclusions of the study.

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PREFACE OF THE COMMISSION

It is today generally accepted that action taken solely on prices and wages is insufficient to maintain a non-inflationary growth policy. For these reasons, the Commission has deemed it useful to have independent experts study, in the different member countries, the possible part played by certain primary non-employment incomes in the inflationary process.

Given that it is an important subject just as much from the economic viewpoint as the political, thereby justifying as wide a discussion as possible, the Commission is publishing in the current brochure the complete study presented by Professor D.E.W. Laidler. The opinions expressed are the sole responsibility of the author and should not be taken to be the attitude of the Commission concerning the many questions involved.

THE STUDY

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CHAPTER 1.

INTRODUCTION

Inflation and its control have taken the attention of U.K. policy makers throughout the post-World War II period. Interest in the potency of alternative anti-inflation policies stemmed mainly from concern over the course of the balance of payments. Balance of payments equilibrium and full employment were the main macro-economic objectives of government policies since 1945. The commitment to full employment was made by all political parties. Also there was general agreement that U.K., being a major economy with sterling as a reserve currency, should ensure that its balance of payments did not develop in such a way as to undermine the international monetary arrangements as embodied in the I.M.F. system. This system placed the emphasis on the maintenance of fixed exchange rates at least for the major industrial countries.

Fiscal policy was the main means through which the objective of full employment was pursued. Taxation and government expenditure changes were initiated along lines thought to be consistent with a balance of payments position conducive to maintaining the strength of sterling. In other words, deflationary measures were taken when a balance of payments deficit developed or persisted for some time. The ensuing unemployment was never allowed to rise above 3% for the whole period of the 1950's and 1960's. Indeed, for most of the years during this period unemployment was below 2%. Deflationary fiscal measures were seen as operating on the balance of payments via their impact on the rate of inflation. This stance reflected the economic thinking prevailing till the mid-1960's, which is best expressed by the Phillips curve relationship between unemployment and the rate of change in money wage rates.

Evidence presented towards the end of the 1950's reinforced the view that there is an inverse relationship between unemployment and wage inflation. The same evidence was all the more impressive as it suggested that this

relationship was stable over nearly a century during which many institutional changes had taken place. Thus policy makers were presented with what appeared an easy and simple choice: a small rise in unemployment for a smaller inflation rate if balance of payments developments required it, or alternatively the endurance of a higher rate of price rises in the pursuit of a smaller level of unemployment.

Policy formulation based on the simple relationship between excess demand and inflation inevitably had its critics. On the one hand it was argued that U.K. policy makers were mistaken in relying solely on fiscal policy in the belief that the control of the money supply is unimportant if not irrelevant for promoting price stability. Others argued that incomes policies could ensure price stability without having to sacrifice the objective of full employment. These conflicting attitudes towards the potency of the various anti-inflation policies reflected alternative diagnoses of the causes of rising prices. Some advanced the view that inflation is a monetary problem requiring monetary remedies, while others argued that inflation was caused by trade union militancy. According to the latter, trade unions can and do make use of their power to push wages up independently of the state of demand in the labour market. As a result of union militancy costs increase so that firms are forced to raise their prices in order to maintain their profit margins. Thus incomes policies were recommended as the best way of affecting price inflation through the imposition of ceilings above which money wages could not rise.

Events since the mid-1960's appeared to confirm the diagnosis that trade union militancy was the main cause of inflation which began to accelerate. Increases in the level of unemployment did not appear to have the desired impact on wage inflation. The inverse relationship between unemployment and the rate of change of money wages came to be seen as something of the past. At the same time as inflation accelerated, industrial unrest began to assume larger and larger dimensions. Rising unemployment, increasing industrial

strife, and accelerating price inflation formed the basis for the argument that if price rises are to be curbed trade union militancy needed to be restrained. Wage and price controls were advocated. Thus the years since 1966 have been characterised by repeated attempts to institute arrangements regulating increases in money incomes. The controls have sometimes been statutory and sometimes voluntary and there has been more than one wage freeze.

Whether or not trade union militancy is the cause of inflation, whether or not inflation is a monetary phenomenon, and whether or not there is a stable relationship between unemployment and wage inflation are all questions which can in principle be resolved by appealing to empirical evidence. It is, therefore, useful if we set out certain features present in the determination of economic policy in the U.K.

The U.K. played an active role in the setting up of the Bretton Woods system and its subsequent evolution. Whatever the intentions of the creators of the I.M.F. system may have been, after the 1948-49 realignments of exchange rates, this system came to imply a commitment, at least on the part of the major industrialised countries, to maintain the exchange rates fixed. Fixity of exchange rates leads to an interdependence of price levels among economies. Individual economies become linked with each other in very much the same way as regions within an individual country are interdependent through the use of a common currency. In 1958 full convertibility was formally established and in the subsequent years numerous international agreements resulted in the removal of most obstacles in the movement of goods between countries. Similarly, during the 1960's the mobility of capital and labour greatly increased. The implication of these developments was that the course of each individual economy with the exception of the United States was largely determined by events in the rest of the world. More specifically, fixity of exchange rates led to price level trends being mainly determined at an international level. Each individual country, except of course the U.S.,

was too small to have a significant impact.

Given the monetary arrangements governing international relations during the 1960's we may think of individual countries as exporters/importers of inflation, the long-run average inflation rate being determined at a world level. Thus any country, including the U.K., pursuing certain policies aiming at a rate of inflation different from that in the rest of the world while maintaining its exchange rate fixed would find its policies frustrated. International organisations such as the O.E.C.D. as well as academic economists have drawn attention to the convergence of inflation rates during the 1960's and drew the conclusion that economic policies need to be internationally co-ordinated. For an economy to be insulated from external inflationary impulses its exchange rate must be allowed to be freely determined by the demand for and the supply of its currency. Indeed, following the recent break down of the I.M.F. system and the adoption of greater flexibility of exchange rates by the major countries, their inflation rates have begun to diverge, in sharp contrast to the trends of the 1960's.

In considering, therefore, the U.K. experience and in discussing the potential effectiveness of alternative anti-inflation policies it is necessary to analyse the impact on U.K. of its relations with the rest of the world and its exchange rate policies.

During the post-war period U.K. policy makers relied on fiscal policy for the achievement of the objective of full employment. This reliance on fiscal policy reflected the prevailing intellectual environment which minimised the importance of the money supply and the effectiveness of the market mechanism, especially in the labour market. Instead of attempting to control the rate of growth of the money supply, U.K. policy makers chose to maintain stable interest rates. Thus open market operations were undertaken with this objective. The implication of this was that control of the rate of expansion of the money supply was abandoned. For the same reason, i.e. to maintain stable interest rates, budget deficits were primarily financed by borrowing

from the central bank. The alternative course of borrowing from the public was considered as undesirable to the extent that it would have led to the rate of interest rising. A rate of interest policy was chosen not only because of the belief that "money does not matter" but also because it was considered as desirable in andof itself. For example, a policy of maintaining a particular, usually "low", level of interest rates has a direct impact to a large, politically important group of people, i.e. the people who are buying their house by using mortgages. Mortgage payments can be kept low it is believed by maintaininglow interest rates, a belief that completely ignores the impact of such policies on the demand for housing and the resulting price increases, which in turn affect monthly payments.

U.K. monetary authorities have attracted wide criticism for their policies. It has been pointed out on many occasions by numerous economists and institutions that people choose to maintain a stable part of their wealth in cash balances. If they find that their cash balances are increasing, they attempt to eliminate their excess cash balances. In doing so they increase their expenditure which soon manifests itself in higher prices. Higher prices imply lower real balances, and this process will continue until real cash balances are reduced to their desired level. But if the economy is operating a system of fixed exchange rates then economic agents can adjust their cash balances through the balance of payments. Monetary policy in this case will have a direct impact on the balance of payments and only short-run effects on domestic inflation. In other words, excessive monetary expansion will lead to a balance of payments deficit and temporarily to a rate of inflation higher than that prevailing in the rest of the world, and vice versa if the growth of the money supply is less than that of the world aggregate.

If the exchange rate is allowed to fluctuate freely then monetary policy has more impact on the domestic rate of inflation; the exchange rate changes to equilibrate the balance of payments and insulate the country from the price behaviour in the rest of the world. In short "monetarists" have

argued that given fixed exchange rates inflation is an international phenomenon determined by the rate of growth of the world money supply. Economies operating such exchange rates can only deviate from the internationally determined rate of inflation in the short-run and if they are small, can have no significant impact on the world average rate of inflation. Thus while the world was in a state of mild excess supply in the 1950's and early 1960's the average world rate of inflation was low. At the same time the U.K.'s permissive monetary policy resulted in a British rate of inflation slightly higher than that of the rest of the world, but still low in comparison to the rate prevailing since the mid-1960's, and in a steadily deteriorating balance of payments. In the mid-1960's the rate of growth of world money supply increased leading to an acceleration of the world inflation rate. U.K. attempts to reduce the domestic rate of inflation through either deflation or wage freezes failed in the face of pressures coming from the rest of the world. U.K. policies were too insignificant to affect the world inflation rate. Furthermore, events following the 1967 devaluation of sterling provide striking evidence of the inter-dependence of economies on fixed exchange rates and their inability to pursue an independent monetary policy. The devaluation of 1967 did not lead to the expected improvement in the U.K.'s balance of payments as it was accompanied by permissive monetary policies. Prices rose steeply to the level prevailing in the rest of the world, a manifestation that prices are determined at a world rather than national level. When, however, monetary policy was reversed under I.M.F. pressure the balance of payments moved into a position of surplus during the years 1969-1970. But tight monetary policy in a world of accelerating inflation was not effective in reducing the U.K. domestic rate of inflation to levels comparable to those prevailing in the late 1950's and early 1960's.

Monetarists, though they stress the role of excess demand as a cause of inflation, are highly critical of policy formulation based on the simple Phillips curve relationship between unemployment and the rate of change

of money wage rates. The essence of the Phillips curve relationship is that the demand and supply of labour determine the equilibrium wage rate, the higher the excess demand, i.e. the lower the level of unemployment, the higher will be the rate of change in wages. But monetarists point out that the implication of this analysis is that although negotiations are over money wages what the two sides in the wage bargain try to influence is real wages. Thus in order to make consistent the Phillips curve relationship with the analysis whereby demand and supply determine the equilibrium real wage level monetarists argue that the rate of change of money wage rates will be equal to the expected rate of price inflation plus an adjustment reflecting the state of excess demand in the labour market. Thus it is to be expected that mild deflationary measures will not immediately cut down the inflation rate. It will continue on its course as a result of expectations regarding price rises. Monetarists, therefore, explain the phenomenon of rising unemployment and accelerating inflation as a manifestation of the impact of the expected rate on the actual rate of inflation.

Empirical research undertaken both in the U.K. and elsewhere suggests that the monetarists' explanation is not contradicted by the evidence. Be that as it may, a substantial number of economists, policy makers and economic institutions have not been persuaded by the monetarists' evidence. Instead, they advance the argument that it is trade union militancy that causes inflation and that incomes policies rather than control of the money supply is potentially the most powerful anti-inflation policy.

Incomes policies though widely advocated in the U.K. have not attracted general support. The U.K. experiments with incomes policies have tended to place emphasis on restraining money wage increases. This feature of U.K. incomes policies combined with the consequences directly arising from the acceleration of inflation have led to both employers and trade unions expressing their opposition to wage and price controls.

In periods of inflation people find the real value of their income being

eroded by price increases. In their attempt to make up these losses they seek to achieve increases in their money income which will compensate for the losses suffered. If ceilings are imposed on these money income increases while prices in one form or another continue to rise, income recipients are frustrated from maintaining their real income. The ability of different social groups to achieve money income increases in line with price inflation varies. On the one hand those groups with fixed incomes, e.g. pensioners and others relying on social security, have no market power in maintaining their real incomes and must rely on the political process. On the other hand workers in the private sector belonging to a strong trade union are better placed to offset the effects of accelerating inflation. Thus, in times of accelerating inflation income is redistributed and this leads to social unrest. The redistributive effects of unanticipated inflation have tended to be worsened by the adoption of incomes policies. Trade union opposition to incomes policies stems from their apparently uneven impact. Whenever incomes policies have been instituted in the U.K. the government was regarded as being better placed for a time to enforce in the public sector its chosen norm of wage increases. This contrasts with the experience of the private sector which was often unwilling to comply with the imposed ceilings. Thus, income was redistributed towards workers in the private sector; the ensuing resentment led to industrial strife in the public sector. Indeed, a casual investigation of strike activity data for the recent years is sufficient to show that the major industrial disputes occurred in the public sector. The two disputes involving the mineworkers in 1972 and 1974 are the most striking examples of this phenomenon.

Trade unions are opposed to incomes policies not only because of their uneven impact on different groups of workers but also because if they are not successful in containing price inflation then profits take a larger share of the national income. Further, it is argued that controls on money income increases for certain professions, e.g. solicitors, estate agents,

accountants, etc., are either ineffective or non-existent so that these groups tend to suffer less from inflation.

The corporate sector is also, to say the least, lukewarm in its support for incomes policies. Their opposition is based on the difficulties that emerge in the recruitment of labour, on company liquidity when prices are held down and appreciated capital is taxed as a corollary of the incomes policies pursued by the government.

The control of inflation is now the top priority of economic policy in the U.K. All political parties agree that unless the inflation rate is stabilised at a level below that experienced in recent years the prospects for the British economy are alarming. Anxiety is expressed about the socio-political consequences of accelerating inflation. It is, therefore, not surprising that all policy options are discussed, the advantages and disadvantages of each being carefully evaluated. Inevitably monetary policy is advocated by some but the majority of policy makers in the U.K. remain highly sceptical about the prospects of success to control inflation through the pursuit of an active monetary policy. Similarly, doubts have been expressed on whether reliance on fiscal policy is likely to yield the desired results. Incomes policies, in some form or other, still attract support among those directly and indirectly involved in policy making though opposition to them has, if anything, increased in the wake of recent attempts to regulate money income increases.

Though a good deal of work has been done on the impact of such policies on the overall rate of money wage and price increases, very little is known about their impact on non-wage incomes in the United Kingdom, or about how they have impinged on specific sectors of the economy. Moreover, very little is known about the way in which such policies interact with more conventional fiscal and monetary weapons. This study seeks to answer some of the questions implicit here. In the pages that follow we deal with such issues as the

measurement of profits in an inflationary environment, clearly a prerequisite for controlling them. We also deal with the impact of fiscal policies on wage and price setting behaviour and hence on important aspects of the interconnectedness of economic policy tools. In studying the banking sector, we again come upon a potentially important linkage for in this case we inevitably raise issues about the interaction of monetary policies and incomes policies. We then turn to consider the effects of incomes policies on a specific sector - the nationalised industries - but here again we find interconnections with other branches of policy that arise from the effects of price controls on the need of these industries both to borrow to cover deficits and to be subsidised from the central government budget. A chapter on transport follows after which we go on to consider the effects of inflation on the owner occupied housing market, where once again there are important linkages with taxation and interest rate policies. Then we go on to discuss the behaviour of certain classes of professional incomes in recent years. Thereafter, in the final chapter, we summarise our findings, show how they are interlinked, and draw certain tentative conclusions about the appropriate conduct of anti-inflation policy in the United Kingdom.

CHAPTER 2.

THE MEASUREMENT OF BUSINESS PROFITS

by

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Department of Accounting and Business Finance

The Measurement of Business Profits

CONTENTS *

* Sections 2 and 4 are based on research undertaken by Bob Scapens and Section 3 is based on research undertaken by John Arnold. We gratefully acknowledge the help of M.A. El Azma with the simulation studies, results of which are given in Section 3.

1. INTRODUCTION

There does not exist, indeed there cannot exist, any general purpose definition to which we may refer to discover how to measure income. Income is a concept invented to assist people in taking decisions. In order to discover the most useful way to measure income for some particular decision purpose, we must:

(1) specify carefully the purpose we have in mind; we must identify the decision takers, the nature of the decisions and the objectives of the decisions;

(2) specify the various alternative methods of measurement that are to be considered, and

(3) choose between the alternative methods by estimating which would contribute most to the objectives of the decisions.

Measurement of income may be required for many different purposes. It is possible that a different method of measurement may be required for each purpose. The selection of a method of measurement should take account of the benefits and the costs of each available method; if we consider each purpose independently, the optimal method would be that which was expected to yield a maximum surplus of benefits over costs. The method having the highest benefits (method A) may not be optimal if it also has high costs; some other method (method B) is likely to be preferred if it yields numbers which are highly correlated with those produced by method A, so that method B yields efficient predictions of the numbers which would be produced by method A, and it has a lower cost.

The choice of optimal method of income measurement is complicated by the fact that many of the costs of producing different measures are joint costs. Consequently, it is not satisfactory to consider each purpose independently. Strictly the problem of choice involves considering the full set of purposes, identifying all possible sets of measurement methods

associated with the set of purposes and selecting the set of measurement methods which yields a maximum surplus of benefits over costs in aggregate. The method chosen for any particular purpose may differ from the method which would be chosen in an independent study of the purpose because of considerations of cost economy. A relatively inexpensive method which is highly correlated with the most useful method is again likely to be chosen. This discussion begs some measurement problems which cannot be resolved with confidence at the present time; nevertheless, it provides a conceptual framework for our study.

The purpose of our study is to consider the optimal method of measuring business income when that measurement is to be used as the basis for some incomes policy, part of a general strategy for the management of the economy. Control of business profits would presumably be exercised by control of prices either by statute or by voluntary means. The choice of what income measure should be used as the basis for controls depends on what state the controls are desired to bring about. That is a political question. We assume, however, that the controls should introduce as little distortion as possible to the allocation of resources in the economy.

The implementation of an incomes policy will have various effects on the output of a wealth maximising firm: it will tend to reduce marginal costs because of controls on other incomes in the economy; it will tend to reduce demand for a product at each possible price; the contraint on price will tend to increase the optimal output level. It is not possible to generalise about the net effect of these influences. Presumably, however, it would be thought undesirable to base the price controls on a measurement of income which would increase the likelihood that the mix of output would differ under the incomes policy from what it would have been without interference. For example, it would be undesirable to use a measure that systematically understated the opportunity costs of using capital resources.

That would cause the measured relationship between the trend of results of capital intensive industries and the trend of results of non-capital intensive industries to suffer from bias, and the controls would affect output of a firm differently according to the level of its capital intensity. Similarly, it would presumably be thought undesirable that controls should affect output in a way that was biased with respect to the age of a firm's assets and so on.

This reasoning leads us to suggest that the ideal measure of income for purposes of price control would be a measure which reflected the opportunity costs of resources and which recorded an increase in income when a firm implemented efficiently a wealth maximising decision. The greater the wealth of a firm, generated by the activities of a period, the greater income should be.

The use of such a measure might lack the required neutral role if firms did not normally seek to maximise profits or if they did not recognise opportunity costs in their decisions. In either case, the use of a measure related to wealth maximisation might be thought desirable for its role as an incentive. This suggestion remains subject to the political objectives of the Government however. It might be desired, for example, to take account of social costs and benefits of a firm's activities in the control procedures.

In Section 2 we consider some available measures of income. We identify two measures, which we call economic income and economic profit, and show that both appear to have the required relationship with wealth. We discuss the difficulties in measuring the two concepts and consider some measures of accounting profit as possible proxies for the preferred measures.

In Section 3 we give some estimates of the relationship between accounting profits and economic income. The estimates provide a basis for assessing whether the extra cost of a measure, such as economic income, having direct

relevance would be likely to outweigh the extra benefits from its use. The mere fact that accounting measures give different numbers from economic income or economic profit is not necessarily an indication that they are suboptimal. The accounting numbers might be excellent if their relationship with other measures was consistent so that the other measures could be predicted from them with high confidence. Section 4 gives further estimates of the relationship between different measures, this time at the aggregate level.

Finally, our conclusions are summarised in Section 5. It should be kept in mind that a good deal of further research is required to reach firm conclusions. In particular, further work is needed on the practical difficulties of measuring economic profit; on the possibility of modifying standard accounting measures to generate improved estimates of economic profit, and on the relationship between accounting profit numbers and the preferred measures.

2. SOME ALTERNATIVE MEASURES OF PROFIT AND INCOME

Business profits, which form a significant part of non-wage incomes, are calculated by accountants according to conventions that may not reflect real economic costs and benefits. Accountants in the United Kingdom at present are reviewing the available methods of reporting business profits with a view to amending current practices. Particular attention is being given to the methods of "accounting for inflation". In this context, the term "inflation" is used very broadly to include all price changes irrespective of origin. Proposals for reform have been issued by the professional bodies, but there is no concensus as to their merits. Consequently, a Government Committee has been established to examine the problems of accounting in a period of inflation; its report is expected to be published in Summer 1975. In view of the present activity concerning the methods of reporting business profits, it is not clear what information will be available in future years. But the usefulness of reported profits as a basis for an incomes policy may be one of the criteria used by the Government Committee in assessing the usefulness of the alternative accounting methods. In this section we examine two measures - economic income and economic profit - which may be useful for purposes of an incomes policy and compare them with conventional accounting measures.

Economic Income

Much of current thinking about the measurement of the outcome of business activities is derived from the concepts of income and value developed by Fisher, and later Hicks. These concepts were initially discussed in relation to the income of an individual, but have subsequently been extended to the income of a business enterprise. Hicks defined the income of an individual as the "maximum value which he can consume during a week and still expect to be as well-off at the end of the week as he was at the beginning".[1]

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(1) J.R.Hicks, Value and Capital, (Clarendon Press, 1946), p.172.

In deriving an operational measure of income from such a definition the major difficulty is the meaning of the term "well-off". Hicks suggests that the present value of prospective receipts may be taken as a measure of wealth ("well-offness"). The definition of income then becomes "the maximum amount the individual can spend this week, and still expect to be able to spend the same amount in each ensuing week".(2) In other words, income is a residue after the capital value of prospective receipts has been maintained intact.

Such a definition may be adapted readily to the measurement of business income. The income of a business is the amount by which its wealth (measured by the present value of prospective receipts) has increased during the period, due allowance being made for new capital introduced and capital or dividends distributed. This measure will be referred to as "economic income".

The measurement of economic income can be described by the following equations:

$$\text{Income}_j = R_j + W_j - W_{j-1}, \qquad (1)$$

where

$$W_j = \sum_{t=j+1}^{\infty} \frac{R_t}{(1+r)^{t-j}} \qquad (2)$$

In words, economic income for period j is measured ex ante by the expected net cash receipts, R_j plus (or minus) the net increase (decrease) in wealth during the period, where wealth is expressed as the present value of prospective net receipts. The discount rate, r, represents the market rate of interest. We abstract from explicit allowance for uncertainty in our analysis at this stage. A rearrangement of the two equations yields

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(2) Ibid, p.174. Hicks had abstracted from purchasing power changes in developing this definition. But such changes do not significantly affect the concept.

expected economic income for period j as rW_{j-1}. Hence maximisation of wealth (W_{j-1}) leads to maximisation of expected economic income. However, this is not the only available method of measuring the results of economic activities of businesses consistently with standard economic analysis. The measure of profit which appears frequently in neoclassical analysis is equivalent to economic income only in very special circumstances.

Economic Profit

A measure of profit, which will subsequently be called "economic profit", can be shown to be consistent with the theory of the firm. It has the property that it is maximised when decisions are taken to maximise wealth - a property shared with economic income. Table 1 illustrates the measurement of economic profit in the circumstances envisaged in a simple model. An account of the development of the measure is given in the appendix to this section. The important characteristics to note are the valuation of inputs and outputs in terms of current prices (i.e. the prices prevailing in the period under review); the deduction for the cost of

TABLE 1

The Measurement of Economic Profit:

Revenue (Output sold at current prices)			xxx
Less	Inputs valued at current prices,		
	Variable Inputs (e.g.Labour),	xxx	
	Capital Replacement	xxx	xxx
			xxx
Less	Cost of finance employed (in real terms)		xxx
			xxx
Add	Holding gains (excluding proportion due to purchasing power changes)		xxx
	Economic Profit		xxx

finance employed (which is calculated by applying the real rate of interest, i.e. the market rate of interest adjusted for changes in purchasing power, to the aggregate net assets owned); and the inclusion of holding gains (i.e. the gains accruing to the firm as a result of increases in the prices of its net assets).

Economic income and economic profit both attempt to summarise the results of the economic activities undertaken by business enterprises, and both are maximised when wealth is maximised. However, they would not normally be identical in practical application.

Economic profit is a short-run measure in that it focuses on a single period. It provides a measure of the net increase in the value of the assets owned by the firm. Value to the firm of a particular asset, in this context, may be interpreted as the net effect on the wealth of the firm of its being deprived of the use of that asset. For instance, if the firm loses the use of a machine (e.g.by an uninsured accident), it may be able to replace the asset at its current market value, in which case the current market value represents the value to the firm of that asset.

Economic income, however, measures the net increase in the aggregate wealth of the firm. It will equal economic profit in each period only if the aggregate of values assigned to assets less liabilities brought into the measurement process equals aggregate wealth. In the long-run economic profit will be equivalent to economic income as all future production eventually takes place. The two measures would be equivalent in the short-run, e.g. for individual time periods, only if the classical perfect markets were to exist. In such circumstances economic profit would be zero after deducting the equilibrium return on capital invested; and economic income would be equal to the equilibrium return on capital.

Holding Gains

One aspect of economic profit which requires closer examination is the

treatment of holding gains. In table 1 such gains were included as components of the profit accruing to the owners of the business, after deducting the part which arose because of a fall in the purchasing power of money. This treatment may be justified by the assertion that an individual who owns an asset, the value of which rises more than the increase in general price level, is better off as a consequence. But for this argument to be valid, the business enterprise must be viewed as an extension of its owners so that the business assets may be said, in some senses, to be owned by individuals. This view of the nature of the business enterprise may be termed the "proprietary view".

An alternative view of the nature of the business enterprise is the "entity view" which regards the business as separate and distinct from the owners. The view is worthy of consideration only in the case of public companies, where it may be possible to view shareholders as suppliers of finance in much the same way that other interested parties may be suppliers of goods or services. Such arguments rely on the proposition that shareholders have no effective control of the company's operations. The acceptance of an entity view leads to the argument that holding gains should not be counted as part of business profits. A business which holds an asset whose value increases is no better off in consequence because the sale of such an asset would necessitate a replacement at the new increased price. The entity view leads to a measure of economic profit which excludes holding gains.

The choice between the proprietary view and the entity view may be made by considering which yields the most useful numbers for decision purposes. Since relative changes in the prices of assets affect the wealth of a firm (or are likely to be associated with changes in the wealth of a firm) it seems that holding gains should be included in income for purposes of implementing an incomes policy.

Accounting Profit

The conventional measure of profit computed by accountants and included in the annual financial statements of businesses is equivalent to neither economic profit nor economic income. The accountant's measure of profit has traditionally been based on the concept of "historical cost" which gives the profit from a transaction as the difference between the proceeds received and the outlays originally incurred, irrespective of the length of the intervening period. The outlays may have been incurred many years before the period in which the transaction was completed and yet no recognition is made of any changes in the value of money or in the relative prices of inputs in the meantime. Furthermore, accountants do not impute a cost to the use of funds provided by the owners (shareholders) of the business, although interest on other sources of finance would normally be recognised as a cost.

Thus, apart from the exclusion of imputed interest in calculating accounting profit, the major difference between accounting and economic measures of profit is in the valuation of inputs. Accountants use historical costs whereas economic theory suggests the use of current (opportunity) costs. However, substantial freedom is given to the accountant in identifying historical costs for purposes of profit calculation. The so-called "accounting conventions" provide some rules for the identification of historical costs, but there are many alternatives which are equally acceptable. The cost of using the services of an asset may be found by spreading the cost of the asset over its lifetime according to one of various alternative rule-of-thumb formulae; the overhead costs of production in a period may be associated with actual output units in various different ways and hence divided between current and future periods (carried as part of inventory) in different ways; the costs of some "remote" inputs (i.e. inputs which are not readily identified, physically, with output) may be deducted from profits when they are incurred or from the proceeds of selling the output

to which they contribute, and so on. Several accountants, each faced with an identical set of business transactions, may each arrive at a different measure of accounting profit. Thus, in practice there are many concepts of accounting profit.

Accounting for Inflation

Recent concern about the validity of using the traditional accounting measure of profit in a period of inflation has led some accountants to question the usefulness of historical costs as a basis for accounting. The professional accounting bodies in the United Kingdom, through the Accounting Standards Steering Committee, have proposed amending historical costs by a factor reflecting changes in general purchasing power. The effect of such proposals would be to measure profit as the difference between the purchasing power received from a sale and the current purchasing power of the original outlay. It has been recommended that the published annual financial statements of quoted companies should include supplementary statements showing the calculation of profits on such a basis. However, this practice has not yet been widely adopted and its future acceptance is likely to depend on the outcome of the Government enquiry into the subject.

It should be emphasised that the historical cost of an input, even when adjusted for purchasing power changes, will not equal its current opportunity cost, unless inputs used by the business are unaffected by relative price changes. It has been suggested, in general by academic accountants (although there is some support in the profession and business community), that current values should be assigned to inputs in the calculation of profit, in a manner similar to that suggested above for the calculation of economic profit. However, there are various ways of implementing such a proposal and as yet there is no concensus in favour of any one.

Comparison of Accounting and Economic Profits

As was pointed out above, a major difference between accounting and economic profits relates to the valuation of inputs. The accounting profit calculation uses historical costs, whereas the calculation of economic profit requires the use of current values. These measurement differences give rise to variations in the time when each recognises the earning of profit. Accounting profit does not recognise a profit until a sale has taken place, whereas profits are recognised in the measurement of economic profit when production takes place or simply when there is a change in the market value of the assets owned by the firm (assuming that/for our purposes the proprietary view is preferred to the entity view).

The other difference between the two measures is the omission of an imputed interest cost in calculating accounting profit. Economic profit, as shown in the appendix to this chapter, is the excess of the actual return over the normal return on funds used to finance the business activities. For the purposes of control over prices and incomes, distinction between the normal (equilibrium) return and any excess or deficit is important.

To illustrate the relationship between accounting and economic profit, a simple illustration will be used. Alpha Limited bought raw materials for £1,000 on 1st January 1973. On 31st December 1973, when the cost of replacing the raw materials would have amounted to £1,300, Alpha Limited hired £500 worth of labour services to convert the raw materials into a finished product which at that date would have sold for £2,000. However, the sale was not made until 31st December 1974 when the proceeds amounted to £2,500. During those two years the index of the general price level increased at a rate of 10% per annum.

The calculation of accounting and economic profits for Alpha Limited are shown in Table 2, where it can be seen that there are several alternative measures of profit for this simple set of transactions. There are two

TABLE 2

Profits of Alpha Limited

Accounting Profit Calculations	
(i) Unadjusted for price level changes:	
1973 No sales	nil
1974 Sales proceeds less original outlays 2500 - (1000 + 500) =	£1000
(ii) Adjusted for price level changes:	
1973 No sales	nil
1974 Sales proceeds less adjusted original outlays 2500 - $\{1000(1+10\%)^2 + 500(1+10\%)\}$ =	£740
Economic Profit Calculations	
(i) Proprietary View	
1973 Operating profit: current value of output less current value of input 2000 - (1300 + 500) =	£200
ADD Holding gain: increasein value less proportion due to inflation (1300 - 1000) - (1000 x 10%) =	£200
Economic profit for 1973	£400
1974 Holding gain only: (no production) increase in value less proportion due to inflation (2500 - 2000) - (2000 x 10%) =	£300
(ii) Entity View	
1973 Current value of output less current value of input 2000 - (1300 + 500) =	£200
1974 No production	nil

possible measures of accounting profit. The first has no adjustment for price level changes and is the measure reported in the conventional financial statements prepared by accountants at the present time. No sales take place in 1973 and no profit is recorded. In 1974 the profit is calculated by deducting the original costs of the raw materials and the labour from the proceeds of sale. The second measure of accounting profit incorporates adjustments for changes in the general level of prices. This measure is similar to the unadjusted accounting profit except that the deduction for original outlays is adjusted for changes in the general price level.

The calculations of economic profit are given in the second part of table 2. In the first instance, it is assumed that the proprietary view of the business enterprise is accepted. The calculation is made in accordance with the statement given in table 1 except that no deduction is made for the normal return on funds invested in the business; account of the opportunity cost of capital could be taken in the interpretation of the results. For 1973, the profit from productive activities (operating profit) is calculated by deducting the current cost of the inputs, raw materials and labour, from the current value of the output. The holding gains are added to the operating profit to give the economic profit. In 1974 there are no productive operations and only holding gains are recorded. If the entity view of the business is accepted, holding gains will not be recorded in the profit calculation and only the operating profit earned in 1973 will be reported.

The relationship between the accounting and economic measures of profit can be compared by a closer examination of these figures. The adjusted accounting profit is almost directly comparable with the proprietary view measure of economic profit. The adjusted accounting profit was recorded as £740 in 1974, whereas the proprietary view measure of economic profit was £400 in 1973 and £300 in 1974. But the price level changed between 1973 and 1974. The rate of increase in prices was 10%, therefore £440

in 1974 was the equivalent to £400 in 1973. In terms of the 1974 price level, the aggregate economic profit amounted to £740, the same as the adjusted accounting profit.

If the entity view is accepted the holding gains must be eliminated. The holding gains included in the adjusted accounting profit amount to £520; their elimination would reduce profit to £220 in 1974, equivalent to the entity view measure of economic profit of £200 in 1973.

This simple example illustrates that economic profit, aggregated over time, is equivalent to the aggregate accounting profit adjusted for price level changes. The major difference is the time at which each recognise that the profit has been earned. In the accounting measure recognition of the profit is delayed until the sale has taken place. It should be emphasized that this correspondence between accounting and economic measures of profit applies only when the accounting measure has been adjusted for changes in the general level of prices.

The Relationship with Economic Income

The example of Alpha Limited can be extended to illustrate the relationship of economic income to the two measures of profit. For this purpose, a distinction must be made between real and monetary measures of economic income. The measure of economic income given by equation 1 represents a monetary measure - in other words, no adjustment is made for changes in purchasing power. A measure of real economic income may be given as follows:

$$\text{Real Income}_j = R_j + W_j - W_{j-1}(1 + g) \ . \qquad (3)$$

This differs from equation 1 in that the wealth at the start of the period, W_{j-1}, is expressed as the sum of money which would have equivalent purchasing power at the end of the period, i.e. it is increased by g, the proportional change in the general level of prices.

The real and monetary measures of economic income for Alpha Limited are calculated in table 3, where it can be seen that the monetary economic income is equal in aggregate to unadjusted accounting profit, and that real economic income is equal in aggregate to accounting profit adjusted for price level changes. It is assumed that the market interest rate is 15½%. In both cases the differences between the income and profit measures are a matter of timing. Accounting profit defers all recognition until a realisation takes place, whereas economic income measures benefits from the time when the opportunity is first recognised. Such differences in timing may be of great significance to the usefulness of the measurements.

TABLE 3

Economic Income of Alpha Limited

The variables in the calculation:

Net Receipts = R_j and Wealth = $W_j = \sum_{t=j+1}^{\infty} \frac{R_t}{(1+r)^{t-j}}$

time 0 $R_0 = -1000$ and $W_0 = \frac{-500}{(1+0.155)} + \frac{2500}{(1+0.155)^2} = 1441$

1 $R_1 = -500$ and $W_1 = \frac{2500}{(1+0.155)} = 2164.5$

2 $R_2 = +2500$

Monetary Economic Income:

$\text{Income}_j = R_j + W_j - W_{j-1}$

$\text{Income}_0 = -1000 + 1441 - 0 = 441$

$\text{Income}_1 = -500 + 2164.5 - 1441 = 223.5$

$\text{Income}_2 = 2500 + 0 - 2164.5 = 335.5$

Total Monetary Economic Income 1000.0

Real Economic Income:

				Adjustment to 1974 prices
Real Income $_j$	$= R_j + W_j - W_{j-1}(1+g)$			
Real Income $_0$	$= -1000 + 1441 - 0$	$= 441$	$\times 1.10^2$	$= 533.61$
Real Income $_1$	$= -500 + 2164.5 - 1441(1+0.1)$	$= 79.4$	$\times 1.10$	$= 87.34$
Real Income $_2$	$= 2500 + 0 - 2164.5(1+0.1)$	$= 119.05$		$= 119.05$
Total Real Economic Income (in 1974 prices)				740.00

In the illustration, economic income of £441 is recognised as soon as the asset is purchased. Economic incomes of subsequent years represent the normal return on the wealth at the start of the year (measured in monetary or real terms).

The Alternative Measures

There is no single measure which can be regarded as the "correct" method of determining business profits. There are alternatives available, even if attention is focused solely on the concepts of economic theory, and, furthermore, the economic measures do not conform to the practices adopted by the accountant and reported in the annual financial statements. The alternatives may be summarised in general terms as follows:

(1) Economic income: this is a measure of the economic benefits accruing to the proprietors as a result of their ownership of the business.

(2) Economic profit: this is essentially a short-term measure which focuses on the business as a productive unit. There are alternative treatments of holding gains depending on the view that is taken of the nature of business enterprise.

(3) Accounting profit: this comprises the many alternative measures, each differing slightly from another, found in the published financial statements of companies. They are based on historical costs and include no allowance for purchasing power changes. A measure of accounting profit adjusted for purchasing power fluctuations is published by a few companies and such a measure may become more widely used in the future. Further modifications of accounting procedures, for example some recognition of current values, might be made to yield a measure approximating economic profit more closely.

The three measures may be contrasted in terms of the points in time at which each recognises the economic benefits accruing from business activities.

Accounting profit, adjusted for purchasing power changes, reflects the economic benefit only when a sale takes place; economic profit reflects the benefit when production takes place, and economic income records the benefit as soon as the existence of the opportunity is recognised.

Economic income may be viewed as an ideal measure of the economic benefits accruing to the proprietors as a result of their ownership of the business. However, it suffers from the practical disadvantage that its measurement depends much more heavily than alternative measures on subjective estimates of future events; it cannot be verified by an auditor. Nevertheless, the relationship between accounting profit and economic income may be studied theoretically to discover whether the relationship is likely to be stable so that accounting profit, with its greater ease of measurement, could be used as a proxy for or predictor of, economic income. Such a study is reported in Section 3.

Appendix to Section 2

The Derivation of Economic Profit

The measure of economic profit can be derived from the theory of the firm, by marginal analysis. If Q_t, L_t and I_t represent levels of output, variable input and investment in capital stock, and p_t, w_t and q_t represent the corresponding prices, the difference between revenue and outlay (on both current and capital account) measures the net receipts, R_t, received at the end of period t. Thus,

$$R_t = p_t Q_t - w_t L_t - q_t I_t \quad . \tag{1}$$

The objective of the firm may be taken to be the maximisation of its wealth as measured at a point of time (say at the start of period j),

$$\text{Max } W_j = \sum_{t=j+1}^{\infty} \frac{R_t}{(1+r)^{t-j}} \quad . \tag{2}$$

The maximisation of the firm's wealth is subject to two constraints. First, the change in the capital input during each period is equal to investment less replacement. Assuming that replacement is proportional to the capital stock at the start of the period this constraint takes the form:

$$K_{t+1} - K_t = I_t - \delta K_t \quad . \tag{3}$$

Second, the levels of output and inputs are constrained by a production function:

$$Q_t = F(L_t, K_t). \tag{4}$$

It may be noted that capital services, not capital stock, are an input to the productive process. Implicitly, capital stock is multiplied by a factor representing the rate of service per period of time - in equation (4) the factor is normalised at unity and the same term is used to represent both capital stock and the services of that stock. For purposes of this analysis, it may be assumed that the production function is twice

differentiable with positive marginal rates of substitution between inputs and positive, but decreasing, marginal productivities of all inputs. In addition, it is assumed to be strictly convex.

The firm's maximisation problem as represented by equation (2) and subject to the constraints imposed by equations (1), (3) and (4) can be analysed by an examination of the necessary first order conditions. This analysis yields the marginal productivity conditions for the two productive inputs:[1]

$$\frac{\partial Q_t}{\partial L_t} = \frac{w_t}{p_t} \tag{5}$$

$$\frac{\partial Q_t}{\partial K_t} = \frac{1}{p_t} \{ (1+r)q_t - (1-\delta) \} \tag{6}$$

The shadow prices of the inputs can be derived from the appropriate marginal productivity conditions, equations (5) and (6). These prices measure the cost to the firm of employing the last unit of each input and will equal the value derived from its use. Thus, the shadow prices may be written as:

$$p_t \frac{\partial Q_t}{\partial L_t} = w_t \, , \tag{7}$$

and

$$p_t \frac{\partial Q_t}{\partial K_t} = (1+r)\, q_{t-1} - q_t\, (1-\delta). \tag{8}$$

1.

Equation (6) is the discrete time analogue of the following, more familiar marginal productivity condition for capital derived from a continuous time model:

$$\frac{\partial Q}{\partial K} = \frac{q}{p} (r+\delta-\dot{q}),$$

where $\dot{q}$ represents the time rate of change in the price of the capital input. For instance, see D.W.Jorgenson, "Theory of Investment Behaviour" Determinants of Investment Behaviour, (Universities National Bureau Conference series No.18, 1967) pp.129-155.

The measure of economic profit, P_t, may be defined using these shadow prices to value the inputs into the productive process:

$$P_t = p_t\, Q_t - w_t\, L_t - \{\, (1+r)q_{t-1} - q_t(1-\delta)\,\}\, K_t \,. \qquad (9)$$

This measure of profit is consistent with the wealth maximisation model in that the maximisation of (economic) profit, as represented by equation (9), subject to the constraint imposed by the production function, equation (4), yields marginal productivity conditions identical to those expressed by equations (5) and (6). Equation (9) can be rearranged to give a definition of profit in a measurable form:

$$P_t = p_t\, Q_t - w_t\, L_t - \delta q_t\, K_t - r q_{t-1}\, K_t + (q_t - q_{t-1})\, K_t \,. \qquad (10)$$

The terms comprising the measurement of economic profit can be explained as follows.

$p_t\, Q_t$ The quantity of output sold during the period at the prevailing selling price.

$w_t\, L_t$ The amount of the variable input used in production at the prevailing buying price - for example the quantity of labour used priced at the current wage rate.

$\delta q_t\, K_t$ The proportion of the capital stock requiring replacement during the period priced at the prevailing price for the acquisition of new investment.

$rq_{t-1}K_t$ The market interest rate applied to the capital stock brought forward for use in the current period, priced at the market price for new equipment which prevailed in the previous period. This is a measure of the interest cost of investing in the capital stock during the current period.

$(q_t - q_{t-1})K_t$ The capital stock used during the current period multiplied by the increase (decrease) in the price of new investment. This is the gain accruing to the firm by virtue of its holding of capital stock.

The rate of interest, however, may be divided into two components, a real rate of interest, ρ, (which measures the shareholders' marginal rate

of time preference) and a purchasing power adjustment, π. The relationship between these terms and the market rate of interest may be expressed as follows:

$$(1+r) = (1+\rho)(1+\pi) \ . \qquad (11)$$

Substituting this measure into equation (10) yields a revised formula for the measurement of economic profit, thus:

$$P_t = p_t Q_t - w_t L_t - \delta q_t K_t + \rho q_{t-1} K_t + \{ q_t K_t - q_{t-1} K_t (1+\pi) \}. \qquad (12)$$

This expression differs from equation (10) in that the adjustment for purchasing power changes has been taken out of the interest rate and deducted from the holding gains. Thus the interest is calculated in real terms and holding gains represent the increase in value of the business assets over and above the amount required to keep pace with the general price level.

3. A COMPARISON OF ACCOUNTING PROFIT AND ECONOMIC INCOME

Application of Simulation

In this section we attempt a limited comparison of economic income and accounting profit. The relationship between the two will depend on (i) the type of business transactions undertaken and economic conditions, and (ii) the choice of accounting conventions determining which of the several versions of accounting profit is measured.

Our study involves only a small number of the many environmental conditions that might be encountered in the real world. As mentioned in Section 2, accounting profit may be calculated in any one of a large number of ways depending on which combination of the various accounting conventions is chosen. Given the wide range of choice of conventions that may be applied to the valuation of each of a number of categories of assets, liabilities, costs and revenues, the number of combinations that could be applied to a set of business transactions is almost infinite. Our study deals with only seven combinations of accounting conventions. Although our conclusions are accordingly limited, the analysis reveals large differences between the alternative measures and limited ability to predict economic income from accounting income. It suggests the need for caution if accounting measures are to be used as proxies for economic ones.

We use a method of analysis known as simulation. Accounting and economic measures of income are calculated for sets of hypothetical business transactions undertaken by a hypothetical firm under different environmental conditions. This approach has been chosen rather than a direct investigation of real world data for three reasons. The first is that it allows examination of environmental circumstances that may not have actually existed in the recent past, although they may be expected to occur in the future. The second is that once the simulation model is constructed and computerised, the values of particular parameters may be varied and revised results calculated much

more quickly than if the same adjustments were attempted to real world data. The third reason is that data may be assumed that could be obtained only with great difficulty, if at all, from real world sources - for example the future cash flow data needed to calculate economic income.

Description of the Model Used

The hypothetical firm manufactures and sells only one product. In other respects also the model is of a simple world: relationships describing cost and revenue behaviour are straightforward and explicit recognition of uncertainty is avoided. The relationships used in the model do not imply optimal decision procedures. A simple model, such as this, is often the clearest vehicle for an initial investigation of difficult concepts; more refinements may be introduced when the conceptual issues are clear.

We now give a brief description of the model used, in sufficient detail to permit a general assessment of the type of firm being analysed, but omitting detailed specification of the relationships assumed. The firm commences business with initial capital of £1,000. It is expected to be wound up after 20 years. The market prices of all inputs are to increase each year at a compound rate, π, i.e. there are no changes in the relative prices of inputs. Unit selling price per period, for a given output, is assumed to increase at the same annual rate, π.

Demand conditions for the product are assumed to be such that, given the pricing policy, sales volume will increase at a fixed annual rate, g. The required stock of finished goods at the end of a period is equal to a fixed proportion of the quantity sold during that period. Enough finished goods must be produced to satisfy demand and to provide for any increase in required stock. Similarly a minimum stock of raw materials must be available at the end of a period, equal to a fixed proportion of the quantity required for production during that period. Enough raw materials must be bought to satisfy production requirements and to provide for any increase in stock. Each unit of final output requires one unit of raw material

and one hour of direct labour. Factory overhead expenses include a fixed element and an element varying with the level of production. Marketing expenses include a fixed element and an element varying according to the level of sales.

Plant capacity at the beginning of a period must be greater than or equal to the capacity required for production requirements during that period. Any shortfall will automatically generate the purchase of a new unit (or units) of plant. The productive capacity of all plant is assumed to decrease at a constant rate as it ages. Plant is retained until its productive capacity is virtually exhausted at which time it has no value.

Taxation is payable each period at a fixed rate on accounting profit. Taxation payable is not affected by the level of dividends.

Receipts and payments are assumed to arise on the last day of the period to which they relate (with the exception of initial capital and the purchase of plant required for the first year's production). Sales are on credit; amounts of cash collections and debtors are the subject of standardised assumptions. The firm purchases raw materials and incurs factory overhead and marketing expenses on credit; amounts of cash payments and creditors are also the subject of standardised assumptions. Any other costs are paid on the last day of the period in which they are incurred. The firm is required to hold a cash balance at the end of each period, calculated as a function of sales revenue earned during that period.

Any balance remaining on cash account at the end of a period, after providing for the cash balance required to be held at that time, is paid to shareholders as dividend. Any negative balance is assumed to be paid to the company by the shareholders as an extra capital subscription.

On liquidation (at the end of 20 years), all outstanding debts are collected and all outstanding creditors paid. Stocks of raw materials are sold at the existing market price, and stocks of finished goods at the selling

price assumed for the last period of the firm's life. The liquidation value of plant is calculated according to the plant capacity remaining. Accounting capital gains arising on liquidation are assumed to be taxed at the same rate as accounting profit. The final cash balance, after taking account of the above, is distributed to shareholders.

Accounting Conventions Used

Using the environmental conditions assumed in the simulation model, accounting profit figures are calculated using seven combinations of accounting conventions relating to stock and depreciation. The combinations used are described in Table 4. As we noted earlier, these seven combinations are chosen from a very substantial number available. The three methods of stock valuation used are FIFO (first in, first out), LIFO (last in, last out)

TABLE 4

Accounting Conventions Used

Group	Stock Valuation Method	Stock Costing Method	Depreciation Method
A	FIFO	Full cost	Straight line
B	FIFO	Direct cost	Straight line
C	LIFO	Full cost	Straight line
D	LIFO	Direct cost	Straight line
E	Average cost	Full cost	Straight line
F	Average cost	Direct cost	Straight line
G	FIFO	Full cost	Reducing balance

and Average Cost. The three methods are not necessarily descriptive of the physical movement of stock, they merely assume a pattern of physical usage in order to identify the historical costs of end-period stock. Under FIFO, for example, stock is assumed (for costing purposes only) to be used up on production or sales in the order in which it is purchased or manufactured. End-period stock is valued at the cost of the most recent purchases or production. Under LIFO, the most recently purchased or manufactured stock is assumed for costing to be used first. Under Average Cost, an equal proportion of stock of each age held is assumed to be used.

End-period stock is costed at either Direct Cost or Full Cost. The former comprises raw material and direct labour cost only; the latter includes an additional sum for the overhead cost per unit, i.e. total overhead cost divided by units produced.

Two methods of fixed asset depreciation are considered: "Straight Line" and "Fixed Percentage of Reducing Balance". Using the former, a constant amount is written off the cost of the asset as depreciation in each year of its assumed life. Under the "Reducing Balance" method, a percentage of the written down value of the asset at the beginning of a year is charged as depreciation for that year. The percentage is constant from year to year. For the purposes of calculating depreciation, plant is assumed to have a four year life and to be worth nothing at the end of that time.

Results of the Simulation

For each combination of conventions, accounting profit is calculated for each year of the firm's life. The calculations are performed for three rates of growth in physical output ($g = .02$, $g = .05$, $g = .07$) and five rates of "inflation" ($\pi = .00$, $\pi = .05$, $\pi = .10$, $\pi = .15$, $\pi = .20$). Thus for each group of conventions, fifteen sets of profit figures are calculated, one for each combination of output growth and inflation.

Economic income is also calculated for each combination of rate of

output growth, rate of inflation and set of accounting conventions. Economic income depends on cash flows and thus might be thought to be independent of accounting conventions. In fact, however, our model assumes taxation payments to be based on accounting profit calculations. (Under U.K. practice, such dependence is actually constrained by statute.) Economic income for each period is calculated from expression (1) in Section 2:

$$\text{Income period } j = R_j + W_j - W_{j-1} ,$$

where

$$W_j = \sum_{t=j+1}^{n} \frac{R_t}{(1+r)^{t-j}}$$

In the above expression r represents the discount rate of shareholders in money terms (their marginal rate of time preference). For the purposes of the simulation analysis we assume that the value of r will be greater the greater the rate of inflation expected. In particular we assume that the value of r will be such as to satisfy the equation

$$(1+r)^{-n} = (1+\rho)^{-n} (1+\pi)^{-n} ,$$

where π is the rate of general inflation expected to be experienced by shareholders (assumed to equal the relevant rate of inflation used in the simulation), and ρ is a constant, the "real" or "inflation-free" rate of interest. A value of 0.15 (15%) is assumed for ρ throughout the analysis.[1] Rearranging the terms in the previous expression gives:

$$r = \rho + \pi + \rho\pi .$$

Thus if the expected rate of inflation (π) is 0.10 (10%) per period, r will equal 0.265 (0.15 + 0.10 + 0.015), or 26.5% per period.

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1. Values for ρ of 0.10 and 0.20 were also tested. The results of the simulation were not materially affected. These values are probably materially higher than the actual real rate of interest. Their significance depends on the relative values of other variables implied by the model rather than on absolute amounts, however. Further research will investigate the effects of different assumed relationships.

To reduce the difficulty in comparing and interpreting the considerable volume of data from the simulation, we make use of two statistics - the mean squared relative error and the mean relative bias - to summarise the divergences between economic and accounting measures of income, and a third - the coefficient of determination, generally called r^2 - to estimate the usefulness of accounting measures of income as predictors of economic income.

The first two statistics are based on the relative difference between accounting profit and economic income (the "relative accuracy" of accounting profit). The relative accuracy of accounting profit for period j, A_j, is defined as:

$$A_j = \frac{\text{Accounting profit}_j - \text{Economic income}_j}{\text{Economic income}_j}$$

The first statistic (the mean squared relative error) measures the average size of the difference between accounting profit and economic income over the life of the firm. This statistic is calculated from the formula

$$\text{Mean squared relative error} = \frac{1}{n} \cdot \sum_{j=1}^{n} (A_j)^2$$

By squaring the relative accuracy measure for each period, the direction of the difference is eliminated so that negative differences do not cancel out positive ones.

The second statistic (the mean relative bias) measures the average direction of the difference between accounting profit and economic income over the firm's life. This statistic is calculated from the formula

$$\text{Mean relative bias} = \frac{1}{n} \cdot \sum_{j=1}^{n} (A_j)$$

The third statistic (the coefficient of determination) measures the proportion of the variations in economic income that are associated with

changes in accounting profit. The formula for calculating r^2 is:

$$r^2 = \frac{\left[n \left(\sum_{j=1}^{n} AP_j \, EI_j \right) - \left(\sum_{j=1}^{n} AP_j \right) \left(\sum_{j=1}^{n} EI_j \right) \right]^2}{\left[n \left(\sum_{j=1}^{n} AP_j^2 \right) - \left(\sum_{j=1}^{n} AP_j \right)^2 \right] \left[n \left(\sum_{j=1}^{n} EI_j^2 \right) - \left(\sum_{j=1}^{n} EI_j \right)^2 \right]}$$

where AP_j represents accounting profit for period j, EI_j represents economic income for the same period, and n is the number of periods to liquidation.

Measures of the mean squared relative error, the mean relative bias and the coefficient of determination for the data used in the simulation are summarised in the appendix to this section. The statistics provide a basis for making some tentative comments about the relative usefulness of particular conventions, and about the extent to which some measure of accounting profit might serve as a proxy for economic income or as a predictor of it.

The Divergence Between Economic and Accounting Measures of Income

In this section we consider divergences between economic income and conventional accounting profit, using the measures of mean squared relative error and mean relative bias. In a subsequent section we use measures of the coefficient of determination to assess the possible usefulness of accounting profit as a predictor of economic income.

We consider separately the conventions used in the simulation for stock valuation, stock costing and depreciation.

Stock valuation The tables for convention groups A, C and E enable us to compare FIFO, LIFO, and Average Cost, where stock is costed at Full Cost. Accounting conventions for the three groups are identical except as regards the method of stock valuation used. The relative error measures for FIFO and Average Cost are very similar for all growth and inflation rates considered, and are lower than the corresponding measures for LIFO. The relative superiority of FIFO and Average Cost over LIFO increases as the inflation rate becomes higher, but is not greatly affected by changes in

the growth rate. The size of the relative error of all three methods decreases as the rate of growth increases. The relative bias measures suggest that all three methods result in accounting profit figures that tend to overstate economic income at low inflation rates and to understate it at higher inflation rates (approximately 10% and above). The degree of understatement increases as inflation increases. Examination of the tables for Groups B, D and F suggest that the above conclusions about the relative merits of FIFO, LIFO and Average Cost are not affected significantly by costing stock at Direct Cost rather than Full Cost.

Stock costing Full Cost and Direct Cost may be compared using any of the three stock valuation methods - FIFO (groups A and B), LIFO (groups C and D) or Average Cost (groups E and F). Under all three valuation methods, accounting profit figures calculated using Full Cost are better approximations to economic income than those calculated using Direct Cost. The difference between the two measures tends to be smaller at higher rates of inflation and growth. Both costing methods result in measures of accounting profit that tend to overstate economic income at low inflation rates and to understate it at higher rates.

Depreciation Straight Line and Reducing Balance depreciation may be compared by examining the tables for groups A and G. For all inflation and growth rates, Straight Line depreciation leads to measures of accounting profit that are better approximations to economic income than are those calculated using the Reducing Balance method. As with stock conventions, both depreciation methods result in accounting profit figures that overstate economic income at low rates of inflation and understate it at higher rates.

Accounting Profit as a Proxy for Economic Income

We now consider whether any of the combinations of conventions used in the simulation produces measures of accounting profit that are good approximations to economic income. The relevant statistic is the mean

squared relative error. This is the average of the squares of the periodic relative accuracy measures; its square root accordingly has some interest as an indicator of average periodic error.

The lowest calculated mean squared relative error is 0.0686 (group A: $g = .07$, $\pi = .05$) implying an average periodic relative error of $\sqrt{0.0686}$, i.e. .2619 or 26.19%. The highest calculated error is 0.3322 (group G: $g = .02$, $\pi = .00$) implying an average periodic error of 57.64%. The average of all mean squared relative errors shown in the tables in the appendix is 0.1398, implying an average periodic relative error of 37.39%. In the internal and environmental conditions assumed for the firm in our illustration, no combination of accounting conventions considered leads to measures of accounting profit that are good proxies for economic income.

Table 5 shows the arithmetic average of the error and bias statistics included in the appendix. From these figures, we may draw some general conclusions about the effects of inflation and growth on the relative accuracy of conventional accounting measures of profit. The size of the difference between accounting profit and economic income (measured by the mean squared relative error) seems to be smallest for inflation rates between 5% and 10%, increasing for inflation rates outside this range. The size of the difference is not materially affected by a change in the growth rate from 2% to 5%, but declines significantly when the growth rate increases to 7%.

The direction of the difference between accounting profit and economic income is virtually unaffected by changes in the growth rate, for a given rate of inflation. However, there is a clear tendency for the direction to change as the rate of inflation changes. At low levels of inflation (5% and below) accounting profit tends to overstate economic income over the life of the firm. At higher rates (10% and above) the position reverses.

TABLE 5

Arithmetic Average of Error, Bias and r^2 Statistics

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1799	.2430	.130	.1800	.2102	.183	.1235	.1977	.046
.05	.1445	.0747	.364	.1356	.0321	.662	.0915	.0301	.841
.10	.1392	-.0406	.720	.1334	-.0842	.810	.1012	-.0815	.902
.15	.1445	-.1247	.784	.1448	-.1667	.846	.1212	-.1620	.905
.20	.1552	-.1887	.809	.1611	-.2284	.863	.1433	-.2231	.904

Accounting Profit as a Predictor of Economic Income

We consider finally the third statistic we have used to summarise the results of the simulation - the coefficient of determination (r^2). This statistic measures the proportion of changes in economic income that may be accounted for by changes in accounting profit. As such, it provides an indication of the likely usefulness of accounting measures of profit as predictors of economic income.

At first sight, the r^2 values in Table 5 suggest that, in a large number of circumstances, conventional accounting figures may be good predictors of economic income. In a majority of cases, r^2 is greater than 0.8, i.e. in

such cases over 80% of the change in economic income is associated with a change in accounting profit. The results must be viewed with caution, however. The highest values of r^2 are associated with high rates of inflation and growth. It is important to note that there is virtually no correlation between accounting profit and economic income when zero inflation is assumed. It seems probable that, for the data in our simulation, the impact of inflation and growth is large relative to the impact of other factors affecting the relationship between accounting proftand economic income. We conclude that, in these circumstances, the prediction of inflation and growth rates may be more important than the identification of the relationship between accounting profit and economic income.

A further reason for viewing the high r^2 values with caution is that they may be caused by the particular relationships assumed in the model. More extensive testing, under a much wider range of assumed internal and environmental conditions, is necessary before any firm conclusions can be reached about the usefulness of accounting profit as a predictor of economic income.

Within the limitations outlined above, we may make some preliminary comments about the relative predictive value of accounting profit measures prepared using different conventions. The r^2 values given in the tables in the appendix suggest that, for the data assumed in the simulation, those conventions which produce measures of accounting profit that approximate economic income most closely (i.e. have low relative errors) also produce accounting numbers having the greatest ability to predict economic income. The differences between the r^2 values of numbers prepared from alternative accounting conventions are sufficiently large to suggest that, in general, certain conventions may produce accounting profit figures that are significantly more useful than others as predictors of economic income.

Conclusions

The results of the simulation exercise should not be regarded as conclusive. The analysis first requires extension in several ways and such extensions are proposed in research which we are undertaking. The model described above deals with a simple firm operating in a simple environment. It would be desirable to investigate various more complex sets of transactions and environmental influences. It may also be interesting to extend the analysis to investigate the assumption that the firm is attempting to optimise its output level when explicit assumptions are made about movements in the sales price-volume relationship for its product. Various other combinations of accounting conventions should be examined including conventions that allow for changes in the index of retail prices. Our above analysis has assumed that prices of all inputs and outputs change at the same rate. It would be interesting to investigate the situation in which there are relative price changes of inputs - and to investigate the usefulness, in that situation, of accounting reports based on current values.

Firm conclusions about the relationships between accounting profit and economic income must await the results of such further analysis.

In the circumstances investigated, certain accounting conventions resulted in superior measures of accounting profit, i.e. some accounting conventions seemed more useful than others. However, no group of conventions tested led to a measure of accounting profit that was a good approximation to economic income, or a consistently good predictor of it.

Appendix to Section 3

Summaries of the Error, Bias and r^2 Statistics

GROUP A

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1343	.2317	.114	.1447	.2028	.168	.1020	.1902	.024
.05	.0992	.0692	.475	.1028	.0304	.739	.0686	.0294	.905
.10	.0984	-0.0395	.796	.1036	-0.0805	.867	.0770	-0.0763	.957
.15	.1088	-0.1185	.842	.1175	-0.1589	.894	.0964	-0.1526	.954
.20	.1233	-0.1788	.857	.1353	-0.2178	.905	.1185	-0.2108	.948

Accounting conventions:

FIFO; Full Cost; Straight Line.

GROUP B

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1676	.2423	.153	.1690	.2097	.201	.1123	.1965	.048
.05	.1229	.0724	.406	.1189	.0312	.698	.0784	.0294	.883
.10	.1165	-0.0407	.760	.1163	-0.0829	.843	.0866	-0.0795	.938
.15	.1238	-0.1222	.816	.1285	-0.1631	.875	.1060	-0.1576	.937
.20	.1364	-0.1841	.837	.1455	-0.2231	.889	.1280	-0.2168	.933

Accounting conventions:

FIFO; Direct Cost; Straight Line.

GROUP C

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1419	.2329	.074	.1460	.2027	.153	.1015	.1898	.017
.05	.1606	.0766	.295	.1393	.0323	.634	.0890	.0295	.838
.10	.1711	-0.0400	.648	.1498	-0.0859	.771	.1117	-0.0842	.872
.15	.1786	-0.1284	.721	.1656	-0.1722	.806	.1384	-0.1685	.867
.20	.1882	-0.1963	.754	.1836	-0.2373	.826	.1641	-0.2332	.864

Accounting conventions:

LIFO; Full Cost; Straight Line.

GROUP D

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1676	.2423	.153	.1690	.2097	.201	.1123	.1965	.048
.05	.1750	.0792	.265	.1522	.0335	.606	.1000	.0303	.806
.10	.1785	-0.0400	.639	.1574	-0.0867	.760	.1197	-0.0854	.857
.15	.1829	-0.1291	.717	.1707	-0.1735	.800	.1443	-0.1704	.857
.20	.1911	-0.1973	.751	.1874	-0.2388	.821	.1688	-0.2352	.858

Accounting conventions:

LIFO, Direct Cost; Straight Line

GROUP E

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1340	.2313	.100	.1448	.2027	.165	.1018	.1902	.023
.05	.0997	.0691	.477	.1035	.0303	.737	.0689	.0293	.905
.10	.0994	-0.0398	.795	.1046	-0.0807	.865	.0777	-0.0766	.956
.15	.1101	-0.1190	.840	.1187	-0.1595	.891	.0975	-0.1532	.952
.20	.1249	-0.1796	.855	.1369	-0.2187	.902	.1200	-0.2118	.946

Accounting conventions:

Average Cost; Full Cost ; Straight Line.

GROUP F

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.1676	.2423	.153	.1690	.2097	.201	.1123	.1965	.048
.05	.1236	.0725	.404	.1195	.0313	.697	.0788	.0294	.884
.10	.1176	-0.0407	.757	.1172	-0.0830	.841	.0873	-0.0798	.936
.15	.1251	-0.1225	.814	.1296	-0.1635	.873	.1071	-0.1581	.935
.20	.1380	-0.1846	.834	.1469	-0.2238	.887	.1293	-0.2176	.930

Accounting conventions:

Average Cost; Direct Cost; Straight Line.

GROUP G

g / π	.02			.05			.07		
	Error	Bias	r^2	Error	Bias	r^2	Error	Bias	r^2
.00	.3322	.2783	.163	.3176	.2343	.195	.2224	.2242	.112
.05	.2305	.0836	.226	.2130	.0355	.525	.1567	.0331	.666
.10	.1929	-0.0436	.646	.1846	-0.0895	.723	.1485	-0.0886	.801
.15	.1825	-0.1333	.736	.1830	-0.1759	.780	.1585	-0.1736	.831
.20	.1848	-0.1999	.775	.1919	-0.2392	.810	.1744	-0.2366	.847

Accounting conventions:

FIFO; Full Cost; Reducing Balance.

4. A COMPARISON OF ACCOUNTING PROFIT AND ECONOMIC PROFIT

The Available Data

The purpose of this part of the report is to investigate differences at the macro level between alternative measures of business results. Data are not available for the computation of all the measures referred to in Section 2 above. Economic income cannot be measured at the macro level because the measurement process would require an estimate of the wealth of all businesses in terms of the present value of future net receipts and such estimates rarely exist in explicit form even at the level of the individual firm (except, perhaps, as stock market valuations). Moreover, estimates of economic profit measured in the manner suggested in Section 2 are not available. Nevertheless, some indication of the extent of the differences between accounting and economic measures of profit can be derived from published data and it is possible to estimate the effects on profit measures of including or excluding holding gains.

Most of the data used below are derived from "National Income and Expenditure 1973" (the Blue Book) published by the Central Statistical Office. The data selected for present purposes are restricted to the company sector and omit businesses which are constituted as sole-traders or partnerships. However, conclusions for the company sector are interesting in their own right. The estimates of accounting data taken from the Blue Book represent an aggregation of information contained in tax returns submitted by companies to the Inland Revenue. These estimates are probably reasonably accurate. The estimates used to modify the accounting data, in particular stock appreciation and capital consumption, are regarded by the Central Statistical Office as subject to errors in excess of 10%.

Accounting Profit

Aggregate accounting profits are presented in Table 6. The gross profits

from operations are reduced by the amount of the depreciation of fixed capital. The figures for depreciation represent the statutory allowances granted for purposes of tax assessment and will differ from the amounts charged in the annual accounts of companies. This difference arises because companies can choose the methods of providing depreciation in their accounts, whereas a particular system and fixed rates are prescribed for tax purposes. However, both are based on the historical cost of fixed assets.[1] The use of statutory depreciation allowances eliminates the effects of variations from company to company in the method of providing depreciation. The disadvantages of using these figures are that they differ from accounting numbers, the primary object of our attention, and the statutory allowances are frequently altered to stimulate or depress investment, i.e. as a measure of fiscal control independent of economic costs. The difference between accounting charges and taxation allowances will depend on the average age of assets.

A particular problem associated with the use of statutory depreciation allowances in recent years was brought about by changes to tax laws in 1970. The changes permitted companies to deduct from profits a substantial portion of the cost of new plant and machinery purchased after 27th October 1970.[2] Accordingly, substantial allowances were claimed in 1971 and 1972; these were in excess of the "normal" depreciation for one year on a historical cost basis and, furthermore, they considerably exceeded depreciation on a current cost basis - capital consumption - as estimated by the Central Statistical Office.

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1. Investment allowances, when granted, represented an allowance over and above the historical costs. However, the figures in Table 6 are not greatly affected. Investment allowances granted amounted to only £6 million in 1968 and £1 million in 1969 for the combined corporate and personal sectors.

2. After 21st March 1974, in certain instances, the whole cost may be deducted in the year of acquisition. Further distortion is therefore to be expected in 1974.

TABLE 6

Accounting Profit (£ million)

	1968	1969	1970	1971	1972
1. Gross profits of companies operating in the United Kingdom (before providing for depreciation and stock appreciation)	5,275	5,143	5,279	5,756	6,584
2. Less Statutory depreciation allowances granted for purposes of tax assessment	1,828	2,033	2,457	3,339	4,282
3. Net profits of companies operating in the United Kingdom	3,447	3,110	2,822	2,417	2,302
4. Add Rent and non-trading income	1,725	1,916	2,149	2,460	2,946
	5,172	5,026	4,971	4,877	5,248
Less Interest payments					
5. Debenture and Loan Interest	425	495	554	592	630
6. Other interest paid by banks, etc.	416	484	485	452	529
Accounting Profit:	4,331	4,047	3,932	3,833	4,089

Source: 1973 Blue Book Lines 1, 4, 5 and 6: Table 26
Line 2: Page 113
Line 3: Table 31

TABLE 7

Depreciation Charges (£ million)

	1968	1969	1970	1971	1972
1. Statutory depreciation allowances granted for purposes of tax assessment	1,828	2,033	2,457	3,339	4,282
2. Capital consumption at current cost	1,431	1,579	1,791	2,049	2,309

Source: 1973 Blue Book, Table 57 and page 113.

The figures for statutory depreciation and capital consumption in recent years are compared in Table 7. In the years 1968 through 1972 the statutory allowances exceeded the real capital consumption, and the difference was substantial in 1971 and 1972. In a period of rising prices, depreciation calculated at historical cost may be expected to be a smaller amount than depreciation based on current prices (for example, replacement costs). However, the particular method of calculating statutory depreciation allowances prescribed in the United Kingdom has led to the reverse of the expected result. This fact should be kept in mind when examining the measures of accounting profit presented in Table 6.

Alternative Measures of Profit

Direct estimates of the alternative measures of profit discussed in Section 2 cannot be obtained from the published data. Accounting profits recognise revenues at the time when sales are made, whereas economic profit recognises revenues equal to current selling prices when production takes place. A strict calculation of economic profit would require revaluation of stocks of finished goods at selling prices and information for that purpose is not available. However, we can obtain some indication of the levels of economic profit by using information available to revalue stocks and depreciation at current cost prices.

First, we suppose that the entity view is accepted, i.e. companies are viewed as distinct and separate from the owners of the share capital, so that holding gains are excluded from profit measures. This measure is then compared with that implied by the proprietary view of economic profit by examining the holding gains in each period. As was noted in Section 2, the entity and proprietary views of economic profit differ only in that real holding gains are included in the latter but excluded from the former.

Economic Profit : An Entity View

An entity view of profits is given in Table 8. The two adjustments which require comment are stock appreciation and capital consumption.

(a) Stock Appreciation

The gross trading profits of companies are an aggregation of profit measured according to historical cost conventions. Both opening and closing stocks are valued in the accounts of companies at their historical cost. However, an improved estimate of economic profit would be obtained if opening and closing stocks were valued at current prices. Stock appreciation is calculated at the Central Statistical Office as the difference between (i) the estimated increase in the physical quantity of stocks valued at current replacement costs, and (ii) the increase in the book value of those stocks. The effect of the adjustment for stock appreciation in Table 8 is to revalue stocks at current prices.

(b) Capital Consumption

The depreciation charge in the calculation of accounting profit is valued at historical costs. In economic profit calculations depreciation should be measured at current prices. In Table 1, which illustrated the calculation of economic profit, the deduction of depreciation was referred to as "capital replacement", i.e. the amount required to replace the capital stock used up in production. The capital consumption, estimated at the Central Statistical Office, is the amount of capital replacement in current prices required for all companies. Thus, it should be deducted from gross trading profits in a calculation of economic profit.

In Table 9 our estimates of aggregate accounting profit and of an entity view of aggregate economic profit are compared. It can be seen that the differences between the two are not substantial except in the years 1971 and 1972 when the estimate of accounting profits may be an understatement because

TABLE 8

An Entity View of Profits (£ million)

	1968	1969	1970	1971	1972
Income arising in the United Kingdom					
1. Gross trading profits	5,275	5,143	5,279	5,756	6,584
2. Rent and non-trading income	1,725	1,916	2,149	2,460	2,946
	7,000	7,059	7,428	8,216	9,530
3. Less Capital consumption	1,431	1,579	1,791	2,049	2,309
4. Less Stock appreciation	458	583	884	834	1,057
	5,111	4,897	4,753	5,333	6,164
Less Interest payments					
5. Debenture and loan interest	425	495	554	592	630
6. Other interest paid by banks etc.	416	484	485	452	529
	4,270	3,918	3,714	4,289	5,005

Source: 1973 Blue Book
Lines 1, 2, 4 and 5: Table 26
Line 3: Table 57
Line 4: Table 69

TABLE 9

Profits Compared (£ million)

	1968	1969	1970	1971	1972
Accounting profit	4,331	4,047	3,932	3,933	4,089
Entity view of economic profit	4,270	3,918	3,714	4,289	5,005

Source: Tables 6 and 8

of the increases in statutory depreciation allowances. In general, an overestimate of depreciation in conventional accounting seems to be offset by the inclusion of stock appreciation. In view of the uncertainty in the depreciation estimates, however, these conclusions should be interpreted cautiously.

Holding Gains

The difference between the entity view of economic profits as presented in Table 8 and the proprietary view of economic profit is that real gains from holding assets should be included in the latter. These gains are equal to the increase in the value of assets in excess of the amount required to maintain the purchasing power of the investment in the assets. Two important classes of asset are fixed capital and stock. The gains arising from the holdings of fixed capital are estimated in Table 10. The change in the prices of fixed assets has not in general been very different from the change in the prices of consumer goods and services and so the holding gains or losses are not substantial. Similar calculations could be performed for stocks. However, the increase in prices of fixed assets and stocks have been similar and there are unlikely to be significant real gains at the aggregate level from holding stocks; at the aggregate level, real gains and losses experienced by individual firms tend to offset each other as the various price increases work their way through the economy.

A further component of holding gains can arise because a company has borrowed capital, either from the capital market or from suppliers in the form of trade credit. As prices rise the purchasing power of indebtedness falls, and the debtor experiences a holding gain. The reverse is true of a company which makes loans or is owed money by its customers. Such holding gains (or losses) may be large for the individual companies but will be relatively quite small at the aggregate level. If the corporate

TABLE 10

Holding Gains on Fixed Capital

(£ million)

		1968	1969	1970	1971	1972
1.	Net capital stock at current prices - measured at year end	31,300	34,800	39,600	44,700	50,100
2.	Less Gross domestic fixed capital formation during year at current prices	2,996	3,544	3,905	3,916	4,275
		28,304	31,256	35,695	40,784	45,825
3.	Add capital consumption during year	1,431	1,579	1,791	2,049	2,309
	Net capital stock at start of period at current prices	29,735	32,835	37,486	42,833	48,134
4.	Net capital stock at the end of previous year at prices then prevailing	28,700	31,300	34,800	39,600	44,700
	Total gain	1,035	1,535	2,686	3,233	3,434
5.	Less Amount required to retain purchasing power of investment in capital stock*	1,406	1,721	2,018	3,247	2,816
	Real gain	-371	-186	668	-14	618
6.	Total gain as % of investment in capital stock at start of period	3.6	4.9	7.7	8.2	7.7
7.	% change in index of consumer goods and services prices	4.9	5.5	5.8	8.2	6.3

* Note:

The amount required to retain the purchasing power of investment in capital stock is calculated by multiplying the net capital stock at end of previous year at prices then prevailing, line 4, by the change in the index of consumer prices, line 7.

Source: 1971 Blue Book

Lines 1 and 4: Table 63
Line 2: Table 51
Line 3: Table 57
Line 7: derived from Table 16

sector is taken for the measurement of aggregate profits, these gains will be made (or losses incurred) from the net indebtedness of the rest of the economy to the corporate sector. However, if the economy as a whole is taken such gains will be offset by losses in other sectors, because the holding gains to the debtor (the person owing money) will be offset by the holding losses to the creditor (the person to whom the money is owed). There will be an exception in respect of foreign transactions, but this may be offset by changes in the exchange rate. Thus, at the aggregate level gains or losses from indebtedness will not be significant.

Conclusions at the Aggregate Level

There do not appear to be significant differences between accounting and economic measures of profit as we have estimated them at the macro level. However, the position is not completely clear because our estimates have used statutory depreciation allowances for accounting profit and because we have ignored some of the opportunity costs associated with production for stock in estimating economic profit.

The Individual Firm

We have suggested that differences at the aggregate level between accounting profit and economic profit may be quite small. At the level of the individual firm, however, there may well be significant and varied differences. Table 11 presents the accounting profits per share for 20 companies quoted on United Kingdom stock exchanges (i) as reported in their accounts (unadjusted profits), and (ii) as adjusted for general changes in purchasing power (adjusted profits) i.e. costing inputs to production at original cost adjusted to the equivalent current purchasing power. The results are taken from a study of the effects of adjusting the accounts of 137 quoted companies for purchasing power changes. The particular companies for which the measures are reported represent the 10 companies with the

TABLE 11

Adjusting Accounting Profit for Price Level Changes

	Accounting Profit per share (as reported)	Accounting Profit (adjusted for price level changes)	Percentage Change in reported Accounting Profit
Land Securities	5.2	26.6	+ 414
Metropolitan Estates	7.9	23.4	+ 195
Commercial Union	12.6	32.5	+ 158
Sun Alliance	38.1	78.8	+ 107
Royal	25.6	50.4	+ 97
St.Martins Property	3.3	5.7	+ 73
Guardian Royal	14.2	23.2	+ 63
Grand Metropolitan Hotels	11.0	17.7	+ 61
General Accident	13.1	21.0	+ 60
Trust House Forte	10.9	16.8	+ 54
Tubes	25.7	2.6	- 90
Johnson Matthey	16.7	0.6	- 96
GEC	7.9	0.2	- 97
Ocean	7.0	- 0.7	- 110
Bowater	5.8	- 1.0	- 117
Babcock & Wilcox	5.1	- 0.9	- 118
British Leyland	2.9	- 1.2	- 141
Vickers	6.0	- 3.7	- 162
P. and O.	5.1	- 4.7	- 192
International Computers	3.3	- 13.8	- 521

Source: R.S. Cutler and C.A. Westwick, " The Impact of Inflation Accounting on the Stock Exchange", Accountancy (March 1973) pp. 15-24.

largest surplus of adjusted profits over unadjusted profits and the 10 with the largest surplus of unadjusted profits over adjusted profits - in both cases in percentage terms. The table discloses substantial differences between the measures. At one extreme, the difference between the two profit measures for Land Securities was four times the unadjusted profit. At the other end of the scale, a small unadjusted profit of International Computers was equivalent to a substantial adjusted loss.

The inflation adjustments reported in Table 11 are based on an adjustment of historic cost for general purchasing power changes and do not represent current prices as required for economic profit calculations. Nevertheless, the adjustments are indicative of the order of magnitude that might be found in calculations of economic profit. Thus, although the alternative measures of profit are not significantly different at the aggregate level, the difference between particular measures may be substantial when the individual firm is considered - an important consideration for purposes of government price control.

5. CONCLUSION

The first question raised in our study concerns the identification of the measure of business profit which an incomes policy should seek to control. A supplementary question should be asked about the practicality of the chosen measure.

Long and Short Term Policies

If an incomes policy is to be implemented for an indifinite period, it might be argued that choice of a particular method of measuring business profit may be of less importance than when a short term policy is being considered. This argument would reflect the fact that different measures will produce similar aggregates over long periods of time, and the view that it may not matter greatly if a chosen measure shifts benefits from one year to another compared to some alternative measure. In measuring economic income, gains will be recognised when the opportunity of realising them is first identified, in economic profit when production takes place and in accounting profit when the ultimate sale takes place. This view seems over-simplified, however. The trend of results from year to year has a significant influence on price control and the use of a measure which yields "errors" in individual years may introduce significant distortions. Moreover, the extent to which a downwards bias in the price in one year may be compensated by allowing a higher price later will be restricted by market demand.

Most people would agree that the choice of a particular method of measuring business profit is critical if the incomes policy is to be removed after a short period of time, or is to be more or less severe in particular periods. In such a case, the date on which the economic benefits are deemed to accrue to the proprietors is important. A policy based on control of accounting profit may not limit the economic benefits accruing during the period in which control is attempted because the benefits may not be realised and hence not reported until a subsequent period. This may have an

important implication for the equity of an incomes policy, as wage earners are not in a position to defer the counting of the economic benefits which accrue to them.

Usefulness of Economic Income

It is not the purpose of the present discussion to weigh all the economic effects of an incomes policy, but to indicate the measures of business profit which are consistent with economic analysis, and to compare such measures with the data produced by accountants. On the grounds of equity and efficiency, it may be suggested that economic income is a desirable measure of business profit because it reflects the success of attempts at wealth maximisation. However, we have noted that economic income cannot be measured (or, more important, verified) directly, and we have not yet found a method of calculating accounting profit which is a reasonable proxy for the economic measure or which is a consistently good predictor of it.

It was demonstrated in Section 2 that economic profit maximisation represents a short term proxy for the maximisation of wealth. As economic income represents changes in wealth, a control on economic profit is also a proxy for the control of economic income. Thus, the economic effects of controlling economic profit would be substantially similar to the effects of controlling economic income.

Economic Profit - Entity View versus Proprietary View

Holding gains may be included in or excluded from economic measures of profit. Such gains are included in economic profit if a business is regarded as an extension of its owners, i.e. the assets and liabilities of the business form a part of the assets and liabilities of the individuals who own the business. However, if the business is viewed as a separate entity, it can be argued that price increases in assets held by the business should not be regarded as a benefit.

The choice between the proprietary and entity views may be regarded, in part, as a political matter. However, there are economic consequences which should be considered. If the proprietary view is accepted for all businesses and the appropriate profits are controlled, individual firms may experience difficulties in financing their operations. If relative prices of a firm's assets increase in some current period, the business will require additional funds to finance replacement. The control of profits including holding gains, may prevent the firm from raising such finance out of its own operations. If it wishes to maintain the scale of its operations, it would be forced to restrict dividend payments to its owners or raise the finance on the capital market. Theoretically, the optimal decision for the wealth maximising firm would normally be to restrict the payment to owners. In practice, however, directors of companies dislike reducing dividends and would probably draw on capital market funds or retained earnings. If capital were rationed, the consequence would be a reduction in funds available for expansion. This may or may not be thought desirable. An additional and perhaps more fundamental point is that economic profit excluding holding gains is not maximised when wealth is maximised. The exclusion of holding gains for control purposes might therefore be thought likely to lead to undesirable distortion in the allocation of resources. There seems to be a strong case for taking the proprietary view of economic profit.

Accounting Profit

The case for using a conventional measure of accounting profit for purposes of price and incomes control depends on a demonstration that the measure would represent a good proxy for economic profit or economic income. In Section 3 we showed that there was no reason to suppose that accounting profit was a good proxy for economic income. In Section 4 we argued that although accounting profit might approximate an entity view of economic profit at the aggregate level, there would probably be substantial distortions from

its use at the level of the individual firm. Conventional accounting profit does not seem to be a suitable basis for control.

Summary

It was suggested above that economic income is the most comprehensive measure of the economic benefits accruing to the owners of a business enterprise, but that there are serious practical difficulties in its measurement. Thus, some proxy measure should be used. The economic model given in the appendix to Section 2 was used to demonstrate that economic profit is the short run equivalent of economic income. Hence, the measurement of economic profit would appear to provide a good proxy measure; conventional accounting measures seem not to be good proxies. There seems to be a strong case, however, for purposes of control of prices and incomes, to adapt conventional accounting measures to bring them as close as reasonably practicable to the measure of economic profit. This would involve valuing assets and inputs to production on a current cost basis and also making adjustments for changes in the general price level. The arguments given above suggest that adjustments to conventional accounting profits for changes in the general price level would represent some improvement over present practice but would fall short of the attainable ideal.

More research is needed before firm conclusions can be reached on these questions, however. More complex models for the derivation of economic profit require investigation, and further simulation studies are required to discover whether economic income or economic profit can be predicted more effectively by using combinations of accounting conventions not yet considered, or by developing new sets of accounting conventions.

CHAPTER 3.

FINANCIAL SECTOR CONTROLS, PROFITABILITY AND INFLATION.

by

Michael Parkin and Zannis Res.

This chapter examines the relationship between the profitability of banks and financial intermediaries and the rate of inflation. It also analyzes the effects on the rate of inflation itself of alternative methods of controlling the profitability of these institutions. The chapter is divided into two sections. In the first, we examine the behaviour of interest rates and liability and asset levels in relation to the inflation rate in order to gauge the effects of inflation upon the profitability of the financial sector. We also examine the movements of real rates of interest as inflation progresses. That is, we examine the extent to which nominal rates of interest adjust to reflect changes in the rate of inflation. In the second section we analyze the effects upon the rate of inflation of attempting to control the profitability of banks and financial intermediaries by (a) controlling the rates of interest which they may pay on their liabilities and which they receive on their assets and (b) by controlling the overall scale of their activity through control of the reserve base of the system. We also suggest how the effects of inflation upon borrowing and lending and intertemporal resource misallocation could be minimised.

Our major conclusions are that nominal interest rates have not been allowed to rise far enough to maintain positive real rates of interest but that the profitability of domestic banks and Building Societies has inproved because their borrowing rates have been held down relative to their lending rates. Interest rates in the more competitive Euro-currency markets have moved to keep up with world wide inflation and those banks which operate in both domestic and Euro-markets have seen a decline in their profitability. We suggest that in order to avoid undesirable movements in financial sector profitability and to prevent inflation from seriously misallocating resources and redistributing wealth, interest rates should change fully to reflect

changes in the rate of inflation encouraged by competition from index linked National Savings assets and Government Bonds. Additionally we present a scheme for indexing mortgages so as to minimise the impact of changes in the rate of inflation on liquidity. Additionally,the overall level of profits could and should be controlled by traditional techniques of monetary control which place limits on the volume of reserves made available to the banking system.

1. The Relationship between Profitability and Interest Rates in the Financial Sector.

Over the last few years most industrialized countries have experienced an increase in their rates of inflation and the U.K. has been no exception to this. Chart 1 gives a time series account of this inflationary experience, starting from the early sixties. Previously, during the late fifties and the turn of the decade, inflation was not really a problem. Since then, however, a series of inflationary waves have taken place, reaching higher and higher levels in succession, until, by the end of 1973, double digit inflation became a reality. How did the different financial intermediaries in the U.K. perform in the face of this inflationary experience? We shall analyze the performance of four groups of institutions, the Clearing Banks, the Discount Houses, the Building Societies and the Secondary Banks. First we shall look at interest rate levels, second at broad balance sheet aggregates and third at our own estimated profitability indices.

We start with an examination of interest rates. There is, of course, a large number of interest rates from which we have selected three which seem to be representative of many more. They are the three-month Local Authority Loan rate as an indicator of money market interest rates, the Bank rate as an indicator of the rates on Advances and the Government "Short" Bond rate as an indicator of medium term (five years) interest rates. These are shown on Charts 2, 3 and 4. All three series move in a very similar fashion. They start at their lowest levels in the early sixties and thereafter seem to broadly follow the rate of inflation. The troughs in the interest rate cycles seem to follow the troughs in the inflation rate in the years 1963, 1965, 1967 and 1971. They all reach their historical heights at the end of 1973 as also does the inflation rate.

Chart 1: U.K. Rate of Inflation

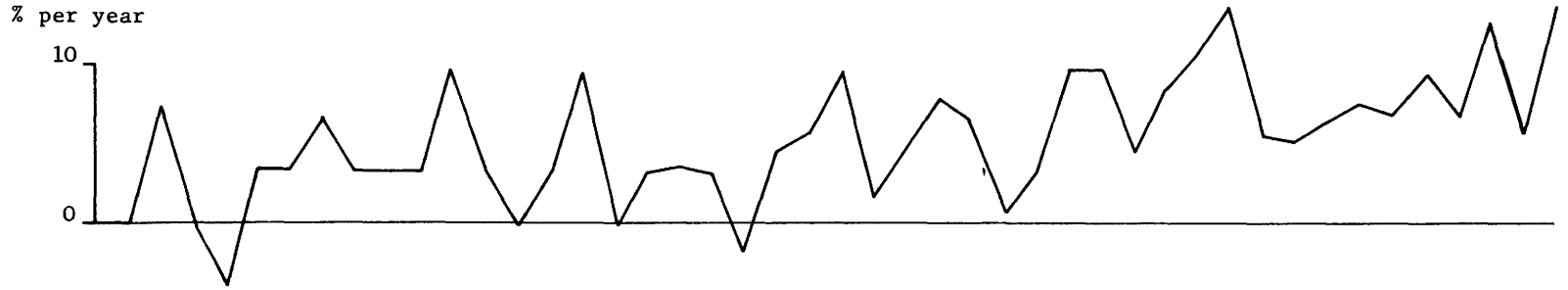


Chart 2: 3MO Loc. Auth. Loan Rate

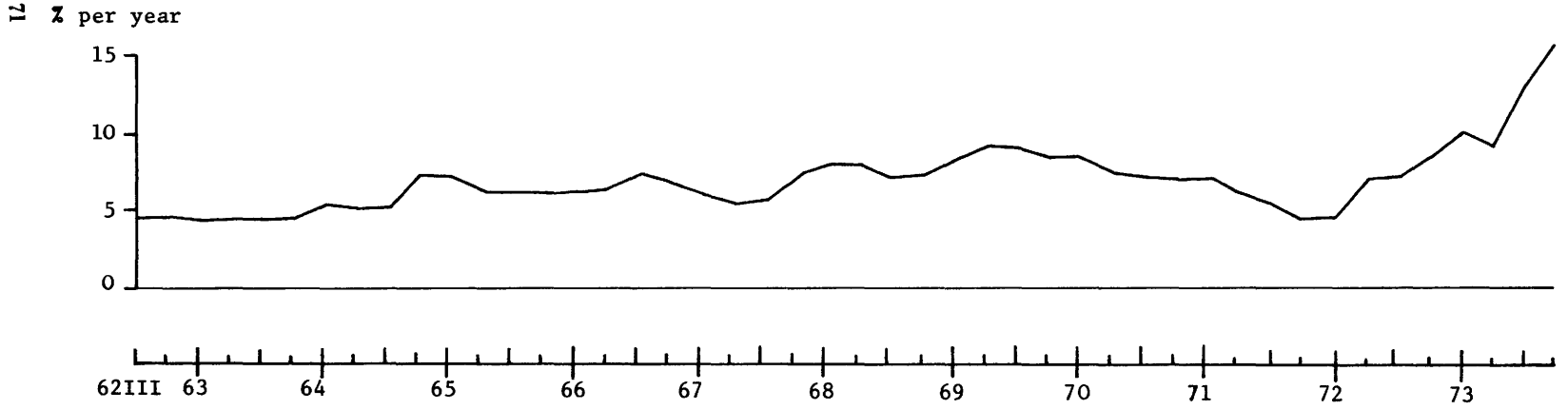


Chart 3: Bank Rate (or min. lending rate)

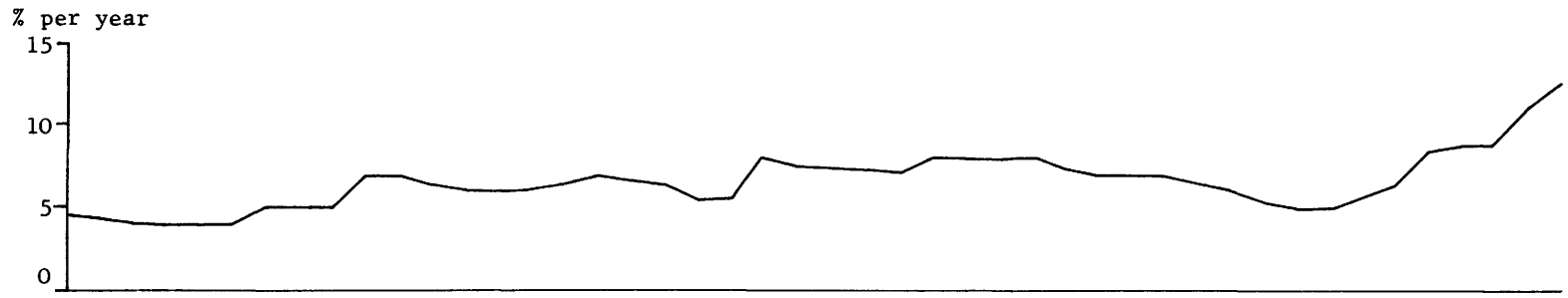


Chart 4: Government "Short" Bond Rate

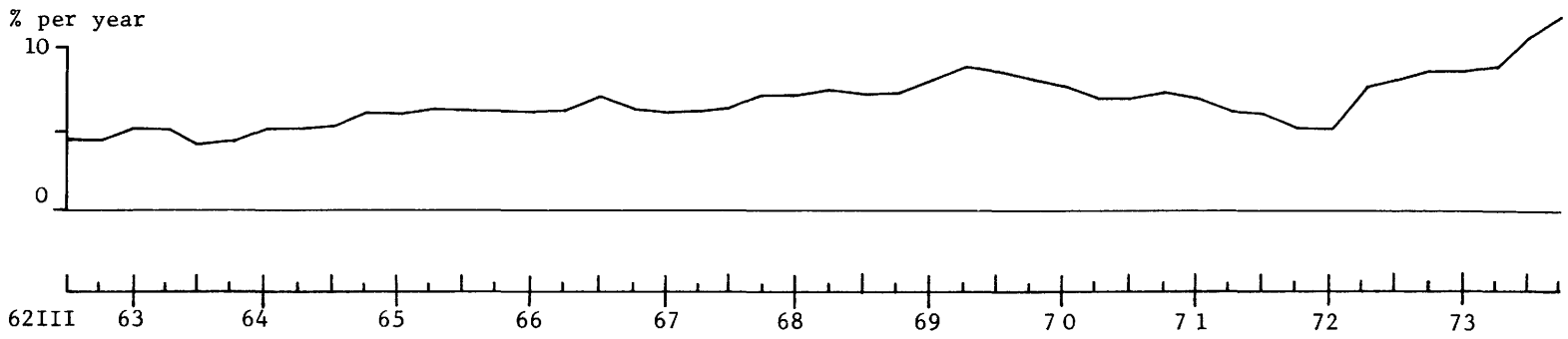


Chart 5: Local Auth. Loan Rate (3MO) minus Inflation Rate

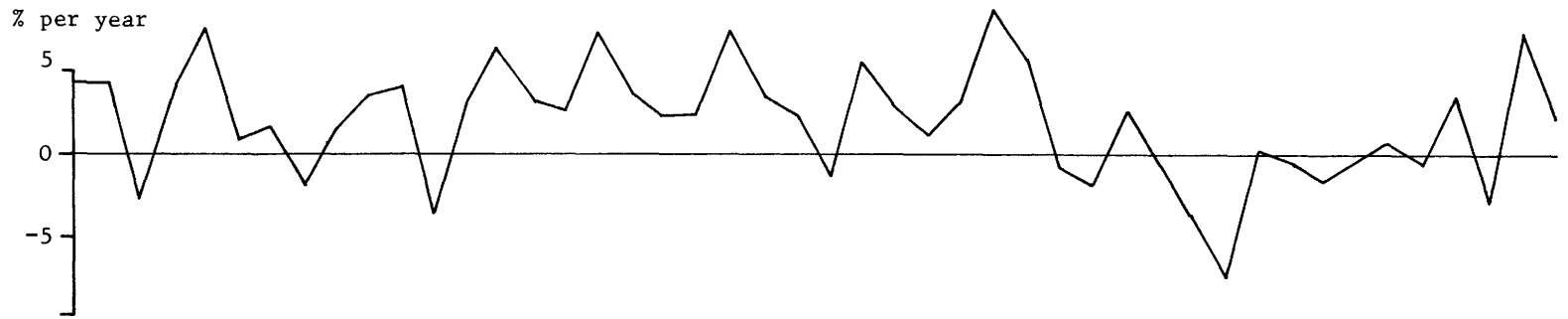
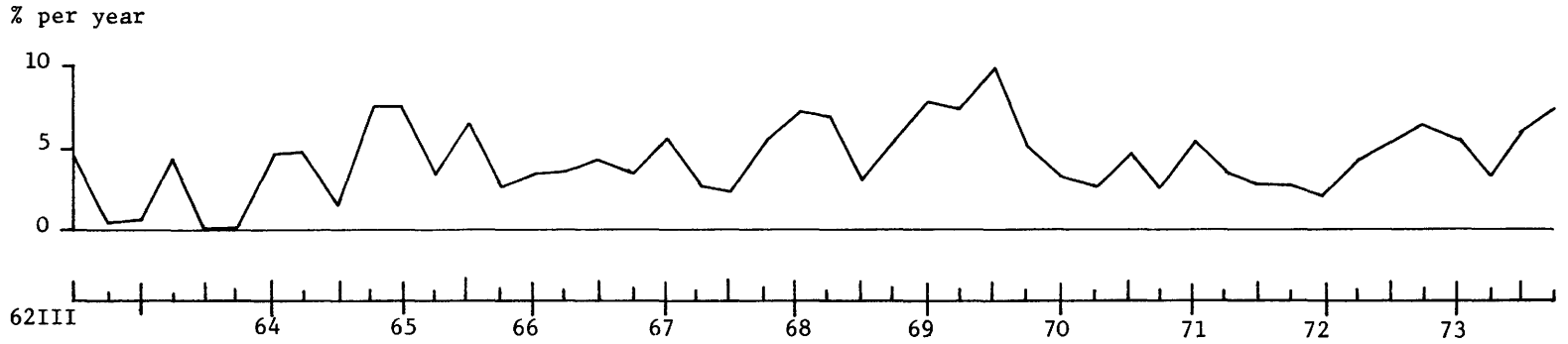


Chart 6: 3MO Euro-dollar Rate minus U.S. Inflation Rate



Is this movement in nominal interest rates sufficient to insulate the real rate (defined as the nominal interest rate minus the rate of inflation) from inflation? Or, to ask the question differently, are changes in the nominal rate large enough to account for the rate of inflation so that the real rate remains unchanged? The series in Chart 5 shows that this is not the case. It shows the difference between the Local Authority rate and the inflation rate. In the 1960's when inflation was at a more tolerable level the real rate was mostly positive. In the 1970's the real rate turned mostly negative. It seems then that nominal interest rates have not responded quickly enough and in large enough magnitute to take into account the rate of inflation. This of course should be no surprise since U.K. interest rates are administered and not left free to reach the levels that would occur in the absence of government interference. An interesting comparison can be made at this point with the Euro-dollar market, which, in contrast to the U.K. market, is mostly free of government interference. Chart 6 shows the real Euro-dollar rate, defined as the difference between the three-month Euro-dollar rate (adjusted for the dollar premium) and the U.S. inflation rate. The real rate is positive throughout the period and varies around a roughly constant value since 1964. These observations do not change if we take the Euro-dollar rate unadjusted for the dollar premium. Thus it seems that the uncontrolled euro-dollar market rate adjust better to inflationary changes than do the controlled domestic U.K. interest rates.

How have the balance sheets of the financial institutions developed during the period of the sixties and early seventies? We turn now to this question.

As an overall indicator of the Banking Sector chart 7 shows the U.K. money supply, broadly defined; (M3 definition). From 1962 until 1971 the

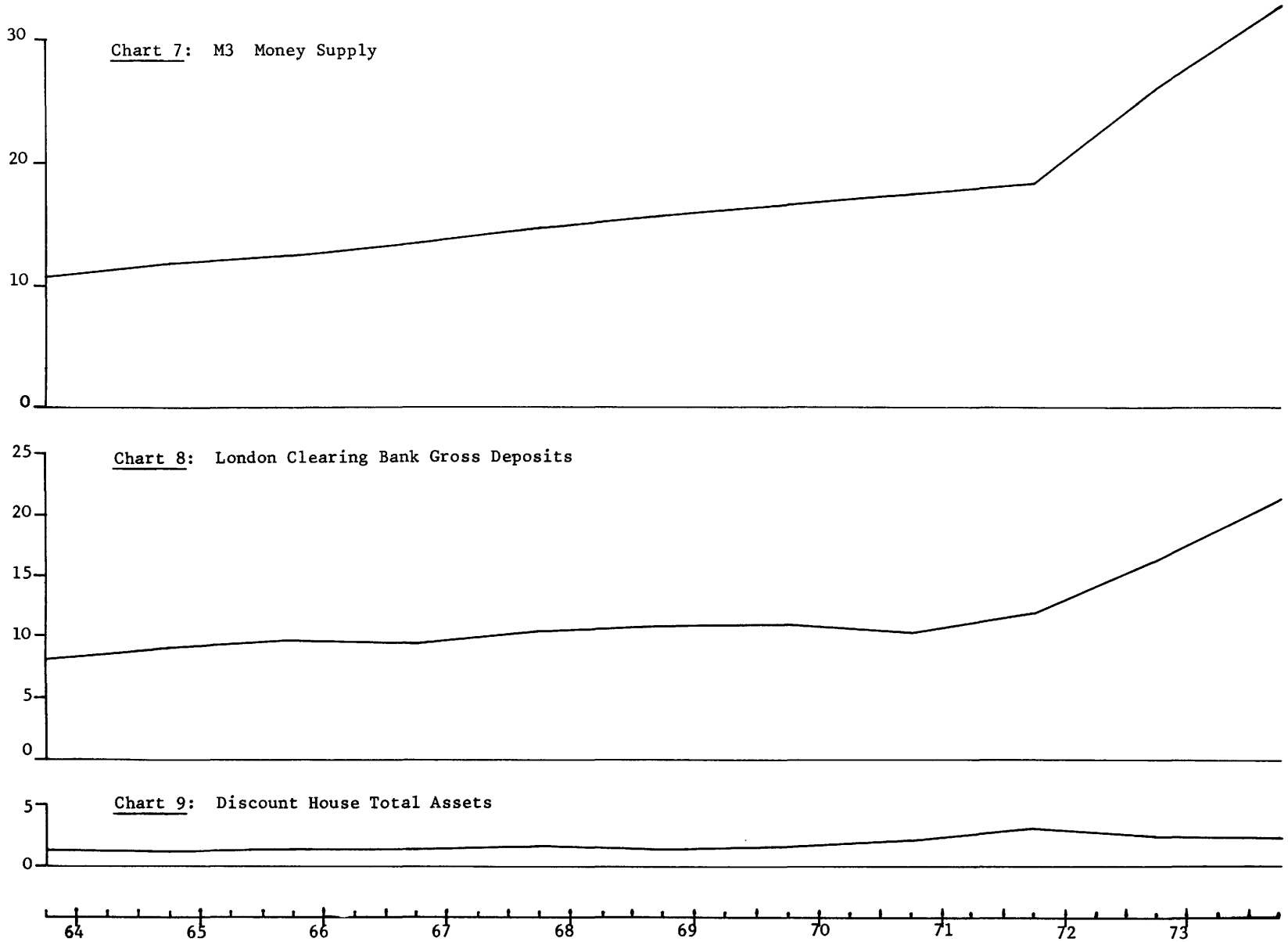


Chart 7: M3 Money Supply
30
20
10
0
Chart 8: London Clearing Bank Gross Deposits
25
20
15
10
5
0
Chart 9: Discount House Total Assets
5
0
64
65
66
67
68
69
70
71
72
73

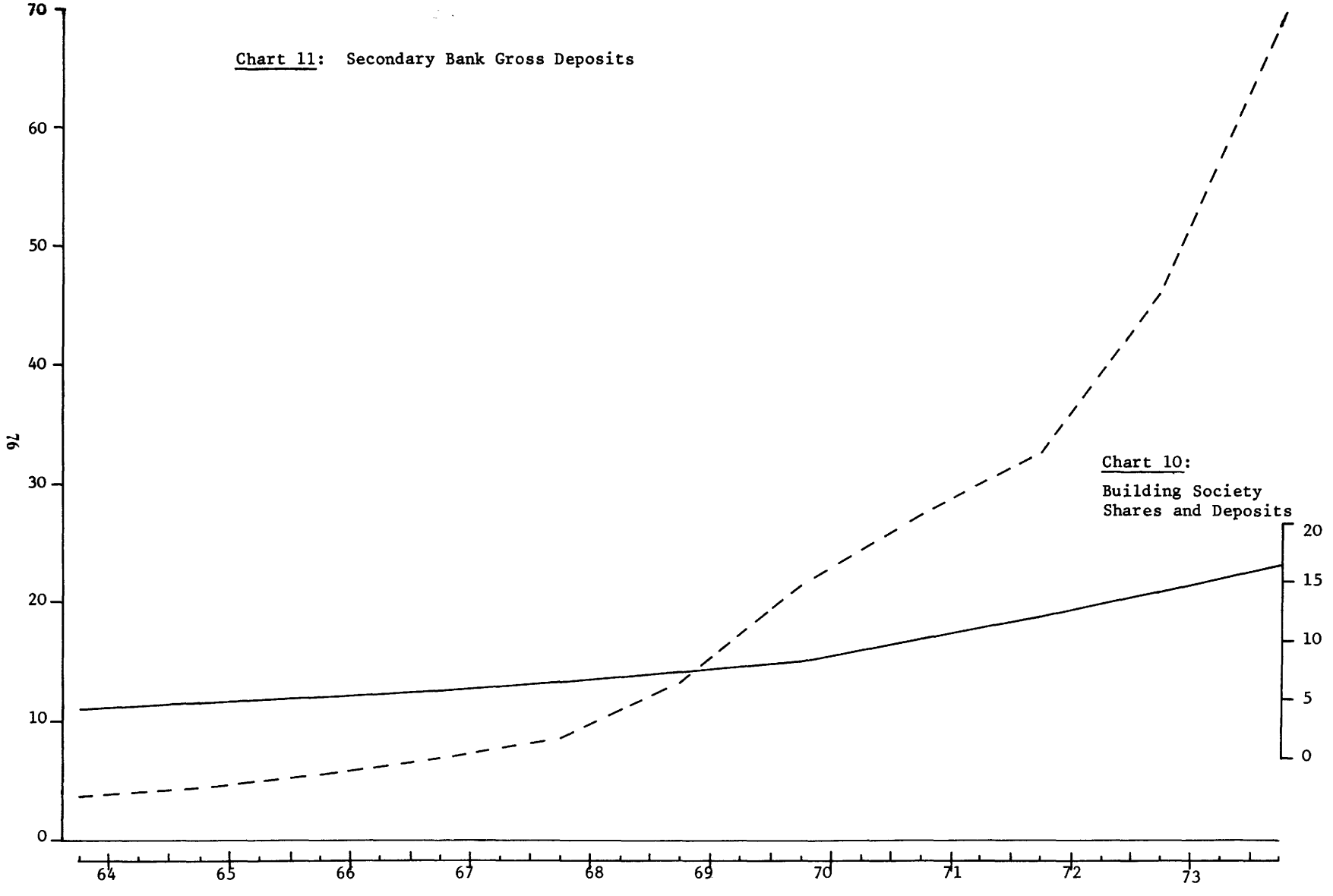


Chart 11: Secondary Bank Gross Deposits
70
60
50
40
30
20
10
0
%
64
65
66
67
68
69
70
71
72
73
Chart 10:
Building Society
Shares and Deposits
20
15
10
5
0

money supply expanded at a rate slower than in the period from 1971 to 1973.

For the Clearing Banks chart 8 shows the level of their Gross Liabilities. This group of banks expanded slowly in the sixties, slower than the money supply indicator above would lead us to believe. Since 1971, however, the Clearing Banks expanded much faster.

The Discount Houses' assets expanded slowly, in line with the Clearing Banks as chart 9 indicates. Since 1971 their assets have actually declined in contrast to the Clearing Banks. The money supply does not give a true picture of their development after 1971.

The Building Societies showed a steady growth in their balance sheet during the whole period of 1962 to 1973. Chart 10 shows the level of their Shares and Deposits which constitute most of the liabilities of these financial institutions.

Chart 11, lastly, indicates the level of Gross Deposit liabilities of the Secondary Banks. In comparison to the money supply and the balance sheets of the financial institutions analyzed above, the Secondary Banks have had an indeed explosive growth. This is true both for their domestic and their eurocurrency components of their portfolio.In summary then, the Clearing Banks and the Discount Houses had the slowest expansion in their balance sheets. The Building Societies expanded faster and the Secondary Banks expanded explosively.

Let us now examine the interest rate differentials which are relevant to the profitability of the financial institutions that we are concerned with.

We first examine those which affect the Clearing Banks. Their major borrowing rate is that on Deposits and their main lending rates those on Call Money, Bills of all types, Government Bonds and Advances.

Chart 12 shows the differential between the Call (Lending) rate and the Deposit Account (Borrowing) rate, as a measure of profitability on the most liquid assets of the Clearing Banks. From 1962 to 1971 the differential has narrowly fluctuated around 1%. From the end of 1971 it has turned against the Clearing Banks and its variability has increased.

The Treasury Bill rate minus the Deposit Account rate differential on chart 13 is a measure of profitability of the next most liquid assets of the Clearing Banks. From 1962 to the end of 1967 there was some variation around an average level of 1.5%. The period of 1968 to 1971 shows less variation around a level of 1.8%, which is a change in favour of the banks. Since the end of 1971 the differential has shown even wider fluctuations at an average of about 2%. Thus, over the whole period,this differential seems to have moved in a direction beneficial to the banks.

The next differential, on chart 14, which attempts to show the profitability of the Clearing Banks on more illiquid assets, is between the Government "Short" Bond rate and the Deposit Account rate. This differential fluctuates more widely than the previous one but shows some otherwise similar characteristics. In the period from 1962 to the end of 1967 it fluctuates at about the 2.5% level. From 1968 to 1971 it fluctuates less than the previous period at a level of 2.8%. Since 1971 this differential seems to vary more widely around the level of 3%. Overall then the direction of this differential has been beneficial to the Clearing Banks.

Chart 12: Call Rate minus Dep.Acct. Rate

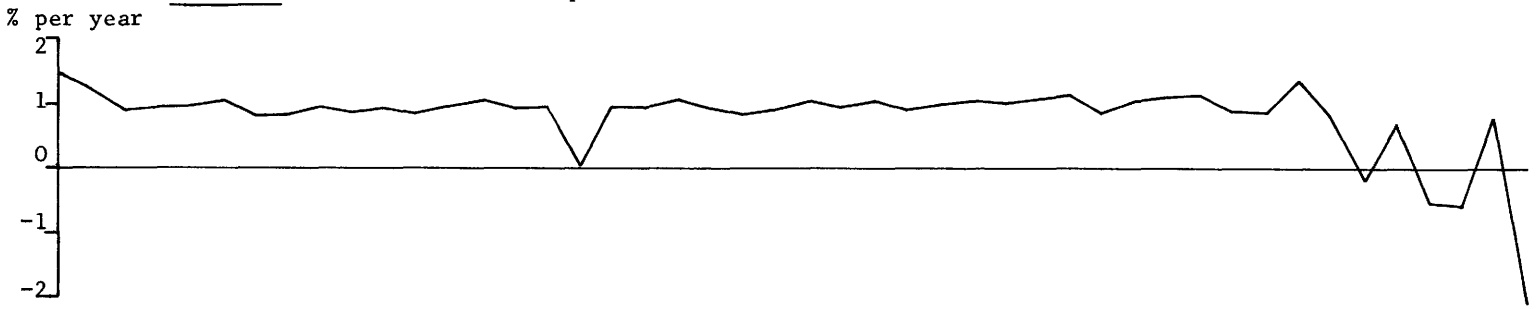


Chart 13: Treasury Bill Rate minus Dep.Acct. Rate

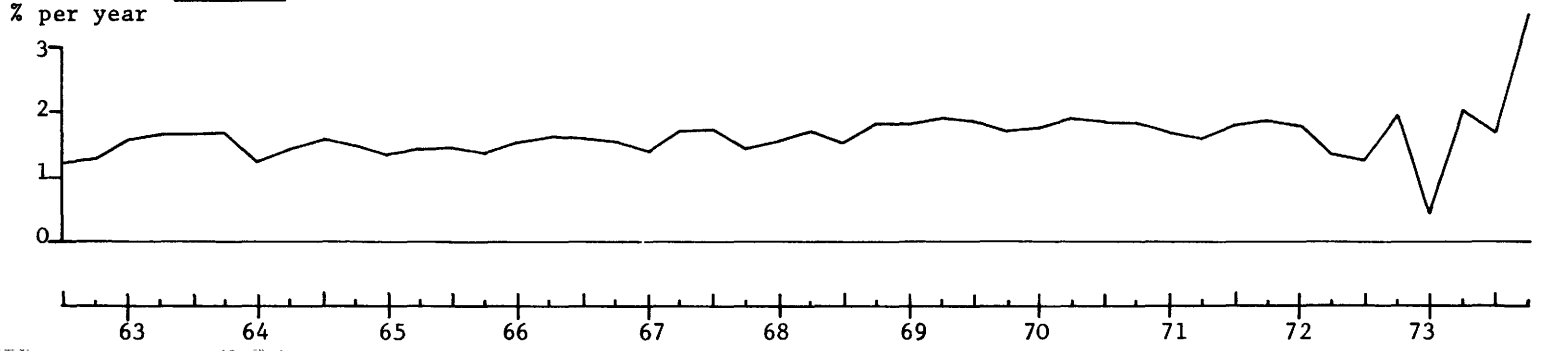


Chart 14: "Short" Bond Rate minus Dep. Acct. Rate

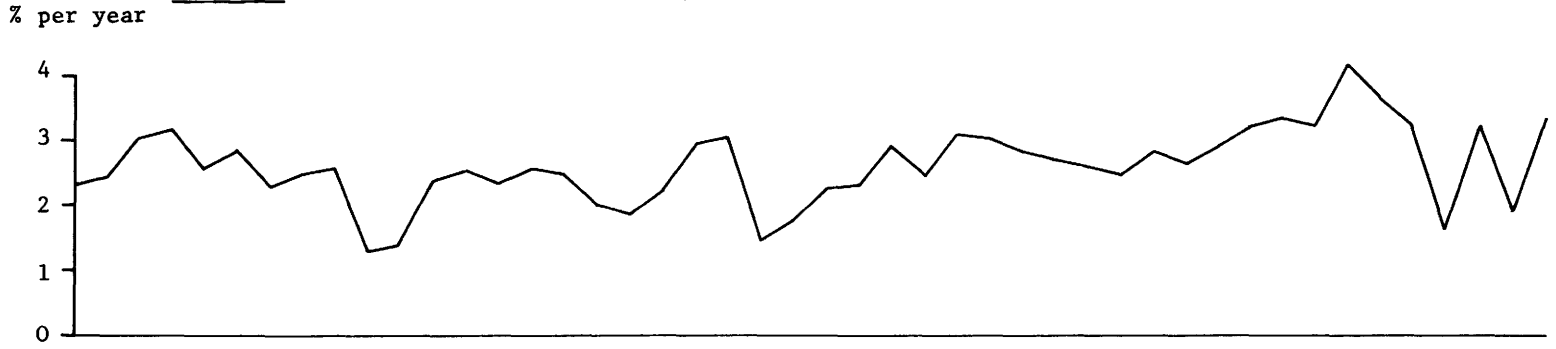
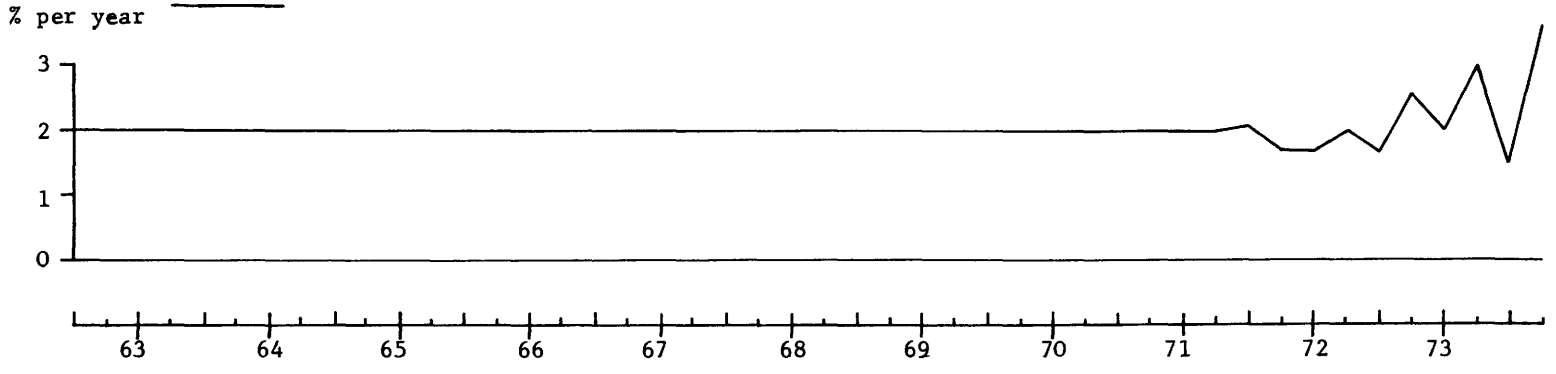


Chart 15: Advances Rate minus Dep. Acct. Rate



The last differential to be discussed is between the rate on Advances (the Bank rate and after 1971 Base rate) and the Deposit Account rate, shown on chart 15. This differential can usefully be regarded as an approximation to the profitability of the banks on their Advances and Overdrafts. It of course underestimates the "actual" one since even the"prime" customers of the banks borrowed at the "Bank Rate plus one" per cent before 1971 and probably "Base Rate plus one" after, and other adjustments are made for term to maturity and risk. From 1962 to 1971 this differential was rigidly fixed at 2% as part of the established cartel arrangements among the Clearing Banks. After 1971, with the introduction of the Competition and Credit Control rules, this constant 2% level was broken and there exists large variability since. The average level has also moved higher to about 2.2%.

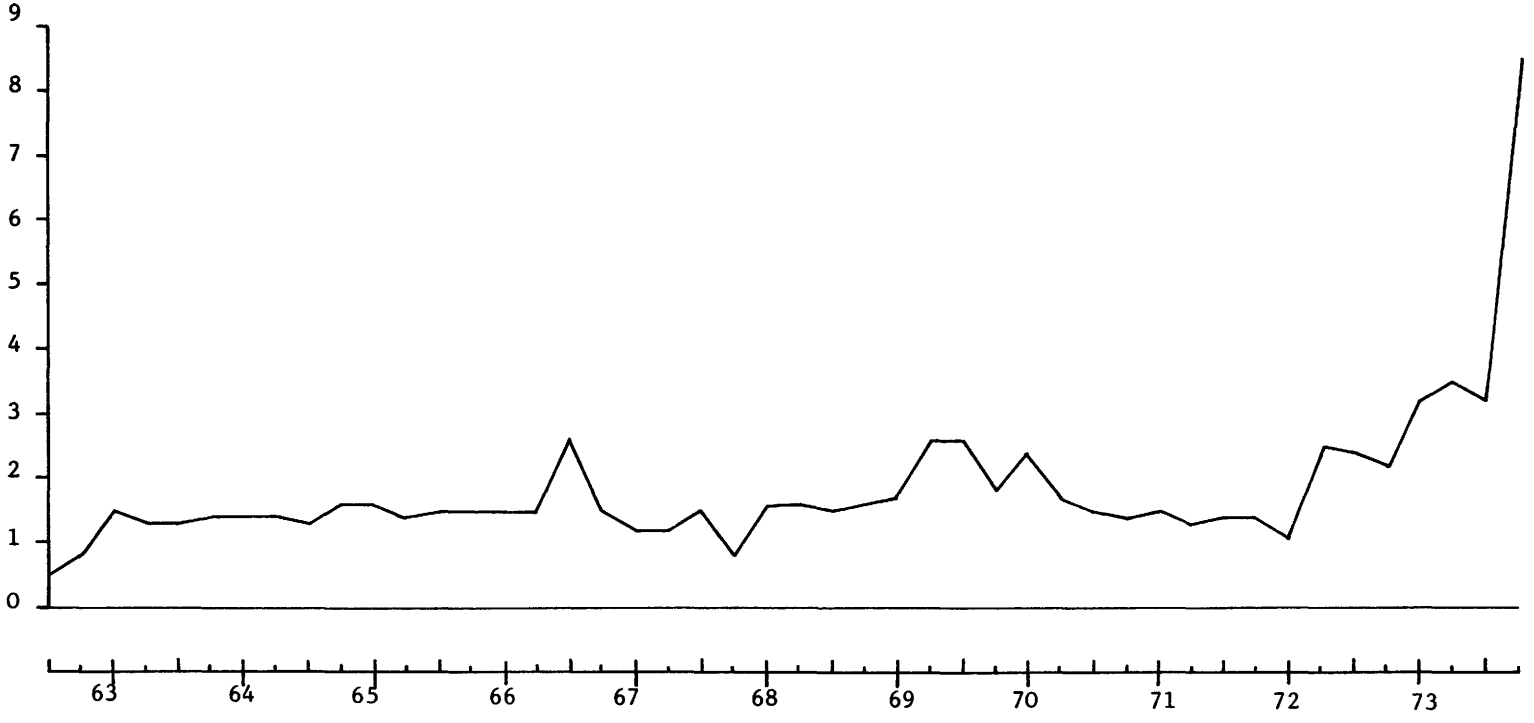
Of the four interest rate differentials that we have examined for the Clearing Banks three seem to have moved in their favour over the period of 1962 to 1973 and one (on the most liquid assets) against them.

Second, we examine two interest rate differentials which give indicators of Discount House profitability. The Discount Houses borrow at Call (short) and lend longer by buying Treasury, Bank and Local Authority Bills as well as Short Bonds and Certificates of Deposit. Chart 16 shows the differential between the three month Local Authority Loan rate and the Call rate. It has fluctuated noticeably around a level of 1.2% and has tended to increase after 1971. A similar picture is conveyed by chart 17 which shows the differential between the Treasury Bill rate and the Call rate. After 1971 it varies more widely.

Third, we examine the movement of two major rates affecting Building Societies. This is displayed in chart 18 as the differential between the Mortgage rate and the Gross (of tax) Shares rate. It shows minor variations about a slowly rising trend up to 1970 after which if fluctuates more widely.

% per year

Chart 16: Local Authority Loan Rate minus Call Rate



% per year

Chart 17: Treasury Bill Rate minus Call Rate

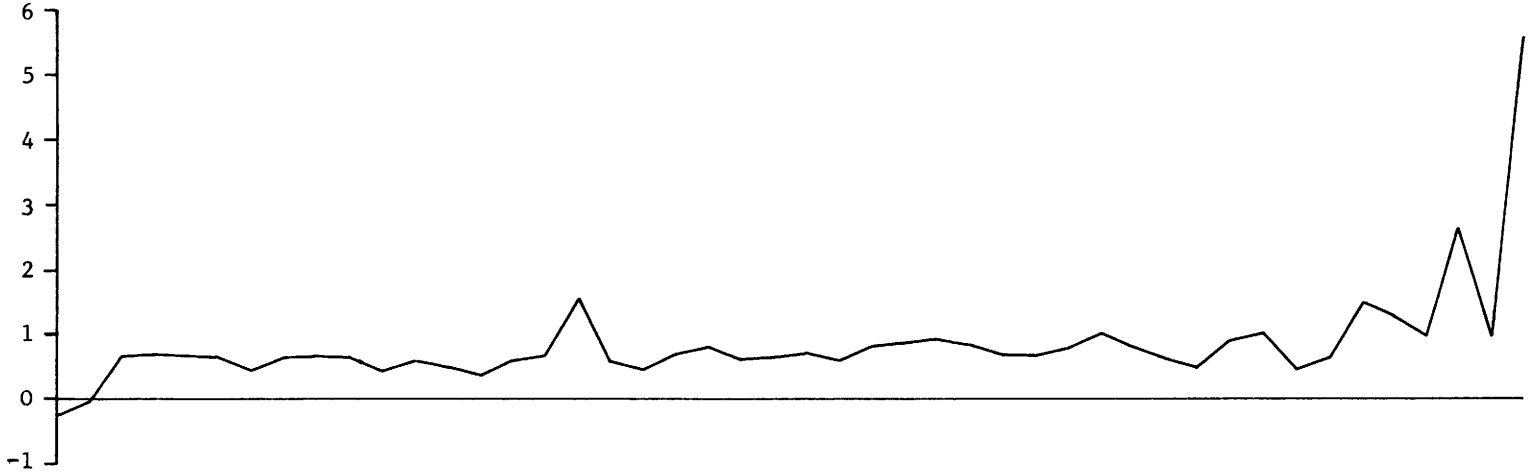
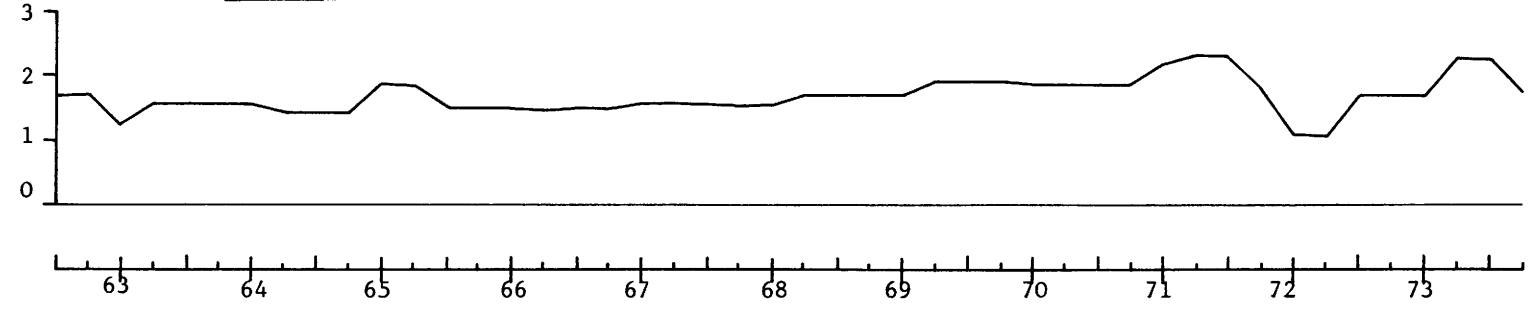


Chart 18: Building Society Mortgage Rate minus Gross (of tax) Shares Rate



Finally we look at a series of differentials that relate to the Secondary Banks. These Banks are heavily involved in the Euro-dollar market. The first differential, shown on chart 19, is between the three-month Euro-sterling rate and the three-month Euro-dollar rate. It has varied very narrowly around zero during the whole period of 1962 to 1973 except for 1967 when sterling was devalued. The margin of variation seems to have narrowed even more since 1969. This indicator of profits then shows that interest arbitrage in the Euro-dollar - Euro-sterling markets has reduced the profits available from that operation to a neglibible amount. Of course this points out the competitive circumstances of the Euro-currency markets.

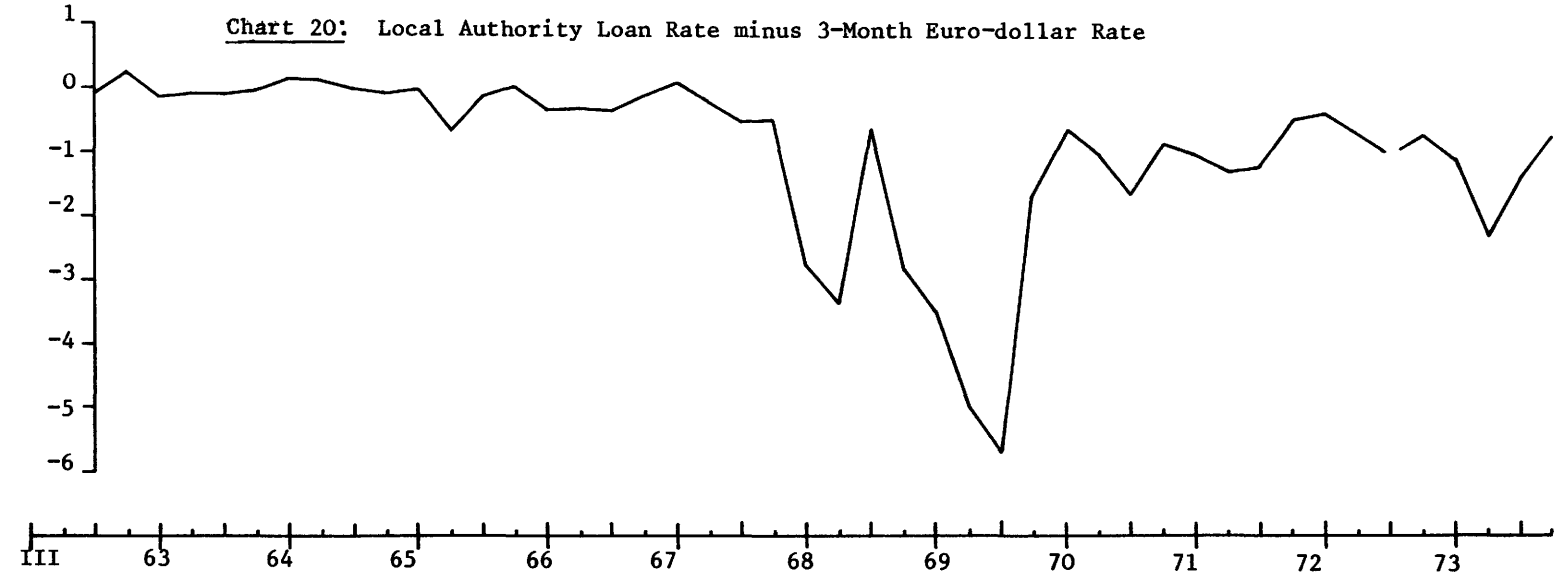
The next differential is between the three-month Local Authority rate (as a proxy for U.K. domestic money market rates) and the three-month Euro-dollar rate, shown on chart 20. This series shows wider fluctuations than the previous one throughout the period. Interestingly also, the fluctuations against sterling are larger than the ones in favour of sterling which points out the fact that exchange restrictions on the banks are such that they facilitate inward arbitrage and discourage outward arbitrage. Thus the banks are quick to eliminate any profit opportunity that may arise in favour of sterling but are unable to exploit the oportunities in the other direction. The chart shows that during 1968 and 1969 the gap widened sharply and it has remained wide and more variable since. This indicator then points to a deterioration of the profitability of the secondary banks.

In summary, all differentials with the exception of that between Euro-sterling and Euro-dollar became progressively more variable towards the end of the period. The exceptional one moved in the opposite direction. Two differentials showed a tendency to narrow, the Local Authority - Euro-dollar one since 1967 and the Call rate - Deposit Account rate since 1971. The other differentials stayed roughly constant or had a tendency to increase.

Chart 19: 3-Month Euro-sterling Rate minus 3-Month Euro-dollar Rate

% per year

Chart 20: Local Authority Loan Rate minus 3-Month Euro-dollar Rate

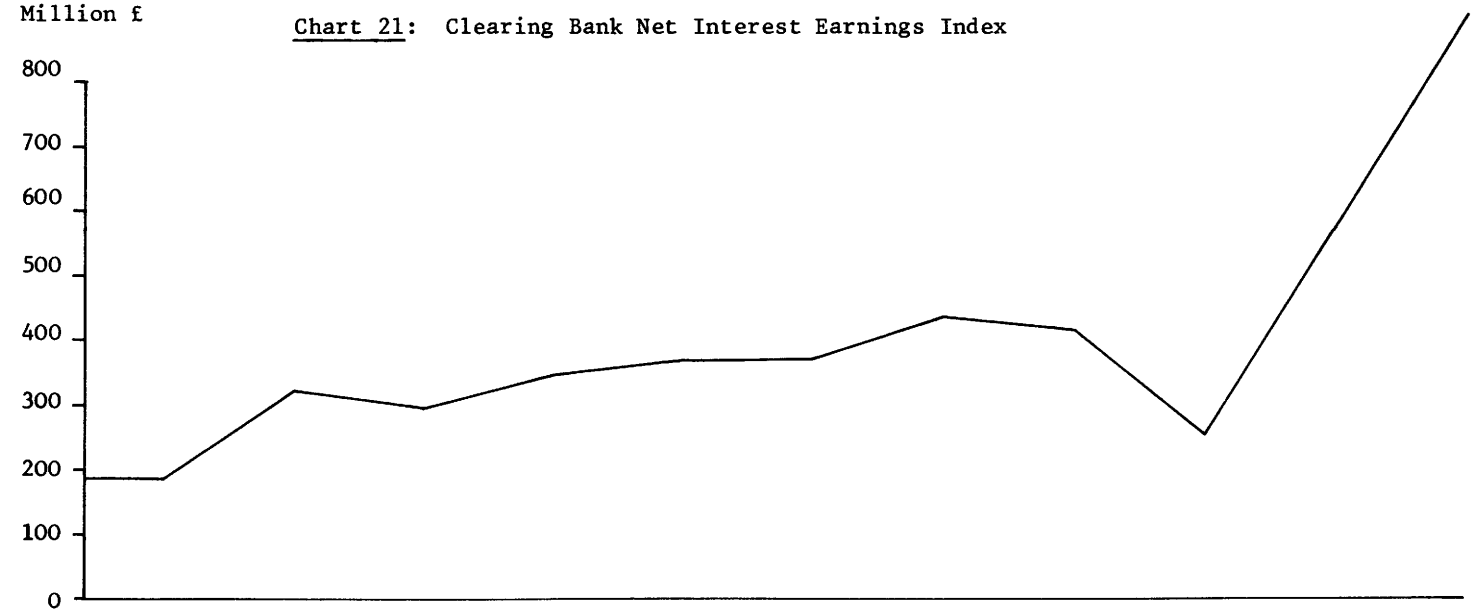


So far we have looked at interest rate differentials as indices of profitability for the different financial groups that we are investigating. However, profitability also depends on the scale of activity. We can allow for this by comparing a Net Interest Earnings Index defined as interest earnings on assets minus interest expenses on liabilities. This index whilst taking account of scale ignores capital gains or losses and all other costs and receipts. This method of arriving at a profit index even though it is more elaborate than simply examining interest differentials, still has simplicity as an advantage. In terms of realism it is not obviously inferior to the published profit statements of the financial institutions since they manipulate their reserve accounts over the years in such a way as to distort their actual profits. All interest rate series are monthly averages for the previous three months and all asset levels are as of the end of the quarter or year. The Euro-dollar rate includes the dollar premium, that is we assume that the Secondary Banks enter into covered arbitrage only.

First we examine the Clearing Bank Net Interest Earnings Index shown on chart 21. This index was calculated as interest earnings on Advances plus interest earnings on Investments plus interest earnings on Liquid Assets minus interest payments on Deposit Accounts. The Clearing Banks have managed to increase their profits over the whole period 1962 to 1973 significantly more than what would be necessary to just compensate them for the rate of inflation. After the Competition and Credit Control rules in 1971 they have fared even better although the variability of their profits seems to have increased also. This profit indicator thus seems to confirm our impression obtained from an examination of the interest rate differentials above. The government controls on Clearing Banks, particularly those on Advances, seem to have contained the growth of their profits to a lower level than what they would have been in the absence of controls as the post 1971 period indicates.

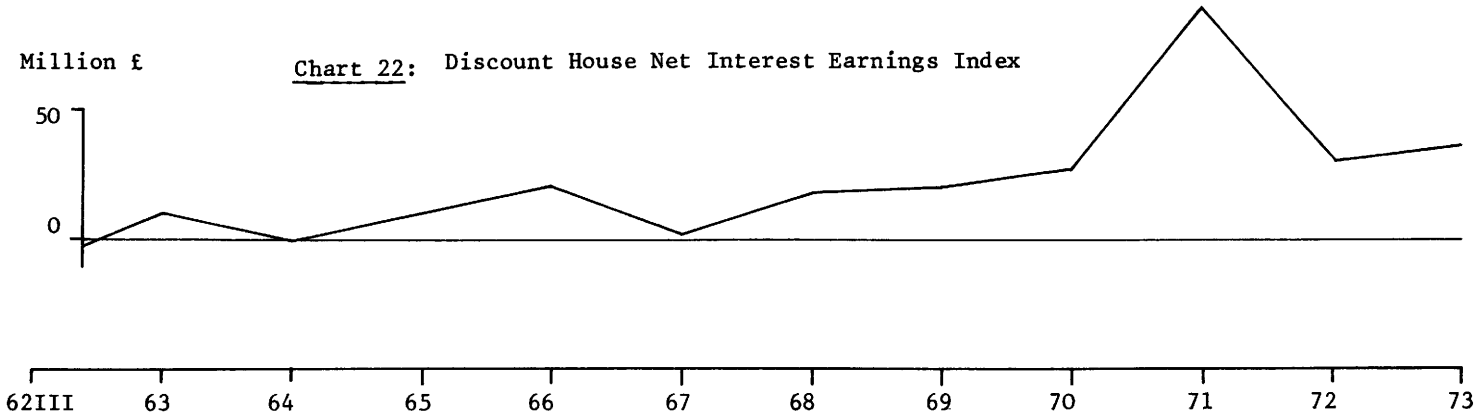
Million £

Chart 21: Clearing Bank Net Interest Earnings Index



Million £

Chart 22: Discount House Net Interest Earnings Index



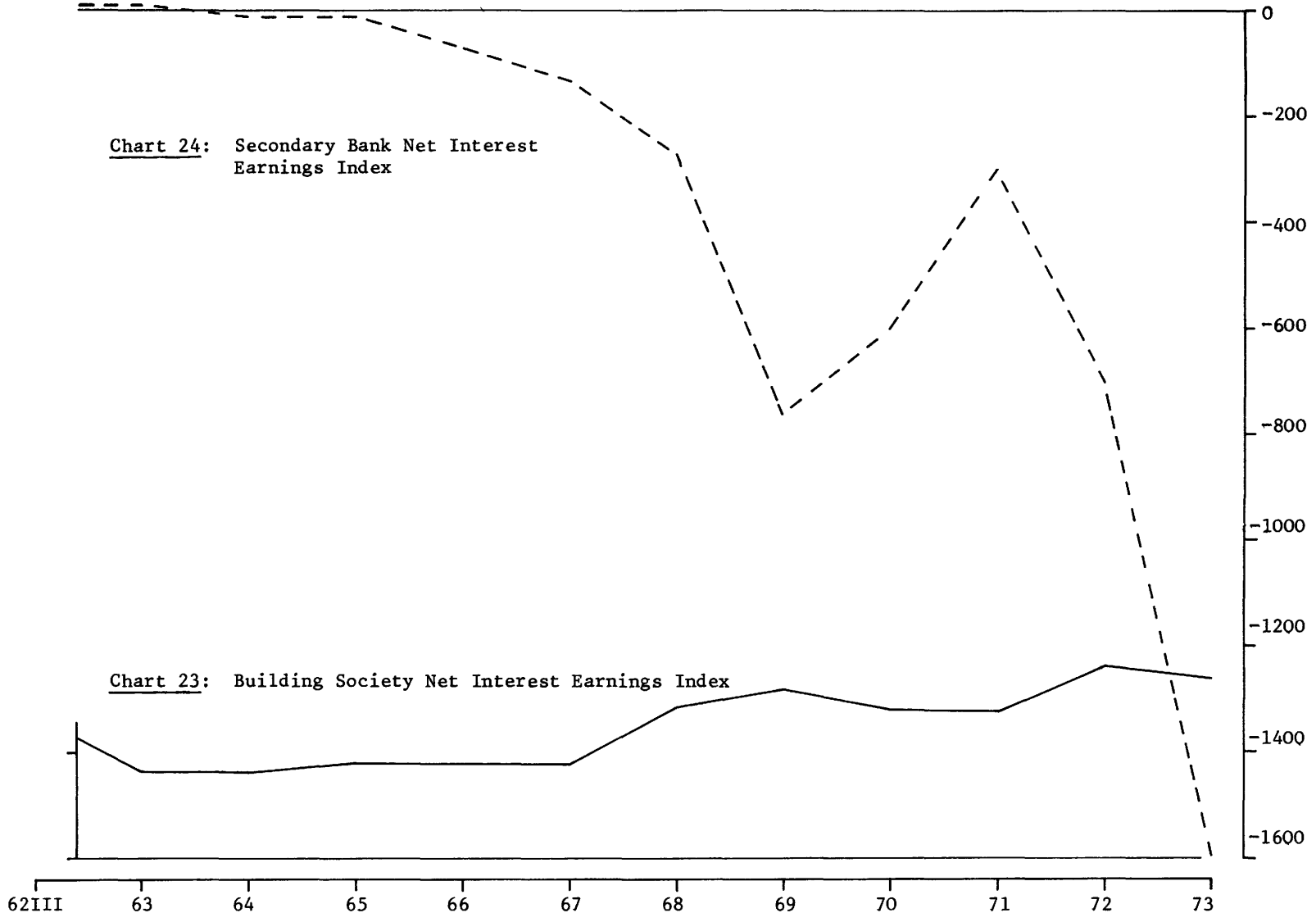


Chart 24: Secondary Bank Net Interest Earnings Index

Chart 23: Building Society Net Interest Earnings Index

Second, the profit index of the Discount Houses was estimated as interest earnings on Assets minus interest payments on Call Loans. This index, shown on chart 22, follows a rising trend which was more than adequate to anable them to keep up with inflation. It broadly agrees with the relevant interest rate differentials previously looked at and shows an increase in variability after 1971.

Third, the Building Society profit index was measured as interest earnings on Mortgages minus interest payments on Shares and Deposits (gross of Tax). As shown on chart 23 it is similar to the one for the Discount Houses af far as hedging profits against inflation is concerned. It has however a smaller variability than the other group over the whole period. Compared to the relevant interest rate differential it is similar in trend but is smoother and narrower in its variability.

Lastly, let us look at the profits index of the Secondary Banks. This index, shown on chart 24, was estimated by adding the interest earnings on nine different assets and subtracting the interest payments on five liabilities. It has been declining over the whole period 1962 to 1973. Prior to 1967 the decline was comparatively slow. After 1967 it became more precipitous and with large swings. Our observations with respect to the covered interest arbitrage differentials that we examine above seem to be confirmed by this index also. In spite of the tremendous growth in their balance sheets, the competitive environment of the Euro-dollar market has forced these banks to make losses as a group. The even more precipitous decline after 1971 must be partly attributed to the Competition and Credit Control rules which imposed comparatively more constraints on this group and unleased even greater competition from the Clearing Banks. Needless to say, the Secondary Bank profits did not keep up with inflation.

Finally, we can summarize the previous discussion of this section as follows.

Nominal interest rates have generally been moving upward. In the second part of the period their variability has increased and they have reached unprecedented heights.

Real interest rates have shown a tendency in the opposite direction to that of the nominal rates in the U.K. During the 1970's they have turned negative more often than in previous years.

In the Euro-dollar market the nominal interest rates have shown an upward trend similar to the U.K. rates. The real Euro-dollar rate, however, behaved differently. It has never turned negative and seems to have varied roughly around a constant level. Thus, the Euro-dollar market has adjusted better to the rate of inflation than the domestic U.K. money market.

Turning to profitability indices, the interest rate differentials have shown a tendency towards greater variabilitity at the end of the period, with the exception of the Euro-sterling - Euro-dollar gap which narrowed. The levels of the differentials have increased in six cases out of the nine investigated, one has stayed constant and two have declined. The Net Interest Earnings profitability indices show broadly similar results as their relevant interest differentials, that is greater variability at the end of the period (except for the Building Societies), and increases in the differentials associated with increases in Net Interest Earnings. They also show an inverse relationship between the profitability of Clearing Banks and that of Discount Houses and Secondary Banks.

With respect to the rate of inflation the Clearing Banks, Discount Houses and Building Societies have more than kept up with it whereas the Secondary Banks have not.

2. The Effects of Alternative Methods of Controlling Financial Sector Profits upon the Rate of Inflation and Resource Allocation.

There are in principle two basic ways of influencing the profitability of the financial system. One is to control the interest rates at which they may borrow and lend, and the other is to control the overall scale of their activity. There are two ways of controlling the overall scale of activity. One is to control the rate of creation of central bank reserve assets, and the other is to put restrictions upon the volume of lending which the various institutions may undertake. In this section we analyse the effects of these alternative methods of controlling the profitability of the financial system upon the rate of inflation.

It will be helpful to begin by considering how interest rates would have to behave if inflation was to have no effect upon the profitability of the financial system. Put at its simplest, all interest rates would have to reflect fully the rate of inflation. The interest rates on all the assets (including their cash reserves) of the banks and non-bank financial intermediaries would have to be increased by an amount equal to the rate of inflation. Also, interest rates paid on deposit liabilities even including current account deposits with the banks, would also have to bear interest at a rate which was marked up by the rate of inflation. If such an arrangement for interest rates was achieved, then the real profitability of the financial system would be unaffected by inflation. Their, nominal profits would grow but only at a rate equal to the rate of inflation. Additionally, there would be no consequences flowing through the financial intermediation system for the allocation of resources. The real rate of return being paid to lenders and the real rate being charged to borrowers as well as the real profitability of the financial institutions would all be uninfluenced by the rate of inflation.

Further there would be no re-distributions of income and wealth. Lenders would not be penalised and borrowers would not be favoured. Such a state of affairs would presumably be judged to be ideal in the sense that the inflation would be entirely neutralised in its effects upon the financial system, borrowing, lending and inter-temporal resource allocation.

From our analysis of the trends in interest rates in the previous section it is clear that the financial system failed to adjust to inflation in this neutral way. How might such an adjustment be achieved? First, it would seem to be essential that there be no restrictions upon the interest rates which competitive financial intermediaries and banks are allowed to charge. Second, there should be no restrictions upon their borrowing rates. This, however, in and of itself would probably not be sufficient. Most types of financial institutions are placed under obligations to hold at least some fraction of their assets in the form of government securities. Also, even in a competitive financial system one of the major competitors for fixed deposits is the government itself through its National Savings movement. Unless, the government, therefore, did something quite positive in both the market for its own securities and with National Savings assets it is unlikely that a freely competitive banking and financial industry would produce interest rate movements that fully reflected the rate of inflation. The additional thing that would be required to achieve this is that the government issue a series of cost of living indexed bonds of varying terms to maturity including possibly a perpetuity, and also that the interest rates on National Savings be adjusted fully to reflect changes in the rate of inflation. These moves would place the banking and financial industries in a competitive environment which would require that they also offer interest rates on their liabilities that fully reflect inflation and also the fact of the existence of a cost of living indexed linked government security would ensure that the institutions would not become locked in to government assets the market values of which had

tumbled in order to produce nominal yields reflecting the underlying rate of inflation.

It is clear that such arrangements would neutralise the effects of inflation on the savings of individuals channelled through the financial institutions and banks. A major objection to the high interest rate implications of such a scheme, universally advanced, relates to the housing finance market. The central problem here is that high interest rates with fixed term mortgages which are amortised in equal nominal installments produce acute cash flow problems in the early years of the mortage. It would be necessary therefore to introduce a mortgage option which enabled borrowers to repay in equal real installments. Such a scheme has been worked out in "Housing Finance - A Realistic Solution" by Michael Parkin and Malcolm Gray in The Banker, June 1974 (Appended).

Instead of adopting the neutral arrangements outlined above U.K. policy has, as indicated in the preceding section, sought to minimise the impact of inflation by holding interest rates down. This is unambiguously a disastrous policy for three reasons. First, it produces a severe misallocation of resources. Low interest rates typically mean negative real interest rates. This induces people to bring forward their consumption and thereby causes too many resources to be allocated towards those activities in which people wish to accumulate simply as a hedge against inflation. Second, it causes gross re-distributions especially between borrowers and lenders, the borrower gaining and the lender losing in some cases substantially especially in the market for housing finance. Third, and perhaps in the long run most serious of all, such a policy exacerbates the inflationary situation. It does this through two channels. First, low or negative real rates of interest induce excessive demands being placed on the economy's productive capacity and second the mechanism whereby low interest rates can be validated involves

printing ever increasing money balances. Whether or not one regards that increase in the money supply as the cause of inflation, it certainly permits the inflation to continue unabated.

An alternative which is often been tried, is to control not only interest rates but also the total volume of lending. This has particularly applied to the banks lending in most phases of deflation over the postwar years. There are two major objections to this approach. First, it tends not to work, in the sense that total financial system lending to industry and households is typically uncontrolled. It is always easy to control one part of a banking-financial system but virtually impossible to control the aggregate. Second, there is a tendency for the best risk customers to be favoured by the banks and therefore when restrictions and low interest rates are on, higher risk customers find themselves paying excessively higher rates of interest, and therefore again the equity of the control is called into question.

Controlling the real profits of the banking system by an arrangement which encourages the indexation to the cost of living of all interest rates is excellent for controlling the misallocative and re-distributive effects of inflation but does nothing of course to influence inflation itself. Any inflation rate is possible under such an arrangement. In order to have a positive effect upon the rate of inflation it would seem desirable to augment the control of the real profitability of the banking system with control of their overall nominal level of activity. Since, as we have already noted, it is difficult to achieve by way or control of their lending it presumably has to be achieved by the traditional techniques of monetary control. This involves placing a reserve requirement upon some group of institutions such as the clearing banks and then making available to them a stock of reserve assets which grows at a controlled rate. The critical thing here seems to be that the choice of the reserve asset itself should be made such that the

asset in question (a) can in fact be controlled and (b) is in relatively inelastic and stable demand by the institutions in question. The traditional cash reserve base seems to offer the best scope for control in this respect rather than the use of wider definitions of reserves as present in the Competition and Credit Control regulations. (For a full but rather technical discussion of this see The Manchester School, March 1973 specialissue on Competition and Credit Control).

One crucial requirement for control of the cash base of the banking system is that the foreign exchange rate be free to adjust and not be rigidly pegged. This also is necessary if domestic interest rates are fully to reflect domestic inflation.

CONCLUSIONS

Our main conclusions are as follows:

(a) control over domestic interest rates have prevented those rates from rising fully to reflect the rate of inflation;

(b) the uncontrolled Euro-dollar and Euro-sterling rates have adjusted to reflect world inflation;

(c) the profitability of all the groups examined have, with the exception of the secondary banks, increased;

(d) the secondary banks which have to operate in both domestic and Euro-markets have suffered sharply falling profitability;

(e) the above features of domestic interest rate policy have had serious but unquantifiable resource missallocations and income redistributions;

(f) holding down domestic interest rates has probably worsened U.K. inflation relative to that of other major countries;

(g) within the Banking sector there has been an inverse relationship between Clearing Banks profitability on the one hand and Discount Houses and Secondary Banks on the other.

LIST OF CHARTS

CHAPTER 4

FISCAL POLICY AND INFLATION *

by

M.T. SUMNER

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1. INTRODUCTION

Three distinct but closely related questions are raised by the title of this paper. Firstly, how is the inflation rate altered by variations in demand induced by tax changes! The traditional anwer that higher taxation reduces inflation has been challenged in recent years; the reasons for this challenge and the evidence offered in support of the proposition that higher taxation increases the inflation rate are examined in section 2. Secondly, can taxation be designed to reduce inflation not through its effects on demand but by providing an incentive to maintain stable prices? Several schemes have been proposed with this end in view; the general principles, though not the details of particular plans, are considered in section 3. Finally, unless the government takes deliberate steps to offset fiscal drag, inflation increases the real yields of taxation. How does this characteristic affect the stabilising properties of the tax system and its effects on resource allocation and income distribution, and how would it be modified by indexation? The paper ends with a brief concluding section.

2. TAXES AS A DETERMINANT OF INFLATION

The use of taxation as an instrument of anti-inflationary policy has historically been considered so uncontroversial as to require little discussion. In the traditional view inflation is generated by excess demand, excess demand is reduced by a tax increase; therefore higher taxation lowers the inflation rate. Attempts to refute this traditional view must proceed either by disputing the link between taxation and excess demand, or by espousing, explicitly or otherwise, some other theory of inflation in which taxation and the alleged cause of rising prices are positively associated.

The first contention, which accepts the traditional view of inflation but disputes the role of taxes, can be dealt with briefly. It is not difficult to envisage circumstances in which a tax increase would raise demand. An increase in sales taxation might generate expectations of a further increase, and hence create or augment a speculative demand for storable goods. More plausibly, an unanticipated, permanent increase in business taxation will raise investment demand if interest payments are not tax deductible and the discounted value of depreciation deductions exceeds the cost of an asset, or if interest payments are deductible and the tax code is more generous than the standard of economic depreciation; the conditions for a temporary increase in business taxation to raise investment demand are weaker. The recent fiscal history of the United Kingdom provides appropriate examples of periods when these conditions were fulfilled for at least certain types of capital goods.[1] However, the significance of such examples should not be exaggerated: these cases merely qualify the traditional anti-inflationary rule in particular instances without questioning its general validity. The main grounds for opposing the traditional view are not that an increase in certain taxes in certain circumstances may affect demand perversely, but that the effects on demand are not the only relevant consideration.

The belief that higher taxation is the antithesis of a successful anti-inflationary policy is rarely stated explicitly and comprehensively. The origins of this belief are probably to be found in the doubts frequently expressed about the effects of indirect taxes. Students are taught that the imposition of a tax on a particular commodity will, except in special circumstances, raise its price; it appears schizophrenic to assert at a later stage of the educational process that higher indirect taxes will reduce inflation by depressing demand.[2] Yet the apparent paradox is superficial: the price of a taxed commodity will rise relatively to other prices; the effects on the general price level depend on the government's use of the additional tax revenue. If the proceeds are used to reduce the money supply, the price level cannot remain the same (or a fortiori higher than before) without a contraction in the scale of economic activity, and it is this decline in demand which, in the traditional view, causes prices to fall relatively to their level in the absence of the tax increase. The time period necessary for full adjustment to a tax change cannot be specified a priori; moreover, the impact effect of an increase in indirect taxes might well be a higher price of taxed commodities and an unchanged price of other goods, and hence a temporarily higher level of prices. However, the logic of the traditional analysis as a statement of the eventual effect of a change in indirect taxes is not affected by the nature of the adjustment path.

Whereas confusion about the role of indirect taxes has a long history, doubts about the impact on inflation of changes in direct taxes have been expressed only in the recent past. At one time it was thought, presumably on the basis of the partial equilibrium analysis of indirect taxes, that an increase in income tax accompanied by a cut in indirect taxes would enable the government to maintain price stability without sacrificing full employment (even temporarily) when wages were pushed up by some unexplained impulse.[3] However, recent commentators have been sceptical about the implicit assumption

that workers will not react to an increase in their income tax liabilities.[4] At a slightly higher level of sophistication, recent U.K. trends in nominal, real and net real wages have been described and compared by Jackson, Turner and Wilkinson /9/, who draw attention to the generally - increased incidence of wage - taxation; and suggest that the growing discrepancy between increases in pre-tax nominal wages and in post-tax real wages may have been responsible, at least in part, for the wage explosion at the end of the 1960's.

Despite the wealth of descriptive statistics presented in this study, the authors refrain from testing or even formulating any hypotheses, and therefore in their conclusion they are restricted to mentioning a possible connection between taxation and inflation. Nevertheless, their contribution serves the valuable, if limited, function of emphasising that the employee will be concerned with the spending power conferred by his wage net of income tax and social security contributions, deflated by the (weigthed) prices of the goods he buys. Their argument can readily be extended to the employer's side of the labour market, where the relevant magnitude is the money wage plus employer's social security contributions, deflated by the price of the goods which the firm produces. In other words, taxation drives a wedge between either the employer's and employee's perception of the nominal wage, or their respective perceptions of the price level: at the aggregate level, workers are affected by the retail prices of their consumption bundle, employers by the wholesale prices they receive for their output.

Wage bargaining can dtermine only the nominal wage, but that is only one component of the real wage on either side of the labour market. In consequence, the nominal wage which an employer is prepared to pay or at which a worker is prepared to accept employment will be changed by changes in the taxes they are required to pay or

in the prices which confront them. These ideas provide the basis for a recent investigation of wage behaviour in the U.K. by Parkin, Sumner and Ward [18]. Their model incorporates three hypothesis: demand for labour depends on the real wage paid (partly to the government in the form of employer's social security contributions) by the employer; supply of labour depends on the real wage (net of taxes) received by the employee; and the money wage is adjusted so that the expected change in excess demand for labour (which depends on expected price and tax changes) will eliminate any existing excess demand. These assumptions yield a wage equation of the form

$$\dot{w} = \alpha + \beta X + \gamma \dot{P}_E + (1-\gamma)\dot{P}_c - \gamma \dot{T}_1 - (1-\gamma)\dot{T}_2$$

where $\dot{w}$ = rate of change of nominal wages

$\dot{P}_E$ = expected rate of change of wholesale prices (including an export component in an open economy)

$\dot{P}_c$ = expected rate of change of retail prices

$\dot{T}_1$ = expected rate of change of unity plus the effective rate of employers' social security contributions

$\dot{T}_2$ = expected rate of change of unity minus the employee's effective personal (income plus social security) tax rate

X = lagged excess demand for labour.

It will be noticed that only anticipated tax and price changes enter the wage equation explicity; unanticipated changes would be reflected in the excess-demand term. Furthermore, the coefficients of the tax and price variables are subject to a priori restrictions as a direct result of the algebraic derivation of the wage equation: the sum of the coefficients on expected price changes is unity, so that a uniform change in the anticipated rate of price inflation would riase the rate of wage inflation by the same amount. In other words, the Phillips relation between excess demand for labour and the rate of wage change does not offer a stable menu for policy

choice. The restriction that the coefficient on each tax change term is the negative of the corresponding price change coefficient is a consequence of specifying supply of and demand for labour as functions of the appropriate real wage: a given change in the real net-wage received by the employee, for example, will have the same effect on labour supply no matter whether it is caused by a change in retail prices or by personal taxes. Indirect taxes enter the model implicitly through the difference between wholesale and retail prices.

In the present context, the properties of the tax change parameters are of particular interest. However, an obvious problem arises in fitting this generalised expectations model empirically, since only anticipated tax changes appear as an independent variable. While considerable progress has been made the measurement of price expectations, there is at present little alternative to using a measure of expected tax changes derived from ex post actual changes. This may be one of the reasons why in the unrestricted results reported by Parkin, Sumner and Ward the fiscal variables perform badly: tax changes on both sides of the labour market are statistically insignificant, and for employees are incorrectly signed. This could mean that the participants in wage negotiations simple do not form expectations about tax changes, regarding them rather as a random variable, or, more plausibly, that such expectations are formed but the attempt to proxy them by actual tax changes introduces severe measurement error which obscures their role in wage setting.

Other studies which incorporate a relation between wage- and tax-changes have yielded more positive conclusions.[5] It is therefore important to establish how much could be inferred from a positive partial relation between increases in say, income tax and increases in wages. This problem of interpretation is more subtle than many students of the subject have appreciated.

At the lowest level of sphistication, the popular discussions of taxes and inflation completely ignore the indirect links between taxation, excess demand and the inflation rate that constitute the essence of the traditional view. This rather serious omission is a natural consequence of focussing on a single aspect of an extremely complex problem in verbal discussions, a mode of analysis which is not well suited to the consideration of multivariate relationships. More seriously, there is grave danger of, and indeed precedent for, making the same mistake in interpreting the results of regression studies of the wage equation.[6] It cannot be emphasised too strongly that the coefficient of (say) an income tax vaiable in a wage equation provides an estimate only of the direct effect of a tax change on wages; to this direct effect must be added any indirect effect operating through other arguments of the wage equation, and particularly through the excess demand for labour. To analyse the total effect of a tax change on inflation therefore requires a carefully specified model, not one isolated structural equation. To date, models large enough to incorporate the relevant relationships have been designed with more attention to econometric convenience that to economic theory.

The indirect effects of taxation through excess demand provide an alternative explanation for the failure of the fiscal variables in the tests conducted by Parkin, Sumner and Ward. Their model is based, as noted above, on the assumption that supply of and demand for labour are functious only of the relevant real wage: inability to sell planned output at expected prices pushes firms off their labour demand curves, on the lines suggested by Patinkin [19 ch. 13]. If, however, the effect of taxation in reducing demand is anticipated by firms, but prices do not respond immediately, the labour demand function would be modified. Hence the predicted direct effect of anticipated personal tax changes becomes ambiguous.

In an attempt to make inferences from the wage equation alone, a number of writers[7] have assumed that the indirect effects of a tax change through excess demand are offset by a change in government spending. This procedure invites two comments. The first is that this assumption opens a Pandora's box of analytical problems, which have been widely ignored. If government spending were increased by the same amount as tax revenue, then aggregate demand would increase in accordance with the well-known balanced budget multiplier theorem: in the simplest case, since part of the initial cut in disposable income is reflected in a fall in saving, national income must increase to induce the same volume of saving as before. While there are innumerable qualifications to and extensious of the theorem, they affect only the magnitude, not the direction, of income change, provided consumers do not exhibit money illusion. However, if demand is supposed to remain unchanged then the government surplus must increase relatively to what would otherwise have happened. In consequence, some other change must occur in the government's accounts: either bond sales or creation of money must be reduced. If the new tax and expenditure policies were maintained, cumulative changes in the stocks of money and/or bonds would result with further repercussions on private spending. To trace the process further would try the reader's patience unnecessarily, for enough has been said to show that maintaining a constant level of aggregate demand when taxes are changed is a much more complicated matter that has been assumed elsewhere. The second comment is shorter and simpler: if, by whatever policy measures are necessary, demand is maintained constant after a tax increase, there will be no opportunity for the traditional mechanism to operate; therefore, whatever the outcome of the intellectual gymnastic performed by the analyst, they will be simply irrelevant to the central question.

If taxes are increased but government spending on goods and services remains unchanged, it is still the case that some other accommodating change must occur elsewhere. The resulting surplus must be financed by reductions in bond sales or in money creation. The corresponding stocks will continue to fall, with effects on private spending which reinforce the tax increase, as long as the surplus persists, i.e. until prices or real income have fallen sufficiently to reduce real tax revenue to its former level. Provided markets clear eventually, prices must be reduved in the long run. As always, comparisons must be interpreted in relation to what would otherwise have happened.

To conclude this part of the argument, the current rash of studies claiming to demonstrate, at various levels, a positive relation between taxation and the price level or inflation rate has in fact presented no evidence in support of that proposition. The analysis is far more subtle than many of the contributors have realised. Whether a government elected for a short period would be prepared to sacrifice its employment objectives for an unspecified, and in the present state of knowledge unspecifiable, period in retur for the promise of slower inflation in the long run is another question. Apart from electoral considerations, it is not clear that such a policy would be socially desirable. However, these wider issues do not affect the result of this section, that there is no reason to doubt the traditional view that higher taxes lower the inflation rate. Conversely, a tax cut has no place in an anti-inflationary policy.

3. TAXATION AND DIRECT CONTROLS

Despite the faith in direct controls over prices and incomes still to be found in various political quarters, the evidence of past experience overwhelmingly denies their efficacy.[8] As demonstrated in the previous sections, there is a large, if incoherent and incomplete, body of literature which argues that a restrictive fiscal policy is more likely to increase than reduce the inflation rate. It may therefore appear paradoxical that the proposal to use fiscal policy as a means of enforcing direct control is enjoying more attention than ever before.

The suggestion to employ the threat of fiscal action as a bargaining weapon appears to have originated with Hansen [6], who envisaged the government offering to trade unions a sharp reduction in disposable income if they failed to select the declared level of average money wages consistent with stable prices at full employment. As the author of the scheme pointed out, there would be awkward problems of timing declarations and tax changes in relation to the necessarily centralised and discrete wage agreements. Furthermore, the distribution of income between wage earners and the rest of the community would have to be varied to reward or punish the unions as appropriate, whatever was appropriate for the residual and irrespective of the wider implications of the redistributive methods adopted. Two problems not mentioned by Hansen are the translation of an average wage into a wage structure, and the difficulty of distinguishing between wage-earners and others on the basis of income or any other tax base. More fundamentally, he implicitly attributes blame for inflation to organised labour, an admittedly popular but unsubstantiated view.

Subsequent writers have not followed Hansen in regarding the existing tax structure as an instrument capable of any variation required by the bargaining situation. Instead, it has been

suggested that the fiscal system be adapted or extended to discourage price increases or to strengthen employers' resistance to wage increases, depending on the writer's view as to the source of inflation. Examples include Nevin's proposal for a factor tax to replace profits tax /16/, Scott's scheme for a tax an price increases /21/, and Weintraub's plan for a supplementary profits tax geared to wage increases above a stipulated level /24/. Instead of discussing the details of these or other schemes, attention will be confined to two general questions, viz. their probable effectiveness in the light of alternative theories of inflation, and their side effects.[9]

Frequently the authors base their advocacy of fiscal controls on the view that inflation is caused by the exercise of market power. Those who believe that this view originates in a confusion between high and rising prices and that inflation is caused by excess demand and expectations, find it just as difficult to defend fiscal appendages to direct controls as the controls themselves. They cannot reasonably be regarded as operating through demand, since existing instruments are capable of controlling demand. They may serve as a means of talking down price expectations without maintaining as large a degree of excess supply as would have been necessary without them, but any expression of anti-inflationary intent which carries conviction would serve the same purpose.

The similarity with direct controls carries over to side-effects. Three familiar consequences are worth reiterating. Firstly, the effective price of a commodity can be altered in a variety of ways, even if the nominal price is controlled. Secondly, the diversion of effort which the first consequence implies is compounded by the misallocation which derives from the inability of controls, whether or not supported by fiscal sanctions, to distinguish between relative

and absolute price changes. Fiscal supports or substitutes for direct controls introduce more possibilities for misallocation than the usual fixing of relative prices associated with prices and incomes policies. For example, Nevin's proposal for a factor tax would provide an artificial incentive for vertical integration.[10] The scheme proposed by Weintraub would make the rate of profits tax a function of the excess of actual over guidepost wage increases in the individual firm; in the face of an "excessive" increase in the wages of a particular group of workers, the firm would have an artificial incentive to disintegrate, even if the outside source of supply involved some additional real costs, provided the lower rate of tax on the smaller gross profit left a larger net profit. Finally, such policies require real resources for administration and compliance.

Thus, the case for taxation as a means of making those responsible for inflation pay for their misdeeds is no more compelling than the case against taxation as a means of controlling inflation indirectly through demand. It is dependent for its appeal on the inflation theory caricatured in the previous sentence; and whatever the effect of a tax on inflation itself, it is difficult to imagine a scheme which would not introduce new distortions in the allocation of resources.

4. EFFECTS OF INFLATION ON THE TAX SYSTEM

In discussion of inflation a distinction is generally made between the effects of anticipated and unanticipated inflation. The latter is undesirable because it causes arbitrary redistributions of income; in particular, borrowers benefit at the expense of their creditors. In a fully anticipated inflation, however, contracts will be negotiated by mutual consent to preserve the same real position as would have existed had prices remained constant; in particular, nominal interest rates will rise by the rate of anticipated inflation. The undesirable effects of this type of inflation are concerned with resource allocation: demand for real money balances will be reduced by the implicit tax of inflation; and resources must be diverted from more productive tasks to the socially sterile function of changing prices and economising on the use of money. Since economic or any other theory can say little about the character of the redistribution generated by unanticipated inflation, analysis of the consequences of inflation has been largely confined to the tax on money balances imposed by an anticipated inflation, and especially the relation between the revenue derived by the government and the welfare losses suffered by the private sector. Rare attempts to widen the scope of the analysis of the allocative effects of inflation have typically juxtaposed the two forms of inflation, assuming part of the community to be aware of inflation and the rest blissfully ignorant.[11]

Unfortunately, this distinction breaks down once the existence of a conventional tax system is recognised. In general, it is no longer true that a perfectly anticipated inflation, characterised by a sufficient increase in nominal interest rates to preserve the corresponding real rates, will leave the distribution of income unaffected; and the effects of inflation on resource allocation will not be confined to those which result from the substitution of other stores of value for money. In this section the combined

effect of inflation and the tax system on allocation and distribution are illustrated, and the reader's attention is drawn to the simple solutions which are readily available for some aspects of the problem, and to the intractable difficulties which appear elsewhere. For simplicity the argument proceeds on the assumption that, for the firm, the prices of output and all inputs are affected equally by inflation, and that rates of return required by its shareholders and creditors rise by the rate of inflation; similarly, for the household, nominal pre-tax income and prices rise at equal rates. Thus, ignoring the effect on demand for money emphasised in traditional theory, such an inflation would be neutral in a model with no tax system. Suppose, however, that a tax system does exist, and consists of a tax on corporate income, and a tax on personal income; since the characteristics of indirect taxes are well understood[12], they will be ignored here.

First, the allocative effects of the interaction between taxes and inflation will be illustrated by examining their impact on a profit-maximising firm liable to pay corporation tax. In general, the firm's input decisions will be altered by inflation, even though wages and the prices of raw materials, capital equipment and the firm's output all rise proportionately. Employment decisions will not be affected in the circumstances assumed,since labour costs are a straightforwardly deductible expense in the computation of corporation tax liabilities; but the firm's profit-maximising stock of fixed capital may be increased or reduced, depending on the proportion of interest paid to creditors and imputed to equity holders which is tax deductible, and on the rules governing depreciation.[13] Even if, on average, the firm's desired capital stock remains unchanged, the optimal composition will be altered if depreciation rules are not identical for all types of asset. Apart from accidental offsetting of stimulating and depressing effects, there are two special rules which guarantee invariance of investment decisions in the

presence of uniform inflation. These rules are those stated earlier for independence of investment with respect to different tax rates: either investment expenditure must be wholly deducted from taxable income in the year of acquisition and no interest payments deducted; or all interest payments, including the opportunity cost of shareholders' funds, must be tax-deductible, together with true replacement-cost depreciation, but capital gains on assets would have to be taxed on an accruals basis. Implementation of either rule would involve important changes in the tax system, with repercussions on firms' financial policies, and would require detailed provisions for the transitional phase. Subject to that qualification, however, the first rule is extremely simple, would create minimal accounting complications, and would leave the accounting profession free to present financial statements to shareholders in whatever form was deemed appropriate. The alternative requires knowledge of the physical depreciation and nominal appreciation rates of each of the firm's assets, and separation of payments to shareholders into opportunity cost and pure profit components. This second rule is the logical end of the current debate on inflation accounting, but it suffers from the obvious handicap of being infeasible. The first rule would have an additional advantage, since it would make investment decisions largely independent of inflation[14], without serving as a precedent for the extension of inflation-proofing to other sections of the fiscal system, a possibility which a recent contributor to the accounting literature considers as worse than the inequities of the present system, considered below, on grounds of administrative cost.[15]

The firm's choice of fixed capital stock is not the only decision influenced by inflation under current fiscal arrangements; as the debate on stock appreciation in the financial press during the period immediately prior to the third (November) budget of 1974 emphasised, the tax treatment of inventories raises similar problems.

Indeed, there is an exact parallel between the rules for fiscal neutrality with respect to fixed investment and the appropriate treatment of stock appreciation. At present, stock appreciation is taxed and interest payments are deductible; neutrality would require, as before, deductibility also of the opportunity cost element in the return to shareholders. Alternatively, the tax system would not affect inventory decisions if interest deductibility and taxation of stock appreciation were both abolished. Again, there is a striking difference between the two rules in terms of the implementation costs; notably, the second would result in a major simplification of current practice.

To summarise the argument of this section so far, under the present tax code inflation affects corporate decisions in a manner which was certainly unintended and for which no economic justification is evident. It would be possible to eliminate such effects in two alternative ways, only one of which is feasible. Under this neutrality rule the corporate tax base would be simply sales revenue minus outlays for wages, materials, equipment and structures. As is well known, neutrality requires full loss offsets in certain cases; to the extent that provisious for carrying losses back are incomplete or irrelevant (e.g. in the case of new firms), distortions would still arise, but on a considerably smaller scale than under the present arrangements.

Distortions in resource allocation are not the only consequence of a tax system designed in an era of relative price stability. The progressivity of the personal income tax ensures that real revenue from this source increases during an inflation, assuming a fixed tax structure. Because the tax structure is not continuously progressive, there is in principle no reason to except an equitable distribution of the additional tax payments across income classes; in practice, the effects are concentrated near the bottom of the income scale, where marginal tax rates increase most rapidly.[16] Further inequities arise from the fact that the incomes of the employed are taxed at source, but the self-employed are taxed in arrears.[17]

It is true that the effect of inflation on the personal income tax could be offset by discretionary tax changes. The objection to this pragmatic solution is the opportunity it provides for chancellors to make surreptitious changes in the tax structure or in the real size of the budget. A more satisfactory solution would be to legislate for an automatic adjustment of personal allowances and of the income slices which attract a particular rate of tax, on the basis of movements in a consumer price index. Such a scheme was enacted in Canada in 1973 and in the Netherlands in 1971, though in the latter case provision was made for downward adjustment of the correction factor by up to 25 per cent, in the light of budgetary requirements.

No further problem arises in the case of labour income. The same is not true, however, of property income. Even if inflation is fully anticipated and interest rates rise immediately to maintain real rates constant, the tax system will prevent maintenance of real consumption in perpetuity. In a no-tax world with a real interest rate of 5 per cent, the (correct) expectation of a 5 per cent inflation rate would raise nominal yields to (approximately) 11 per cent; interest recipients who maintained their real consumption unchanged and devoted the additional 'income' to preserving the real value of their wealth would enjoy an unchanged real consumption in perpetuity. In the presence of an income tax such a choice is no longer feasible because the whole of nominal 'income' is taxed, including the amount needed to preserve the real value of initial wealth. There is a corresponding gain to debtors whose nominal interest payments are tax deductible. To deal with this problem it would be necessary to introduce a personal 'depreciation' allowance, or, more drastically, to change the base of the tax system from income to consumption or wealth, with personal allowances and the slices subject to successive tax rates indexed.[18] These possibilities of reform raise issues far beyond the scope of this essay.

While there is widespread agreement that the existing tax system has undesirable effects on resource allocation and income distribution in the presence of inflation, there is less agreement that indexation

provides an appropriate solution to the problems surveyed in this section. Indeed, an apparently strong argument against indexation is provided by the role of fiscal tools as instruments of stabilisation policy. However, the stabilising properties of the existing tax system are more complex and less clearly desirable than is generally supposed.

The stabilisation aspects of the tax system are usually discussed in the context of a fixed-price Kenesian model. A standard result is that the impact on a real income and employment of an exogenous disturbance will be reduced but not eliminated by the built-in stability afforded by the tax system; unless the disturbance is transitory, discretionary action will be needed to restore full employment.

In fact, real tax revenue depends on the price level as well as real income, and it was argued above that the price level changes in response to excess demand. Suppose, therefore, that an exogenous increase in aggregate demand disturbs an initial equilibrium. Real tax revenue will rise because of the resulting inflation as well as the higher level of real income; if the real value of government spending remains constant, the effects of higher taxation on aggregate demand will be reinforced by reductions in the nominal stocks of money and/or bonds in accordance with the government's budget constraint. Since inflation will continue at least as long as excess demand persists, it is clear that the initial level of demand must eventually be restored; but, with the now higher price level, the government's budget surplus will be higher or its deficit lower than initially, with further repercussions on the nominal money supply or stock of bonds. The conlusions that demand will overshoot the equilibrium level, and that the initial expansionary shock will be followed by a period of induced deflation, would be reinforced if the inflation generated by excess demand created anticipations of continuing inflation, for in that case the price level would still be rising when the level of demand returned to its initial level.

To summarise, the correction of a distrubance by reliance on built-in stabilisers involves at best fluctuations. Whether the equilibrium level of income is stable, and if so whether it is attained within an acceptable period, are questions to which no general answer is possible; it all depends on the parameter values of the particular case. Imperfections in the automatic stabilisers could, of course, always be offset by discretionary action, but there seems singularly little virtue in constructing a system containing strong possibilities of instability. In large measure, the problem stems from the ambitious target of zero excess demand at a constant level of prices: full equilibrium, in the absence of further intervention, requires that any price changes are rolled back to the initial level (or, more generally, to the level they would otherwise have attained).[19] An alternative target, less ambitious but probably more generally acceptable, would be zero excess demand at a zero inflation rate; any price changes caused by a disturbance in the level of demand would not be offset by opposite changes induced by the fiscal stabilisers.

Indexation schemes reduce the probability of overshooting and oscillations in response to a temporary disturbance, and hence they may well increase the stability of real income[20], though they would retard the complete correction of a permanent change in demand: indexation validates the fixed-price assumption of the elementary models, leaving only the monetary changes induced by a deficit or surplus to act as a cumulative influence on a disequilibrium. Any net gain on the real side should be compared with the loss from reduced resistance to continuing price changes. Once excess demand has been eliminated, any inflation which has been built into expectations could continue indefinitely. It may be objected that the implicit model underlying these speculations presupposes instantaneous indexing, whereas any practicable schemes will necessarily incorporate substantial lags; but it would be purely fortuitous if the excess supply produced by institutional delays in indexing was just sufficient to deal with any expectations problem. Discretionary action could be proposed as an alternative counter-argument, but if discretionary action could be relied upon there would be little need for indexation.

In a fully indexed system, the development of which would presumably be stimulated by fiscal indexing, the residual costs of inflation might be sufficiently small to be ignored. No further action would then be required. The burden of the present argument is simply that if full indexation is expensive to implement or if even a fully anticipated inflation imposes non-negligible costs, an alternative worth considering would be the construction of a scheme which recognises zero inflation along with zero excess demand as a fiscal objective. This would imply that an excess demand episode would be followed by the deliberate but automatic creation of excess supply in whatever volume and for whatever period was necessary to rectify inflationary expectations. A natural possibility to examine would be to limit the adjustment of tax schedules for changes in the price level in the light not of revenue needs but of the inflation rate. Full consideration of the details of such a scheme is, however, well beyond the scope of this essay.

5. CONCLUSIONS

It would be unreasonable to subject the reader to a summary of an already lengthy paper. The sole purpose of this concluding section is to emphasise the need for extensive empirical work if the questions raised in the survey of existing knowledge on the relation between taxation and inflation are to be answered fully. Attempts to cast doubt on the traditional view that higher taxation reduces inflation have, it is hoped, been shown to be fundamentally unsound; but whether, for example, inflation varies monotonically in response to a particular tax change requires much fuller investigation than it has yet received. Similarly, however obvious their appeal on grounds of equity, alternative schemes for indexation, and indeed the present system, call for detailed examination to determine their effects on real output and inflation in a stochastic environment. The present effort has at best provided a research agenda.

FOOTNOTES

1. For the derivation of these results and an application to the U.K., see Sumner [22]; the current system of investment incentives is examined in [23].

2. Cf. Hotson's statement [7] that "... economists must strive mightly to integrate their micro and macro price theories, and develop the macro implications of their micro theories".

3. The most articulate exponent of this view is Hansen [6].

4. For example, Cockfield [2] asserts:
"If taxes are increased the ordinary man and woman set out to recoup their loss in higher wages and salaries and this is true whether the increase is in income tax or in purchase tax or in any other tax."

5. See Gordon [5] for the U.S., and Wilson [25] for Canada.

6. Cf. Gordon [5].

7. Wilson [25] is one example.

8. For the U.K., see Parkin, Sumner and Jones [17]. For the U.S., the most recent evaluation was performed by the Council of Economic Advisers; for discussion see Laidler [13].

9. Weintraub's proposal is examined in detail by Isard [8] and by Kotowitz and Portes [12]. Both discussions are essentially micro-economic, and in consequence do not cover the broader issues considered here.

10. Nevin explicitly claims that the factor tax "would avoid the snow-balling effect of a crude turnover tax system", but the base of the tax would be labour costs, capital consumption and purchases of materials; there is no reference to the exclusion of intermediate goods, and indeed Nevin later contrasts the factor tax with a V.A.T. The proposal was primarily intended as a contribution to growth by reallocating the tax burden in favour of efficient firms, but "a second advantage of such a change would be that it would discourage and not encourage the inflation of costs".

11. Kaldor [11], for example, appears to believe that inflation raises the (nominal) rate of return on new investment relative to rates on financial assets.

12. Notably, any 'distortion' (which need not, of course, be undesirable) of relative prices caused by a system of ad valorem taxes levied at unequal rates will not be compounded by inflation, whereas specific taxes will not be neutral in this respect.

13. See Sumner [22]. The neutrality rules discussed below are readily derived from the general relation between inflation and implicit rental price of capital services.

14. In the period 1963-'73, the corporate sector accounted for about 85 per cent, of both private fixed investment excluding dewellings, and of private inventory investment, discussed below. The allowances available to unincorporated businesses are the same as in the corporate sector, but they are subject to the progressive income tax; hence the neutrality results would not apply where the marginal tax rate varied over time because of variations in total income.

15. See Morley [15], ch. 3.

16. See Bossons and Wilson [1] on Canada, and Matthiessen [14] on Sweden.

17. See Prest [20].

18. A personal expenditure tax was advocated by Kaldor [10] many years ago. It would involve similar administrative problems as the wealth tax recently advocated by Flemming and Little [3] to replace, inter alia, the tax on unearned income and capital gains tax.

19. Friedman [4] is one of the few writers who have appreciated this point; he regarded it at that time as a virtue.

20. See Bossons and Wilson [1] for evidence that the performance of Canadian output and employment in response to an exogenous shock will be improved by the indexation scheme adopted in 1973.

REFERENCES

1. Bossons, J., and T.A. Wilson, "Adjusting Tax Rates for Inflation", Canadian Tax Journal 21, (May 1973).

2. Cockfield, F.A. "The Reality of Experience", Journal of the Royal Statistical Society, Series A 132, (1969).

3. Flemming, J.S. and I.M.D. Little, Why We Need a Wealth Tax, Methuen, 1974.

4. Friedman, M. "A Monetary and Fiscal Framework for Economic Stability", American Economic Review 38, (1948).

5. Gordon, R.J. "Inflation in Recession and Recovery", Brooking Papers on Economic Activity (I: 1971).

6. Hansen, B. The Economic Theory of Fiscal Policy, Allen & Unwin, London, 1958.

7. Hotson, J.H. "Adverse Effects of Tax and Interest Hikes as Strengthening the Case for Incomes Policy - or a Part of the Elephant", Canadian Journal of Economics 4, (May 1971).

8. Isard, P. "The Effectiveness of Using the Tax System to Curb Inflationary Collective Bargains: Analysis of the Wallich-Weintraub Plan", Journal of Political Economy 81, (May 1973).

9. Jackson, D., H.A. Turner and F. Wilkinson "Do Trade Unions Cause Inflation?" University of Cambridge Department of Applied Economics Occasional Paper 36, Cambridge University Press, (1972).

10. Kaldor, N. An Expenditure Tax, Allen & Unwin, London, 1955.

11. Kaldor, N. "Economic Growth and the Problem of Inflation", Economica N.S. 26 (1959).

12. Kotowitz, Y., and R. Portes "The Tax on Wage Increases: A Theoretical Analysis", Journal of Public Economics 3, (May 1974).

13. Laidler, D. "Two Issues in the Economic Report of the President 1973: The Control of Inflation and the Future of the International Monetary System", University of Manchester/SSRC Inflation Workshop Discussion Paper 7406, forthcoming in American Economic Review.

14. Matthiessen, L. "Index-Tied Income Taxes and Economic Policy", Swedish Journal of Economics 75 (1973)

15. Morley, M.F. The Fiscal Implications of Inflation Accounting, Institute for Fiscal Studies and Institute of Chartered Accountants in England & Wales, 1974.

16. Nevin, E. "Taxation for Growth - A Factor Tax", Westminster Bank Review, November 1963.

17. Parkin, M., M.T. Sumner and R. Jones "A Survey of the Econometric Evidence of the Effects of Incomes Policy on the Rate of Inflation", in M. Parkin & M. Sumner (eds) Incomes Policy and Inflation, Manchester University Press, 1972.

18. Parkin, M., M.T. Sumner and R. Ward "The Effects of Excess Demand, Generalised Expectations and Wage-Price Controls on Wage Inflation in the U.K.", University of Manchester/SSRC Inflation Workshop Discussion Paper 7402, forthcoming in the Rochester Conference Series.

19. Patinkin, D. Money, Interest and Prices, Row, Peterson & Co., Evanston, Illinois, 1956.

20. Prest, A.E. "Inflation and the Public Finances", Three Banks Review, (March 1973).

21. Scott, M.Fg. "A Tax on Price Increases?" Economic Journal 71, (1961).

22. Sumner, M.T. "Announcement Effects of Profits Taxation", in M. Parkin (ed.), Essays in Modern Economics, Longmans, 1973.

23. Sumner, M.T. "Recent Changes in Fiscal Investment Incentives: A Postscript", Manchester School 41 (June 1973).

24. Weintraub, S. "An Incomes Policy to Stop Inflation", Lloyds Bank Review 99, (January 1971).

25. Wilson, T.A. "Taxes and Inflation", Report of the 24th Conference of the Canadian Tax Foundation, 1972.

CHAPTER 5.

PRICES AND INCOMES POLICY AND THE U.K. NATIONALISED INDUSTRIES IN THE POST-WAR PERIOD

by

Robert Millward

1. INTRODUCTION

An increasingly accepted view of the way that governments implement price and income restraint is that pressure inevitably is placed on the public sector. Certainly in the U.K. in the last few years government intervention in the pricing of nationalised industry goods and services has raised much comment. There are some who believe such intervention has been going on for a long time and - to take another example - the pay pause of 1961/2 was seen as effective only in so far as there was some temporary "leaning" on certain wage and salary groups in the public sector. Most of these observations have been impressionistic and little if any substantive research has been performed in this area. This paper attempts a preliminary examination of this problem from the point of view of an important sector of the public sector, namely the public corporations - a sector embracing the nationalised industries and other much smaller corporations (see Statistical Annex, Note (a)).

The approach involves first of all considering to what extent U.K. governments have attempted to put more pressure on public corporations than on the company sector - either by any explicitly declared features of their general policy or through the machinery developed to enforce such policies, or by "back-door" persuasive pressure developed (consciously or unconsciously) for the purposes of prices and incomes policy. Secondly data is analysed to see whether such attempts have been successful, whether for example there has been any discriminatory impact on prices and incomes. Thirdly the implications of this type of policy for the nationalised industries and for wider issues such as the size of the government budget are considered.

2. GOVERNMENT POLICY

There is not complete agreement as to the precise periods over which prices and incomes policies have been deemed to be in force in the U.K. Following the argument of the 1968 Brookings Report[1] the post-war period up to 1964 saw three periods where the target was a freeze on money incomes, 1948, 1956 and 1961/2, supplemented by a price plateau in 1956 and the 1961 pay pause embraced dividends. The latter was then followed by the development of criteria for wages and salaries based on the guiding light of a 2½% p/a increase, with however public exposure by the National Incomes Commission as the only sanction. Little can be deduced about these periods to suggest any discriminatory policy towards public corporations aside from the 1962 incomes policy white paper where warnings to public authority employees might have had implications for the corporations.

> "In the past comparisons with levels of income in other employments have played a large part in discussions leading to wage and salary increases ... especially in the public services. [But] ... in the immediate future more regard will have to be given to the general economic consideration set out in this paper. The government will emphasise the need for this in their negotiations with their own employees." (2)

In fact, any emphasis on wage restraint in the public sector seems to have fallen on bodies like the Civil Service and National Health Service, that is outside the corporation part of the public sector.

So far as price restraint is concerned the government had, in April 1961, published its reassessment of "The Financial and Economic Obligations of the Nationalised Industries";[3] which would if anything tend to have the effect of raising the industries' prices relative to those of the private sector. The paper noted the low financial rates of return in the public corporations, the "excessive" use of the economy's savings for their investment programmes, and "excessive" absorption of resources from the prevalence of "low" prices. Although the government of the time did not say so in so many words, there

was also some embarrassment for the goverment's monetary policy caused by the need to finance the industries' investment programme by central government loans backed ultimately by the issue of government stock. The White Paper therefore proposed, amongst other things, that the industries' statutory requirement to break even should be interpreted as a requirement operative over five years and no longer. Together with the requirement that depreciation provisions should be costed on the replacement basis, the establishment of target financial rates of return on net assets and with no qualifications relating to the general problem of inflation, government policy was clearly to raise the price level and self-financing ratios of the nationalised industries relative to the private sector.

In terms of official policy little changed in this respect during the 1964-70 period of office of the Labour Government and the first 2½ years of the subsequent Conservative Government. No distinction was made between public and private sectors during the freeze on all incomes and prices in the last six months of 1966, the six months of "severe restraint" opening 1967, and the subsequent "standstill" until March 1968. In the two flanking periods of Labour office, prices and incomes guidelines were supplemented by early warning and delaying powers as well as public exposure by the National Board for Prices and Incomes - all of which had more teeth in the period March 1968 to June 1970 - but the large public corporations were officially to be treated on a par to large firms in the private sector. Explicit statements to this effect can be found in the Prices and Incomes White Papers of 1965, 1966 and 1967.(4) Indeed the Treasury, conscious of the suspicions harboured by the Select Committee on Nationalised Industries, declared to that Committee in 1967 that:

> "Nationalised industries have not been singled out for more stringent treatment under the prices and incomes policy .... The reason is that if nationalised industries' prices got significantly out of line with their costs this would lead to

a waste of national resources and heavy increases in the amounts having to be provided by the Exchequer for new investment." (5)

In November of that same year the government had published[6] an important review of its policy towards the nationalised industries. The main features of this paper were a move towards a closer alignment ofprices and costs at the margin, the evaluation of investment by DCF techniques and more social accounting and compensatory finance for unprofitable services, all of which, if executed would make nonsense of any use of, for example, pricing policies to serve wider inflation policies.

Finally, it should be noted that the one year interregnum from June 1970 was followed by the Confederation of British Industry Initiative asking 200 of its members to sign a declaration covering the 12 months ending 31st July 1972, in order, amongst other things, "... to limit the weighted average of price changes in the relevant range of products to 5% or less."[7] The Chancellor of the Exchequer followed this up quickly by a statement which implied that nationalised industries would do exactly the same, but no more was promised; moreover the Chancellor assured the Chairmen of the Nationalised Industries' Boards that this would lead to neither cuts in the investment programme or more governmental control, and any reductions in the industries accumulation of internal finance would be matched by finance from the National Loans Fund.[8]

The Price Codes[9]

In November 1972 the Conservative Government prefaced stage I of its counter-inflation programme - the pay and price standstill - by suggesting[10] that the C.B.I. initiative had caused financial problems for those participating. In January 1973 the statutory policy to succeed the standstill was outlined, and here important changes with respect to the public corporations were first described - though the basic philosophy may well, as will be considered later,

have been in operation for some time before this date. The pay codes which commenced operation in April 1973 continued previous policies on incomes in so far as employees of nationalised and private industries were to be treated on a par.

The government's policy on prices was in general to restrict increases to an amount reflecting certain "allowable" cost increases, the latter deemed to arise from approved pay increases and rises in raw material prices, interest charges, etc. This was to be reinforced - through the Price Commission - by holding net profit margins at certain reference levels; that is, pre-tax trading profit net of depreciation and interest as a percentage of turnover, or net assets, were to be pegged to some agreed average of the last five years' levels. One qualification to this was that firms making losses in the base period would be allowed to raise prices to eliminate these losses. However, the government would not

> " ... for the time being permit the nationalised industries concerned to increase prices by more than their cost increases in order to reduce deficits. Subject to that, the Price Commission will not under the Code withhold increases which it would allow to a private undertaking facing similar cost increases."(11)

There was a tiny ray of hope for nationalised industries in deficit and this arose from the way in which allowable costs were to be calculated. If the Price Commission were to allow firms to incorporate all approved pay increases into price increases, then any subsequent productivity growth would raise the profit margin. The Price Codes therefore assume firms will achieve a certain minimum productivity growth and only part of any approved pay increase counts as an allowable cost. Indeed close examination of the Code invites the interpretation that it is in part a self-policing system so that firms would pass all productivity advances on in their prices.(12) Its relevance here is simply that the productivity deduction clause may be waived for a nationalised industry in deficit so that if its productivity

advance more than offsets rises in allowable and non-allowable costs, then the deficit would to this extent be reduced by the approved price rise. Finally, however, and a most important point, these opportunities for a nationalised industry to raise prices - see for example paragraph 83 of the Stage 3 Code - are explicitly subject to Ministerial vetting. Thus paragraph 85 of the Stage 3 Code:

> "Where the responsible Minister notifies the Commission that a a price increase resulting from the application of paragraph 83 would have an unacceptable effect on the general level of prices, the Commission will limit the permitted price increase to the amount specified as acceptable by the Minister but not so as to reduce the increase below what is needed to reflect the allowable cost increases of the industry ... "

The Stage 2 Code had similar provisions and so the Price Commission could well find itself sanctioning an increase in the size of a public corporation's deficit.

The government did openly recognise that problems would be caused for the nationalised industries and by the time the Stage 2 Code was practically ready for legislative enactment in March 1973, the government was making noises about reviewing its policy through consultations in the coming summer. The Code " ... can be modified to take account of the growing requirements of investment in the private sector and the need of some nationalised industries to return to commercial viability."(13) Come October the idea of encouraging private sector investment was confirmed by its incorporation into the main aims of the Stage 3 policy but no change in policy towards the nationalised industries was apparent. It was claimed that the commercially unjustifiable level of their prices had made a significant contribution to the reduction in the national price level, that compensation would be provided and that in the longer run a restoration of profitability was desirable so that more self-financing of investment could take place and the requirement for borrowed funds reduced.(14) In fact quite apart from the situation where a nationalised

industry is in deficit there are other important areas where public corporations receive differential treatment and, moreover, they get little if any mention in the sections of the White Papers outlining government policy. Only a close examination of the Codes reveals these issues which may be summarised as follows:

a) Should a firm face the prospect of existing profits turning into deficits, the Price Commission is empowered to approve any price increases which might prevent this occurrence. For nationalised industries, however, this is again subject to the kind of Ministerial vetting mentioned above.

b) Some relief from the Codes' definition of allowable costs was afforded for so-called low profit firms. Paragraphs 49, 61 and 75 of the Stage 2 Code provided two kinds of relief for firms, whether public or private. Firstly for a low profit firm whose productivity growth was expected to be greater than that assumed in the Codes (or which turned out to be greater), the Price Commission could allow the profit margin to rise, but only to the extent of the "excess" productivity growth and with a ceiling of a 5% return on net assets. Secondly, reference profit margins were to be calculated as the average of the best two of the last 5 years so it was quite possible for even a low profit firm to have a base-period profit margin above the reference level. Normally the Price Commission would so determine approved price increases that the profit margin would fall to its reference level. Where the former was less than 5% in the base period (i.e. at April 1973) this reduction would be waived by the Commission - though this argument could not be used to raise the profit margin up to 5%.

The move from Stage 2 to Stage 3, dramatically changed the financial protection afforded to private enterprises whilst public corporations were put in a worse financial position. The Stage 3 Code cannot ever be used to push private sector net profit margins below an 8% return on capital or prevent their rising up to 8%. Private firms are therefore

effectively given a minimum profit level of 8%, but public corporations are specifically excluded from this provision. A public corporation whose productivity growth is bigger than that assumed in the Codes can no longer pull low profits of say 4% up to the 5% level, let alone the 8% level; it cannot even pull them up to its reference profit level, should that be say 6%, since there are no general provisions in the Codes to permit this. Moreover, were its reference level to be, say, 2%, price increases would be abated to push the 4% profit margin down to 2% so that it loses the other small element of relief in the Stage 2 Code. Although this was never stated in the White Paper, the rationalisation for not specifying a minimum profit level for public corporations may well be that the proportion of their trading profits devoted to fixed interest debt is much higher than for the private sector and interest charges are specifically treated in the Codes as an allowable cost.

c) The effect which the Codes might have on investment has clearly been of concern to the government and under Stage 3 a number of loopholes are provided which would allow private firms - and especially those with high past profit levels to which these loopholes are particularly meaningful - to hold their profit levels independently of the cost and productivity provisions of the Codes. Again this is denied to public corporations.

d) Finally it should be noted that the Codes recognise that a firm's productivity growth may outstrip that assumed in the Codes or that forecast on the occasion of an application for a price increase. There are provisions for "clawing back" such "excess" profits - though their execution raises many problems - and these provisions are much less stringent for private enterprise than for public corporations. The latter could find their present profits being pushed below their reference level right down to zero and under Stage 2 these clauses could even have converted present profits into deficits. The clawback clauses can never under Stage 3 be used in connection with private firms to push existing profit

margins below 8% or prevent low ruling profit margins from rising up to 8%.(15)

3. MACHINERY AND IMPLEMENTATION OF POLICY

Outside the ambit of official policy, governments in the U.K. have always tried to influence economic decisions within the public corporations either through the practical way in which a policy is implemented or through informal persuasion. Thus Ministers traditionally had no statutory powers in connection with pricing but a gentleman's agreement involved prior consultation of Ministers by the industries' Boards. The latter were, from 1958, able to request a letter from the Minister should there be disagreement, and from 1961 were entitled to ask for an adjustment of their financial targets. In assessing to what extent governments have "leaned" on the public corporations for purposes of prices and incomes policy, there is a severe problem in disentangling three potential threads of government influence:

a) The restraint on prices and incomes which arises independently of any national prices and incomes policy, such as the existence of unprofitable services and reorganisational issues or the pressure from the industries' Consumer Councils, and which is not to be found in the private sector.
b) Those extra strains on public corporations arising from the particular machinery developed to monitor and implement the national prices and incomes policy.
c) The informal or "back door" pressure exercised on the Corporations by governments (even when unconscious or misplaced) in pursuit of their national prices and incomes policy.

Machinery

Attention here is concentrated on the experiences of the 1960s and 1970s

and first of all the machinery of prices and incomes policy is examined. Three potential instances of discrimination are to be found:

i) The monitoring and investigative system introduced in April 1965 required that large private manufacturing firms - to take a group compable to public corporations - give the government one month's notice of an intended price change. At the expiry of the month, if further study is required the government would then have a further two months for more detailed enquiries including any by the National Board for Prices and Incomes. In later developments of the Labour Government policy, including the post 1967 period, the total standstill period was lengthened. The machinery as developed for public corporations contained two further factors. Firstly the Boards had to give Ministers 3 months notice of an intended price change:

> "The longer period of notice is to enable the Minister, in consultation with his colleagues, to decide whether the proposals should be referred to the National Board for Prices and Incomes before the Boards refer their proposals to the appropriate consultative or consumers' council." (16)

Secondly the advance warnings are channelled through the Minister. This, (a) tended to formalize the procedure for Ministerial vetting or price changes, (b) according to the Select Committee on Nationalised Industries raised the potential degree of Ministerial scrutiny over prices relative to the private sector, and (c) in practice led to more detailed control in at least one Corporation, namely British Railways. As a result of this the Select Committee did recommend that in future advance warnings be made direct to the Department of Employment and Productivity, but this was rejected in 1969 by the Government. Thirdly, the introduction of the N.B.P.I. has meant an industry like the National Coal Board had to seek approval for price increases from four groups: the N.B.P.I.; two consumer councils, and the Minister. Specific evidence and/or complaints of delays arising because of these factors have been made

for the mid 60s by the Coal Board for its price application of November 1965, a number of Gas Boards in October 1965 (costed by the Gas Council at £2¾ million), and the Electricity Council [17] and further evidence could be produced for the 1968-70 period.

ii) In September 1967 the government announced that all major price increases proposed by the nationalised industries would be referred to the N.B.P.I., which would be empowered to carry out an efficiency audit. The Select Committee on Nationalised Industries felt that, in principle, this involved discrimination against the public sector since only selected price increases in the private sector were to be examined.[18]

iii) To back up its Initiative on prices in July 1971, the C.B.I. declared its intention to monitor the performance of companies. It had of course no power of sanction savethat the signatories of the declaration would be asked to agree to discuss their difficulties with the Director General of the C.B.I. were there to be a prospect of an inability to meet the targets. There are other members of the C.B.I. aside from the 200 signatories and and these were to be approached later. This may be contrasted with the degree of influence Ministers could exert on the Nationalised Industries and the relative ease with which the Public Corporation Sector could be covered - viz. at the end of 1973 eight large corporations, nine smaller ones in transport as well as the Passenger Transport Executives, 13 small ones in various fields plus the New Town Development Corporations and Commissions for the New Towns. There seems in fact to be enough evidence that the nationalised industries did comply with the initiative. The Chairman of the Electricity Council reports that, " ... the nationalised industries were ordered to comply strictly with the C.B.I. initiative so there was no increase in tariff during that period." The Treasury admitted in January 1973 of the existence of "price restraint policies of the last two years or so"[19] and the annual reports of British Railways and the Post Office for 1971/2 describe how price increases were kept within the 5% limit.

Informal Pressure

As already suggested, government informal restraint on prices and incomes is not only difficult to detect but for public corporations could be exerted for reaons unconnected with prices and incomes policy, though the statements of Ministers and Board Chairmen need not be taken at their face value. Looking first at the period of Labour's 1965-70 prices and incomes policy, one finds for example that the National Coal Board in 1965 had two applications for price increases delayed; after the first one in February the Board's annual financial target was waived and the declared reasons were a review of the Board's prospects; the second set of proposals in July were deferred by the government "... in view of their implications for prices and incomes policy and of the consideration then being given to other measures to assist the Board's finances". The London Transport Board's application for fare increases in May 1965 was delayed until January 1966 - compensation was paid and the argument advanced was that the Board's operations were to be reviewed. In November of that year an application for fare increases to become effective after the severe restraint period (i.e. from Summer 1967) was shelved, this time because of the considerations raised by the reorganisation of London Transport, all of which sounds fairly suspicious given the open declaration by the Permanent Secretary of the Ministry of Transport that the Board's fares were closely influenced by considerations of prices and incomes policy. In 1966 one Electricity Board had informal discussions withthe Minister before the freeze period and these were terminated by the freeze. The Select Committee on Nationalised Industries also quotes experiences of one Area Gas Board and the Electricity Council but these were during the 12 months following July 1966 and were therefore difficult to assess since price increases were not unknown in this period and government policy did provide for exceptions, for example where import and raw material costs had risen.[20] Enough has, however, been said to suggest that informal pressure on prices for purposes of general prices and

incomes policy did exist during 1965-70 though its quantitative significance is not clear from the evidence deduced so far.

None of this should perhaps be surprising given the interpretation of policy by the government. Although at pains to declare - cf. section I above - that nationalised industries are treated on a par with the private sector, the Treasury has said "... they must observe and if necessary be seen to observe the criteria applicable to industry in general," and in explaining in September 1967 why all the major price increases of the industries were to be referred to the N.B.P.I., the Treasury invoked "... the importance of the industries to the economy and the need to demonstrate that the public sector is co-operating to the full in carrying out the Prices and Incomes Policy." This stress on the public relations aspect of nationalised industry pricing echoed the suggestion made a month earlier by the N.B.P.I. in its 2nd General Report. Indeed the Chairman of that Board has argued that the industries are "basic" to the economy, that for this and other reasons they are different from the private sector, and that governments have dragged their feet in approving price increases for precisely this reason.(21)

Turning now to the experiences of the 1970s, it has already been argued that, as a matter of the mechanics of implementing policy, it looks as though many of the nationalised industries strictly adhered to the CBI initiative but whether any further pressures were exerted in that 1971/72 period is not known. What is apparent is that restraint was operative before the CBI initiative. The previously mentioned statement of the Electricity Council Chairman - made in January 1973 - included the remark that "... the restraint on prices in this industry commenced about three years ago, well in advance of the start of the CBI initiative ..." In its Report for 1970/1 the Post Office argued that certain of its services were underpriced, that postal price increases made slow progress, were eventually modified by the Minister and introduced, at an inadequate level, in February 1971. The 1970/1 Report of the Coal Board records delays by the government in approving price rises

for industrial coals. Finally, an application by the gas industry in 1970 for a price increase to meet increased costs of labour and raw materials was, according to the Corporation's 1973/4 Report, delayed for one year.

Little evidence has been adduced so far in this paper of government attempts to restrain wage incomes of public corporation employees relative to the private sector. It is possible that delays and vetting of price increases in the Corporations in the post 1964 period led ultimately to pressure on earnings. The Post Office, in its Annual Report for 1972/3 did suggest that as a result of the slow growth of prices there "... is already some evidence that postmen's pay and conditions in some parts of the country are insufficiently competitive to attract and retain enough people of the right quality for the job to be done." In so far, also, as price restraint leads to Corporation deficits which necessitate Exchequer support, a gate is provided for government influence on wage bargaining. Finally one must note the view of some observers that Conservative policy from 1970 was to exert restraint on public sector wage increases. Clearly this impact need not be uniform over all industries. The same point applies also to price restraint. It is now approriate to consider whether any of these attempts did actually manifest themselves in the pattern of prices and incomes.

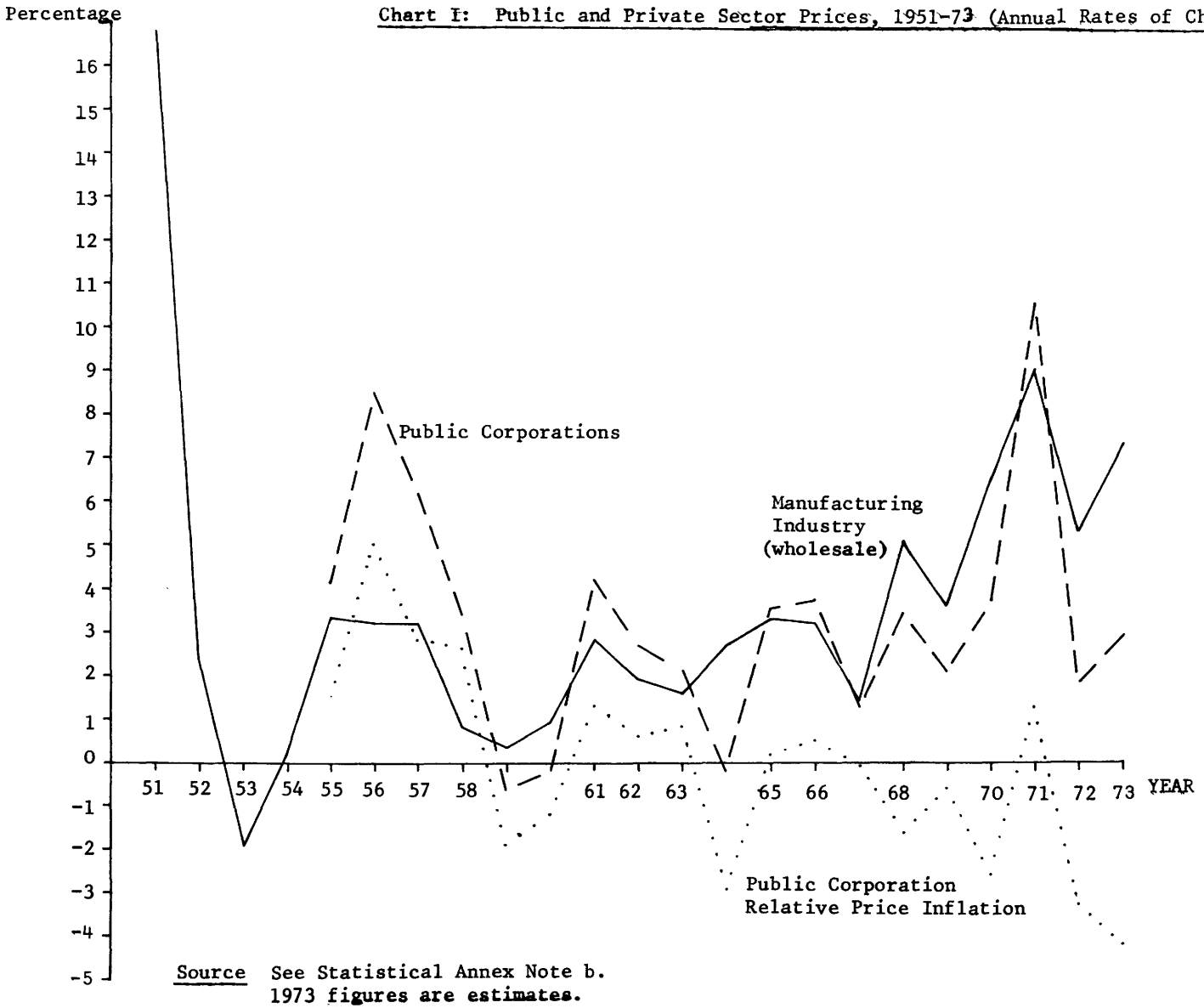
4. WAGE AND PRICE INFLATION IN MANUFACTURING AND NATIONALISED INDUSTRY, 1950-73

The arguments developed so far may be briefly summarised as follows. There is no evidence that governments attempted to apply their prices and incomes policies more strictly to the public corporations than to the company sector in the three periods of restraint in the post-war period preceding the 1964 Labour Government. From 1964-1972 official policy was to apply criteria for increases in incomes and prices and to execute policies

in such a way as to make no distinction between private and public sectors. Since then the development of the Pay and Price Codes have so proceeded that the ability of public corporations to raise their prices is considerably more circumscribed than is the case for the private sector. So far as the mechanics of policy are concerned there is some evidence that the monitoring and investigative procedures associated with the early warning systems and N.B.P.I. subjected the nationalised industries to much closer scrutiny and longer delays than the private sector, and that the CBI initiative on prices of 1971/2 had a much greater chance of success for the public corporations than for the CBI's members. There is evidence that Ministers have exerted restraint on public sector prices - quite apart from official policy or its mechanics - both in the 1965-70 period and in the 12 months period following June 1970 when no determined national policy as such was in operation, and governments appear in part to have been conscious of the psychological effect of holding down the prices of what were seen as basic industries. Finally one ought to bear in mind the possibility that price restraints fed indirectly into wages; the possibility that the 1961/2 pressure on public authority employees may have extended itself to public corporations; also the feelings of some observers that the Conservative policy from 1970 was to exert pressure on public sector wages.

Have incomes and prices in the post-war period moved in such a way as to suggest the existence of a discriminatory design and application of prices and incomes policies? That is, have prices and incomes in public corporations been lowered relative to, say, a comparable part of the private sector like manufacturing, taking into account all factors other than prices and incomes restraint? Such restraints have varied in their intensity and duration, and so both long-run and short-run effects may be considered. Considering long-run factors first, Chart I shows annual rates of change of the prices of manufacturing and public corporation goods and services in the period 1955-73. Nooofficial series are available for the public corporation

Chart I: Public and Private Sector Prices, 1951-73 (Annual Rates of Change)



Source See Statistical Annex Note b.
1973 figures are estimates.

sector and the ones developed for this paper are weighted averages of the data in the Annual Reports of the following Corporations: N.C.B.; British Railways; Electricity Boards in England and Wales; British Gas Corporation; the Post Office, and B.E.A. They account at present for roughly 73% of the Corporations' employment and fixed investment, the balances being largely accounted for by steel which has only been in the sector for a few years in the early 1950s and since 1967.* The data on manufacturing prices excludes those products exported or retailed by manufacturing firms but this will not significantly affect its representativeness.

If the short-term oscillations in the top two lines of Chart I are ignored then the longer term trends can be discerned. They reveal that both sectors experienced the now well known trend of falling price inflation from the Korean War period(22) down to the late 50s, thereafter showing a consistent but gentle rise until the late 60s whence inflation accelerates. It will be noticed that in the 1950s prices are rising at a faster rate in the public corporation sector but that, after an overlap in the late 50s / early 60s, it is manufacturing which from about 1964 shows the greater inflation. Various explanations might be offered for these trends:

a) It might be argued, cf. Aubrey Jones and the Select Committee on Nationalised Industries, that from 1964 or thereabouts although official prices and incomes policy treated the two sectors on a par, the mechanics of implementation together with informal pressure from Ministers meant fiercer price restraint in the public corporations. The earlier period's trend would of course also have to be explained. In fact an illuminatory measure of the trend in both sectors' prices is given by the growth rate of the relative price level in public corporations. This is shown in Chart I in the lowest line which is derived from the other two.(23) In a manner of speaking it involves calculating for 1954 the price level in public corporations, dividing by the price

* see footnote on next page

level in manufacturing and then plotting for each year the rate of growth of this relative price. From 1964 this relative price inflation has been negative but what is noticeable is that

it has been declining and the rate of decline shows a long-run constancy throughout the post-war period - at least up to 1973. Put otherwise, the post-war period shows a constant long-run growth rate of manufacturing inflation relative to public corporations. Thus the post 1964 experience of manufacturing inflation rising relative to that in public corporations involves a trend which can also be seen in the 1950s and early 1960s when prices and incomes restraint was weak if not non-existent and discriminatory aspects not apparent.

b) The persistency of the trend in the relative price of manufacturing might alternatively be explained in more dramatic terms such as those of Glyn and Sutcliffe:

> "The state may ... use the nationalised industries to subsidise the private sector; low prices and profitability amount to a subsidy to production. In practice this has always been the role of the nationalised sector in Britain.... Even though they sell nearly half their output direct to the consumer, private capital may still gain from the low prices charged since they help to moderate wage pressure." (24)

This approach however has to be reconciled with what was happening to profits. The rate of profit in public corporations has shown a consistent long-run increase from the early 1950s to the late 1960s. Relative to the private sector the rise is even more noticeable. Chart II shows annual rates of profit in the Company and Corporation Sectors for the 1950-73 period, and since this data is to be referred to again some brief explanation is in

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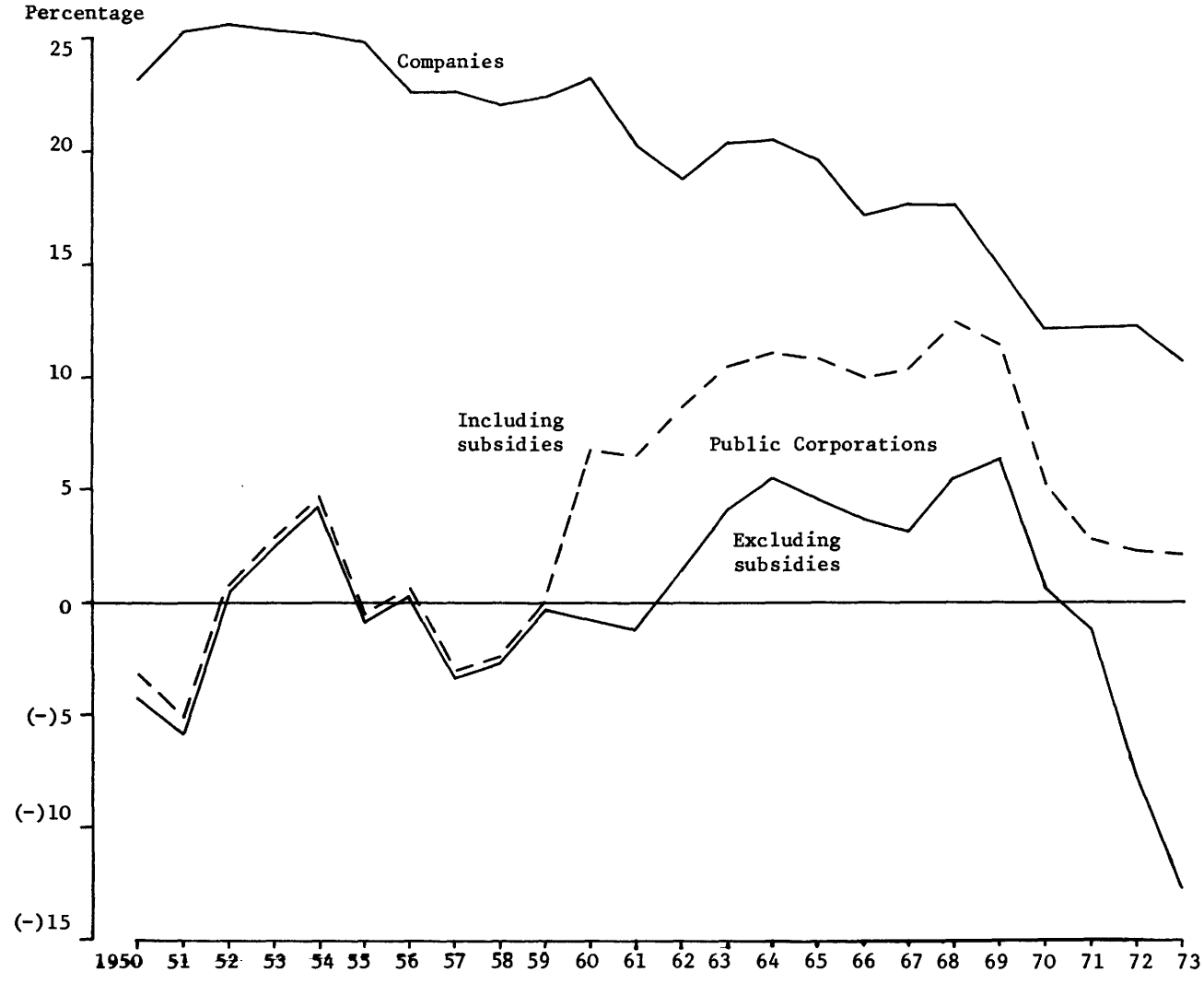
* (footnote from previous page)

A similar coverage applies to the earnings, output, employment and productivity data discussed later on. Many thanks are due to R.Ward who drew up these series and Charts I, III and IV. Note that the manufacturing data includes steel, and the public corporation figures include the Post Office for all the post-war period. For full details of sources and methods see Statistical Annex Note b.

order, (see also statistical annex note c). The profit rate in Chart II is measured as the share of trading profits in value-added, or net output. A more usual measure would be the rate of return on capital. The latter is simply the rate of profit on net output divided by the capital/net output ratio. Over the post-war period the available data suggests that the capital net output ratio has risen gradually, consistently and without oscillations in both sectors at not too dissimilar rates. It is the share of profits in value-added which has differed in the two sectors in such a way that the profit rate variations in Chart II match very closely those of the rate of return on capital and since a longer time series is available for the former this has been used. In fact the variety of measures of profit rates all show similar trends and short-term oscillations. Thus the deductions for stock appreciation and capital consumption have little effect in this respect for public corporations and variations in their rate of profit on turnover follow closely the variations of the Chart II measure. The company sector is not an ideal unit for present purposes since financial companies are included but estimates of capital consumption are available only for the former sector. In fact estimates of profit rates in manufacturing industry, of proft rates using different depreciation rates and of post-tax proft rates - all summarised in a recent piece of work[25] - all show similar long-run trends and close correspondence of shorter-term oscillations. Finally it should be noted that the explicit treatment of subsidies to public corporations is done to bring out their role in the post 1970 period. There is a complication however arising from the fact that from 1969 onwards certain subsidies to British Railways for unremunerative services and track maintenance were reclassified in the official statistics as grants and treated as part of trading profits net of subsidies. Allowing for this would lower the bottom line of Chart II by roughly 2.2 percentage points from 1969 but does not affect any of this paper's conclusions.

Chart II therefore clearly shows the persistent long-run decline in the post-war period up to the late 1960s of profitability in the company sector and the rise in public corporations with the trends particularly noticeable

Chart II: Rate of Profit* in Public and Private Industry : U.K., 1950-73



* Gross Trading Profits as a percentage of Value Added, both measured net of stock appreciation and capital consumption.

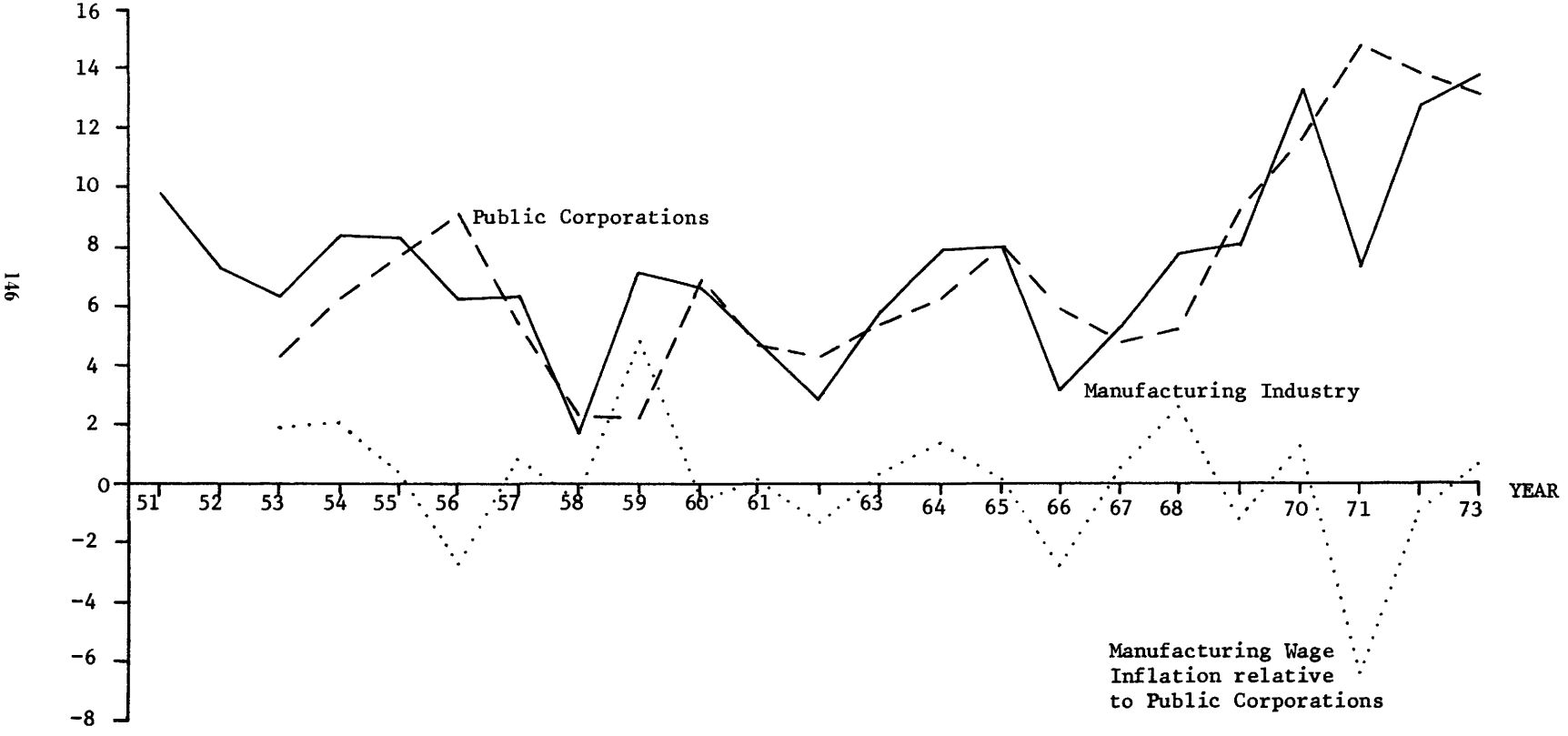
Source: See Statistical Annex Note c.

from the early 1960s. The rate of return on capital in the company sector - again measured net of stock appreciation and capital consumption - fell from 17% in 1955 to 9% by 1968/9, whilst in the public corporation sector, measured with the additional deduction of subsidies and railway grants it rose from zero to 0.8%. This latter trend is incompatible with the Glyn/Sutcliffe notion; if governments were bent on always holding down the prices of nationalised industries, they would not have allowed the profit rate to rise in the way it has done.

c) Perhaps the trend in price inflation can be explained by government restraints on wages? Chart III shows wage inflation in the two sectors in the post-war period. More specifically, the top two lines in the Chart show annual rates of growth of earnings: for manufacturing this relates to weekly earnings of adult males; within the public corporations aggregate, the coal and railways data is on a weekly basis but for the others only annual earnings figures are available. This data must therefore be treated with caution. It will be recalled from the earlier parts of this paper that little evidence could be found of any attempt by governments to restrain wages in public corporations relative to wages in the private sector over a long-run period. At the most the closer scrutiny and control of public sector prices from 1965 onwards might perhaps have led to some squeeze on wages particularly with the post 1960 policy of raising the self-financing ratio of the Corporations. Chart III shows the growth rate of average earnings in both sectors declining to the late 50s/ early 60s, rising thereafter and accelerating from the end of the 1960s - cf. the trend in prices. In the 1960s wage inflation in public corporations, far from being less than manufacturing is in fact greater. Indeed, over the whole post-war period, as the lowest line in Chart III shows, there is a long-term trend for public corporation relative wage inflation to rise, a rise which is only slight in the 1950s but clear in the 1960s. Much of this makes sense if productivity trends are considered. Chart IV plots the rate of change of output per employee in the two sectors and this shows

Chart III: Wage Inflation in Public and Private Industry, 1951-73

(Annual Rates of Change of Earnings per employee)



Source: See Statistical Annex Note b.

1973 figures are estimates.

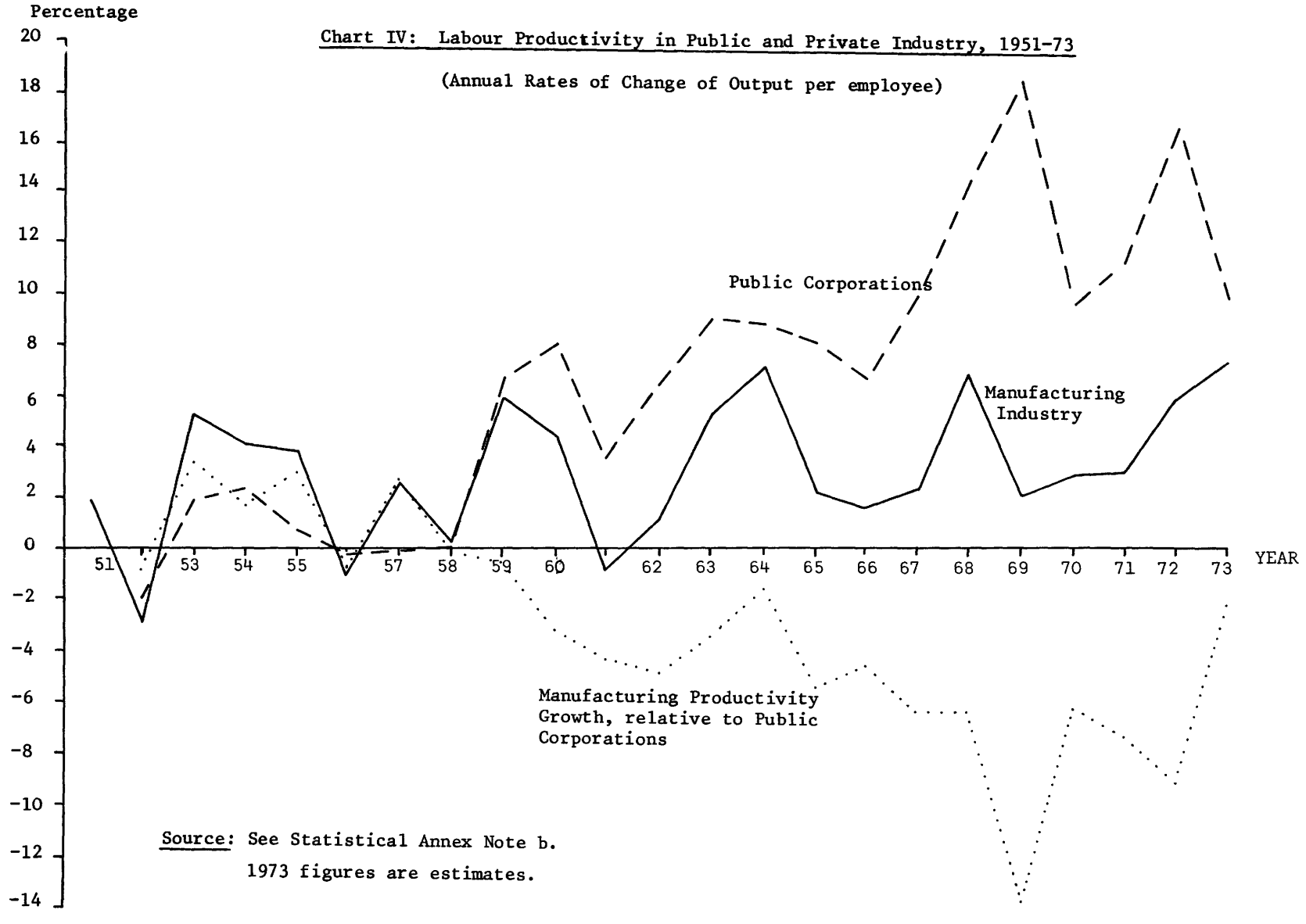


Chart IV: Labour Productivity in Public and Private Industry, 1951-73

(Annual Rates of Change of Output per employee)

Source: See Statistical Annex Note b.

1973 figures are estimates.

that the productivity advance of manufacturing industry was superior to that of public corporations up to the late 1950s but thereafter the latter moved well ahead. This distinction between the two decades has been analysed in some depth by Richard Pryke in his book on "Public Enterprise in Practice".[26] For present purposes one need note only two things. One is that output growth rates show similar long-run trends to productivity in both sectors, but whereas employment hardly changes in public corporations initially and from the late 1950s falls off at an increasing rate, in manufacturing it grows in the 1950s and declines in the 60s in both cases at fairly gentle long-run rates. Secondly as the lowest line in Chart IV shows, the post-war period as the whole shows a fairly constant long-run growth rate of public corporation productivity advance relative to manufacturing.

d) Pulling the various strands together one finds that in the 1960s wage inflation in public corporations is greater than in manufacturing, but so also is productivity advance and to a much greater degree such that the annual growth rate of unit labour costs is rising in manufacturing and falling in public corporations. If one assumes that changes in non-labour costs were, per unit of output, very similar in the two sectors then one can conclude that part of the trend in labour costs manifests itself in a lower price inflation in public corporations and part in a rise in the relative profit rate. In the 1950s wage inflation was slightly less in public corporations but productivity advance was even more, with the net result of unit labour costs growing relative to manufacturing. A disproportionate amount of this effect manifested itself in a lower price inflation in manufacturing so that the relative profit rate of manufacturing actually fell. Although unit labour costs were growing in public corporations in the 1950s relative to manufacturing they were growing at a declining rate so that over the whole post-war period up to the late 1960s relative labour cost inflation in public corporations was declining at a fairly constant

rate - perhaps more in the 1960s than before - and this manifested itself partly in public corporation relative price inflation declining at a constant rate and partly in its relative profit rate rising particularly in the 1960s.

The economic trends resolve themselves then into two fundamental factors. One is the trend of productivity; the other is the trade-off between prices and profits, in particular the decline in the profit rate in manufacturing in the 1950s and the rise of the profit rate in public corporations in the 1960s. For the last mentioned one perhaps need only look at the government policy towards the nationalised industries contained in the 1961 and 1967 White Papers. Pryke points to rationalisation and greater control, amongst other things, to explain the trends in productivity. Certainly large issues are involved, as for the decline in company profitability, but this is not the place to explore them and for our purposes the productivity and profit trends have to be treated as datum.

In sum, though a more sophisticated statistical analysis might find some role for government prices and incomes restraint in explaining long term trends in price and wage inflation up to the end of the 1960s, that role, on the basis of the preliminary investigation here, would appear to be minimal.

5. THE INCIDENCE OF PRICES AND INCOMES POLICY

Attempts to impose incomes and price restraint have varied in intensity throughout the post-war period so that fairly short-term variations could be important. The long-term trends in output and productivity discussed in the last section, have in fact continued in the 1970s - with the one change of less labour shedding in the public corporations - and, though wage inflation has accelerated, the relationship between nationalised and private industry has continued so that the relative trend in labour costs has been maintained with perhaps small rises of the growth rate of public corporation relative wage inflation and the decline of relative labour costs losing its momentum. However, whilst price inflation in both sectors in 1971 was in the 9-11% range, it fell only slightly in 1972/3 in manufacturing to an average of 6%, whilst in public corporations it fell to 2.5%. Thus the long-term decline in public corporation relative inflation seems to have significantly steepened in 1973. Moreover the very slight changes in productivity advance and wage inflation in 1970 and 1971, given the price trends, were sufficient to cause the profit rate to actually decline in these years so that the post-1969 profit trend in public corporations is a reversal of the long-term trend, whereas the experience of manufacturing industry is quite consistent with its long-term profit decline. All of this points to a closer examination of shorter period trends not only in the 1970s but also in earlier periods when prices and incomes restraint varied in its intensity.

First of all it is noticeable from Chart III that the growth rate of average earnings falls off for both sectors in 1961/2 and 1966/7 when government attempts were made to restrain income increases. However, these were also periods of general economic decline with big decreases in the growth rate of output and productivity in both sectors and manufacturing

employment; the growth rate of public corporation employment actually rises in these periods - perhaps as an arm of government counter-cyclical policy or because of a greater willingness to hold on to labour - but the fall in output is sufficient to give a substantial fall in productivity (cf. Chart IV). There are similar troughs in 1958 and in 1970 when incomes policy was dormant and earnings also decline in no less significant a way for manufacturing so that the role of incomes restraint is minimal. On the other hand the improvement in earnings in public corporations relative to manufacturing is substantial in 1962 and 1966. This lends itself to the idea that the strength of discriminatory restraint on public sector incomes is biggest outside the freeze periods, on the grounds that it is only in the freeze periods that incomes policy really bites on the private sector. Again, however, the relative improvement of public corporation earnings occurs in all trough periods - see 1971 in particular - and is quite consistent with the long-run trends. The relative rise in public corporation earnings in 1971 and 1972 is particularly interesting bearing in mind the view that Conservative policy in this period was to lean on public sector wages. Again, however, one should stress that the earnings data is far from ideal and these results must be regarded as provisional. Finally, the years 1972/3 involve statutory incomes policies but earnings in both sectors are not falling to any significant degree and manufacturing earnings are gaining relative to public corporations; in fact it is a period of rising output and productivity in both sectors.

Secondly, it might be asked if there is any evidence of discriminatory price and profit restraint associated with the different intensities of prices and income policies. Here one has to be more careful. As Chart II shows, the profit rate did fall off in public corporations in 1960/1 and 1966/7 when incomes restraint was being attempted, and Posner [27] has pointed to prices and incomes policy as an explanation for the decline in 1966/7. In the case of the company sector, the decline in the profit rate accelerates

in these periods. Again, however, these are periods of general economic decline and similar changes in the profit rate occurred in 1958 and 1970/1 when incomes restraint was not in operation at least in the private sector. Similarly the growth rate of relative inflation in manufacturing falls off in the mid 60s, suggesting perhaps that that sector suffers from prices restraint only in freeze periods, but this cannot be sustained since the relative price inflation tends to fall off in all the periods of general economic decline. Inflation in fact does not fall in public corporations in the exact years of output and productivity decline, and the same point can be made about manufacturing. Partly this is because such periods are often - though not always - associated with rising unit labour costs. Prices also reflect changes in outlays on bought-in materials and the profit rate, as defined, will also reflect the degree of depreciation. In so far as the profit rate reflects the margin between prices and unit costs we can perhaps infer something about prices from movements in the profit rate and in this context there are two things worth noticing:-

a) The change in profit rate in the mid 1960s in public corporations was both sharp - an absolute decline occurred - and extended. It is true that the output and productivity decline started in 1965 but this decline was not large, and distinct recovery occurred in 1967 whilst the profit rate decline was spread out over all the three years 1965 to 1967. Manufacturing in contrast had a widetrough embracing 1965-7 but the profit rate moved from its long term trend really only in 1966. There is therefore a suggestion that price restraint bit more effectively on public corporations than on manufacturing in the 1965-67 period.

b) A similar discriminatory restraint seems to be operating in the period after 1969. Though 1970 is the productivity trough year for public corporations, the change in the profit rate is even more marked - a very steep absolute decline. In the 1972/3 recovery of output and

productivity, profits do not recover but continue to decline.

In manufacturing the 1970 fall in the profit rate is quite consistent with the long-run trend and the cyclical fall-off in productivity; in the recovery of 1971/2/3, the profit decline follows the long-run trend.

6. THE EFFECTS OF PRICE RESTRAINT

Having established that public sector prices have in certain periods been more restrained than the private sector, it is now relevant to ask of the effects of this on the corporations and the economy and, second, to ask whether it matters. To the extent that price restraint has depressed profitability some impact on the sources of finance for capital investment programmes might be felt and it is this issue which is first considered.

The Flow of Funds in Public and Private Industry

The growth rate of gross domestic fixed capital formation in both real and money terms in the public corporation sector in the 1950s was, if anything, declining slightly but since then it has been rising with a lull in the 1968/9 post-devaluation phase. (28) In manufacturing the long-run trend is very similar to that of the profit rate so that in the early postwar period the annual growth rate of investment in real terms was roughly 10% and by the early 1970s this had fallen to 3%. Within these long-run trends there are declines during the periods of decline in output and productivity - with something of a lag in manufacturing. Now the private sector tends to fund a major part of its investment from internal resources. In public corporations trading profits (net of subsidies but gross of stock appreciation and capital consumption) plus other income (net) on appropriation account has, up to the early 1970s, tended to account on average for just over a quarter of the finance for capital formation with a falling trend in the 1950s followed by a rising one in the 1960s. This 'saving share' (or self-financing ratio) in the company sector has matched the long-run decline in the profit rate falling from 350% in the early 1950s to below 100% in the early '70s.

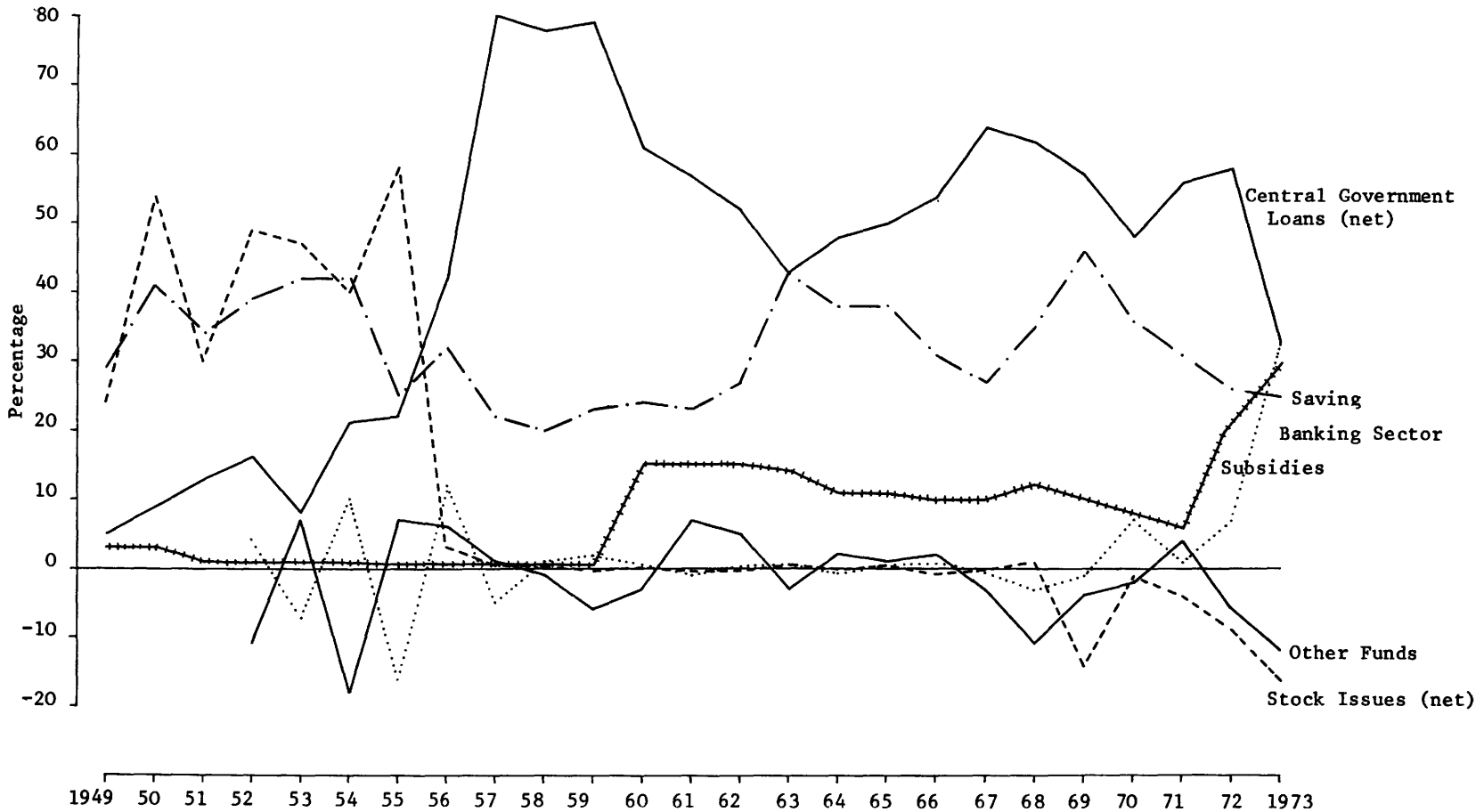
The financial sources of public corporations take on an extra significance insofar as they are intermeshed with the saving of the public sector as a whole and hence with the government borrowing requirement. In Chart V therefore the major funds categories for the public corporation

sector are shown. In addition to saving, issues of nationalised stock were important in the pre-1956 period. Difficulties in placing this stock largely accounts for the size and fluctuations in bank lending in this period and also for the switchover, from 1956, to central government loans as the main 'external' source of finance.[29] The 'other funds' category covers trade credit, similar miscellaneous receipts (net), small amounts of capital transfers and borrowing from the overseas sector, the last mentioned taking on significance only in the 1970s. Thus, although investment has fallen off in the periods of general economic decline identified earlier in this paper, profits and other income have fallen more so that the saving share dips in 1958, 1961, 1965/6 and 1970/1. The balance is generally taken up by central government loans and in fact for much of the postwar period the share of the latter moves asymmetrically to the saving share. More immediate points of interest are

a) The decline in the self-financing ratio in the mid-1960s is very sharp - given the longer run trend of the 1960s - suggesting that the discriminating price restraint which operated in this period did not affect the investment programme but rather the way it was financed.

b) In the 1970/1 recession the public corporation investment rate actually rises - from its post-devaluation fall - but in real terms the growth rate actually averaged only 2% p.a. Thus part of the price restraint may have slightly affected the investment programme. The saving share takes its expected fall but central government loans do not fully take up the slack,[30] and banking and the overseas sector make up the balance.

CHART V : SOURCES OF FUNDS FOR PUBLIC CORPORATION SECTOR
CAPITAL FORMATION 1949-73 (Percentage Distribution)



Source : See Statistical Annex Note d.

c) By 1973 investment had fully recovered but during the 1972/3 period of rising output and productivity the saving share continues to fall absorbing in other words the price and profit restraint documented before. Self-financing therefore falls in a 'recovery' period for the first time for a very long time. Moreover central government borrowing falls - in contrast to what a number of observers have suggested has happened with price restraints[31] - and its share of financing for the first time provides no offset to the trend in saving. The balance is made up by bank lending and central government subsidies.

d) Finally, available data for the early part of 1974 suggest that, though investment has fallen, profits have fallen away disastrously. In the first quarter of 1974 savings in absolute terms became negative - and these seasonally adjusted figures have in the past corresponded fairly closely to the first quarter adjusted figures[32] - and with the continuing decline in central government loans buttressed by a decline in bank lending, subsidies rose to astronomical levels.

e) Hence the post-1969 period which has already been characterised as one of discriminating price restraint on the public corporation is associated not with more government borrowing but with less. Ever since 1956, subsidies and borrowing from the banks and overseas had formed only 9-14% of the funds for investment. Since then the share has been 17% in 1970, 13% in 1971, 28% in 1972, 67% in 1973 and 80% in the first quarter of 1974.

f) Finally it is worth noting that the savings amounts referred to above are measured before depreciation. Put otherwise the profit rate referred to earlier on in the paper was measured net of capital consumption so that not all of its changes would be necessarily reflected in the savings figure - even ignoring non-profit income. The price restraint policies could manifest themselves both in a decline in measured savings or in a

decreased ability of savings measured net of capital consumption to meet demands for non-replacement investment. In fact an indirect manifestation of this is the amount of writing-off of assets that has taken place. Certainly the Annual Reports of the Post Office and the Coal Board for 1972/73 show the writing-off of accumulated losses. The data in Chart V which are taken from government accounts disguises this element of finance to some extent insofar as the capital grants made by the central government for this purpose are not shown. In the accounts of the public corporation the grant is a notional entry balanced by a notional repayment of government loans.[33] If one therefore took the Chart V data on central government loans net of these particular repayments, the central government capital grants for writing off debt would have to be counted as an explicit source of finance and one more akin to a subsidy than a loan. In most of the postwar years such grants have met less than 1% of the finance of the public corporation gross investment programme. Where they have been important is 1951 (8%), 1963 (44%), 1965 (39%), 1969 (81%), 1970 (14%), 1972 (18%), 1973 (27%). Some of the reasons for writing-off assets no doubt go back to the policies of the 1950s but their increased role since 1968 suggests they are an element of the counterpart to the profit rate decline promulgated by the price restraint policies.

Impact on the Government Budget

Insofar as a fall in the public corporation's internal sources of finance means more central government finance and insofar as its own borrowing has increased - and in particular from the banking and overseas sectors - there appears to be some basis for thinking that the discriminatory price restraint policies may have important macroeconomic effects. This has additional interest at present for those who regard the size of the government borrowing requirement as a key economic variable and for those who regard the method of financing that requirement as being of equal, if not more, importance. The role

of public corporations in this context has not, in the UK, been examined in this way before and so, to begin, a brief assessment of the link between corporation and government finance is necessary. The first column of Table 1 shows, for one particular year, the same data as Chart V slightly reclassified. Similar accounts are shown for the other two branches of the public sector. The saving of the central government is its current account surplus gross of the subsidies to public corporations (and to local authority housing) and so such subsidies appear in row (4) as a negative entry. In fact items 5 and 6 and a and b are also intra-public sector transactions. Hence when each of the entries are summed over the three branches of government we are left with the sum of 1, 2, 3 and (c) as the aggregate sources of finance to meet the consolidated total of public sector expenditure on capital account.

TABLE 1 : Sources of Finance for Public Sector Capital Formation and Lending 1972 (£ million)

	Public Corporations	Local Authorities	Central Government	Public Sector
1. Saving	504	588	2010	3102
2. Capital Transfers from Private Sector	23	-	744	767
3. Miscellaneous Receipts (Net)	(-) 66	(-)25	10	(-) 81
4. Subsidies	385	246	(-) 631	-
5. Capital Grants from Central Govt	73	218	(-) 291	-
6. Accruals adjustment	(-) 57	(-)15	72	-
7. Borrowing*	1013	1396	(-) 351	2055
TOTAL	1875	2408	1560	5843
*Met by :- a) Central Govt.Loans	1088	875	(-)1963	-
b) Other intra public sector borrowing transactions	(-)229	98	131	-
c) Borrowing from outside the public sector of which	155	423	1480	2055
i) Banking	147	31	(-)1203	(-)1026
ii) Overseas	20	149	1395	1564
iii) Increase in notes and coin in circulation	-	-	495	495
iv) Other non-bank private sector	(-)11	243	793	1025

Source : See Statistical annex note d

As an accounting identity the public sector borrowing requirement (= deficit) is therefore entry (c) summed over the three branches and totalling £2055 million in 1972. The public corporations' contribution to this is 7%. The public sector accounts in the National Income Blue Books and the Annual Financial Statements certainly invite this assessment of the share of public corporations in the public sector deficit. However such a sub-division shows only which arms of government undertake the borrowing needed to meet the deficit. Public corporations borrow heavily from within the public sector and so it might be better to aggregate over the borrowing total for each sub-branch - item (7). Public corporations would then be credited, on the 1972 figures, with 49% of the same total. This approach corresponds closely to the sectoral flow of funds statements in the Blue Books which records the net acquisition of financial assets by each branch of government - as well as other sectors of the economy. The net sale of financial assets for Public Corporations differs only from the borrowing figure by small amounts - viz. it adds in miscellaneous receipts and accruals adjustments and deducts the small amount of long-term lending included in our investment total. But either of these figures is also misleading insofar as subsidies and capital grants originate from central government and hence raise the central government financing needs and the public sector deficit above what would have been the case if Corporation saving had been higher, albeit that these are decisions taken by the government and not public corporations.

In other words the public corporation sector's investment net of saving and its other small receipts from outside the public sector give a much better representation of its claims on the public sector budget. Such "external finance" (£1425 million) forms 69% of the same total public sector borrowing requirement in 1972. Whether this external finance ought to be compared to that public sector deficit is however dubious since it would then be characterised as an addition to an independently determined central government borrowing target whilst in practice the latter would take into account the

public corporations' needs for external finance. In effect the public corporations' external financial needs are but a part of the total of public expenditure, on current as well as capital account and decisions are taken, with a view to macro-economic effects, on both the total itself and on the various ways in which it is to be financed, including taxes as well as borrowing. Indeed the rate of Corporation saving is, on the evidence of this paper, a variable entity not too dissimilar to an indirect tax. Insofar as we are interested in the effects of price restraint on the level of public corporation investment as well as on the "tax receipts" it seems preferable to retain the concept of external finance.

To what extent then has this claim on the public budget increased as a result of the price restraint policies ? The first line of the table which follows shows the 'external finance' as a percentage of total public expenditure. Now there are various ways of conceptualising a total of public expenditure. The Blue Book figures include public corporation investment and lending but there is no netting-off of saving; they also include subsidies, that part of debt interest which is paid out direct by public corporations and also that debt interest which corresponds - in a loose sense - to the public sector borrowing which facilitates central government loans to the corporations. The latter's contribution to public expenditure is better measured by the 'external finance' concept discussed above. Hence from the official figure we have deducted the Corporations' subsidies, saving and total interest payments. Of that revised total of public expenditure, public corporation's external finance occupies a very small proportion, ranging, as Table 2 shows, between 5% - 8% in the 1960s and 70s. Nor is there any relative growth of this claim on the public budget in periods of price restraint. Such small amounts need therefore have no effect on the overall way in which the government decides to finance public expenditure; the suggestion that rising nationalised deficits mean more government borrowing is wrong in logic and empirically. This does not mean that price restraint policies could not have any important effect. Were

prices and saving to drop steeply so that little of the Corporations' current account expenditure were being matched by revenue then the "external finance" could rise up to one third of public expenditure.

Another aspect of the 1970s period is that public corporations have become an important outward manifestation of public borrowing by acting as an arm of government through which lending is channelled. Corporation borrowing from outside the public sector (*cf.* item (c) in Table 1) is shown in the second line of Table 2 as a percentage of the public sector borrowing requirement. For much of the postwar period since 1956 this share has been negligible, but since 1968 its borrowing from the banking sector and overseas has increased considerably and this manifests itself in the figures for the 1970s in the second line of Table 2. Moreover the banking part of this borrowing is an element in the lending counterpart to increases in the money supply. The major developments here are that borrowing from the banks in

TABLE 2 : PUBLIC CORPORATION SHARE OF PUBLIC EXPENDITURE, DOMESTIC CREDIT EXPANSION AND MONEY SUPPLY CHANGES (Percentages)

Shares of \ Year	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 1st qtr unadjusted
Public Expenditure	5.6	5.7	6.3	2.1	8.1	7.4	5.3	5.3	6.2	5.6	5.8	6.0
Public Sector borrowing	5	1	1	2	(-)1	(-)2	(-)8	∞	11	7	20	∞
Domestic Credit expansion	0.5	(-)0.5	0.5	2	(-)0.5	(-)3	(-)17	15	13	2	9	7
Money Supply changes (M3)	1	(-)1	1	2	(-)0.5	(-)6	(-)4	8	1	2	14	18

Sources and definitions. See text and notes d and e in the Statistical Annex

sterling has increased since 1969 and borrowing in foreign currencies from the banks rose to a massive scale in 1973 and 1974. Thus the fourth line of Table 2 shows public corporation bank borrowing as a percentage of the changes in the money supply and this share has been rising consistently since 1968. Finally

the UK monetary authorities have of late[35] been interested in the 'domestic money' part of the total money supply changes. In this context any changes in foreign exchange reserves do not affect the so-defined domestic credit expansion. Insofar as some elements of government borrowing overseas - in particular that included in the public sector borrowing requirement - are accommodatary finance for the Balance of Payments and prevent the reserves falling, then an increase in such borrowing is treated by the authorities as equivalent to a fall in the reserves and hence has to be added to the conventionally measured money supply changes. Public Corporation borrowing from overseas is treated in this way so that this plus bank borrowing corresponds to the sector's share of D C E. This is shown in the third line of Table 2. The overseas / borrowing was non-existent before 1969 but is now taking place in both foreign currencies and in Sterling. But note that in all this public corporations are acting as an arm of government. The reason for this may in part be attempts to widen the tentacles of borrowing for the government and there may be other reasons which would take us out of the scope of this paper. Its increased importance in this role does not reflect the changes in price and financing policies towards the public corporation - even though *prima facie* it appears to do; pricing policy affects claims on public expenditure and at present such claims are insufficiently large to affect the way in which the expenditure is financed.

Other Economic Effects

The other main effects of the price restraint policies relate to general aspects of prices and incomes policies, to national consumption patterns and to the management of the Corporations. It is useful to preface this by briefly exploring the quantitative size of the price restraints operating from 1970 onwards. One approach to this would be to examine the decline in the profit rate in public corporations relative to the company sector and to estimate by how much prices would have to rise in public corporations, in say 1973/4, to

restore the relative position of the two sectors, notwithstanding that losses have accumulated in the intervening period.

The Chart II profit measure is inappropriate in this context and so we may start with the rate of return on capital - measured net of stock appreciation subsidies and capital consumption[36] - which was 1.0% for the public corporation sector in 1969 and 8.5% in the company sector. On the basis of the long-run trends in these rates of profit and in the underlying differential productivity growth in the two sectors one would have expected that by 1973 the rates would have moved to about 1.5% and 7.0% respectively. In fact the Company sector actually fell to 5.1% which is roughly three-quarters of the expected level - a difference which could be attributed to the price restraint policies. The public corporation rate fell however proportionately a lot more, to (-)1.7%. A restoration of the relative position of public corporation would suggest that a 1973 rate of profit of 1.1% would represent a depression of profit from price restraint roughly comparable to the company sector.

The implications of this for prices can be developed by now turning to the rate of profit on turnover, data for which are only available for public corporations and which was - again net of stock appreciation, subsidies and capital consumption - in 1969 at the 2.7% level. The 1973 expected level is 3.0% and applying the same scaling down factor as before, a similar price restraint on public corporations as on the company sector would push the rate to 2.2%. The actual level in 1973 was (-)5.3%. If any changes in demand and unit costs as a result of price changes could be ignored then to raise the rate of profit on turnover from (-)5.3% to 2.2% would require that the 1973 price level be raised by roughly 7.6%. Appropriate data for 1974 are not yet available. A rough guess based on trends in the saving rate, is that the rate of profit on turnover has fallen to (-)10% or even worse and, allowing for cyclical downturns, the relevant price increase is probably rising up to at least the 15% mark - quite apart from any rises needed to reflect cost increases.

There seem to be five objectives which have, at one time or another, underlain the price restraint imposed on public corporations :-

1. As a short-run palliative to inflation, prices are simply held down in public corporations - in several cases, one suspects, simply to slow down the growth of next month's retail price index. This is to be distinguished from arguments relating to expectations or announcement effects which will be considered later. As such there is, ultimately, probably no downward effect on general inflation - in contrast to what governments have claimed[37] - and there could be an upward effect. By raising public expenditure there is no impact on real consumption levels. Thus were one to be able to show that the Corporations' reduced savings are balanced by rises in taxes then the neutral effect on inflation is clear. If instead government borrowing from the private sector (e.g. by gilts) is used, internal transfer payments are made now to release the resources for the Corporations' consumers and average consumption levels are therefore unaffected. Future repayments of the debt and associated interest charges are matched by taxes or further borrowing; that is, another set of internal transfers but without the resource effects. If overseas borrowing is used then, all other things being equal, the question arises as to where resources are to be forthcoming and who is to finance the interest and redemptions associated with such loans. In all cases there need be no upward effect on prices; there could be if one were able to show that the extra public expenditure is financed by bank lending to the government or more notes and coins are in circulation and no offsetting effects occurred elsewhere.

2. Another objective has probably been to shift the burden of higher public sector prices away from low-income consumers. Who then bears this burden depends again on the very difficult question as to who meets the extra taxes in the present or the future and whether there is an upward effect on the general price level. An alternative to lowering prices is to provide extra means-

tested income relief. Although the latter has certain theoretical advantages the use made of such relief is not 100% and to this extent holding public sector prices may have a more effective short-run impact. It should be noted that this objective is essentially related to the effects of inflation not to its causes.

3. Recent trends in wage inflation have of late been partly ascribed to expectations held of the future inflation rate. Governments convinced that they will reduce inflation could use price restraint to generate more favourable expectations earlier. This seems sensible if the government can eventually control inflation and if the population is also convinced ! Now all the three objectives discussed so far could equally be applied to the company sector of the economy as to public corporations. The first objective has special reference to public corporations simply because they are more easily controlled. The other two have significance for the public sector insofar as its products have special characteristics. The distribution argument presumes that it is families with low incomes who are primary beneficiaries of lower public sector prices. This makes more sense in terms of fuel than in transport where reduced fares for railways, airways and airports could be regressive in their impact. Moreover public corporation products are quite diffused throughout the economy and to this extent low income families are part of a much wider beneficiary group. The 1968 UK input-output table (in the 1971 Blue Book) provides some help in this respect. Although a precise delineation of the public corporation sector is not feasible, it is possible to derive from the Table aggregate figures covering coal, iron and steel, gas, electricity, water and transport. Of the total sales at factor cost of this 'public enterprise sector', 60% go to producers (including themselves), 18% to exports, 6% to capital goods, 3% to public authorities and 23% to domestic final consumers covering passenger rail journeys, domestic fuel and the like. The latter therefore accounts for less than one-quarter of the sector's sales; moreover it

accounts for only 8% of the total purchases of domestic final consumers. Even manufacturing devotes 25% of its sales directly to this group (food, drink, tobacco, clothing etc) and in absolute terms the value of such sales is over three times that of the public enterprise sector. On the other hand the fact that a large portion of public enterprise products go to producers is certainly favourable from the point of view of dispersing price decreases throughout the economy. Unfortunately such sales are only 16% of total purchases by producers.

4. In aiming for price restraint throughout the economy governments also may depress public sector prices to show that they mean business and can keep their own house in order. The public relations character of the government's attitude to the Corporations in the 1960s - *cf.* section III of this paper - seems to correspond to this objective. It has relevance when the basic attack on inflation is being made by invoking public spirited restraint in the economy. But without sanctions - *cf.* the CBI initiative discussed previously in this paper - there is little basis in such a policy and all that happens is a change in relative prices.

5. Finally, controlling prices can be part of a "deal" with the Trades Unions, who promise wage restraint. From the unions' point of view, no gains will be made if the reasoning is based on argument (1) above. If it is based on (2) then unions would need to watch the tax effects of extra subsidies to public and private industry to be sure of any gain. With progressive tax levies and squeezes on profit margins, those union members not suffering from lay-offs could benefit from wage restraint. From the government's point of view the policy may be effective if the unions are able to hold wages - on which one must have serious doubts especially in cyclical upturns of the economy and in the presence of excess aggregate demand.

In addition to the above effects of price restraint there are several other important effects which have not received the same attention, *viz* ;-

a) First of all there is at present, as a result of the price restraints, no coherent economic policy towards the Corporations. The policy outlined in the 1967 White Paper involved - amongst other things - that charges be set to reflect marginal costs, investment assessed by the test discount rate and deficits to be avoided. The change in government in 1970 did not affect the approach and the new government confirmed its acceptance of the fundamental strategy. Clearly deficits have not been avoided and even the provision of compensating finance - consistent with aspects of the 1967 policy - has been inadequate. The rate of profit including subsidies shows the same sharp decline in Chart II in 1970 as the rate net of subsidies; subsidies only arrested the decline in 1973. Second, although an alignment of prices to marginal costs may in some cases require price reductions - as Posner has suggested[38] was the case for gas and electricity in the mid-1960s - the requirements of industries like coal and the railways and the rise in unit costs since the mid-60s suggests that such a rationalisation would have little basis now. Whether or not the 1967 policy has defects, the important point now is the absence of any policy. Prices are being set at the whims of the Minister.

b) To the extent that demand for public corporation products has been stimulated relative to that of other sectors in the economy, the question arises as to whether resources are not being misallocated. The logic of previous government policy would suggest this interpretation. It does however presume not only that prices and marginal costs were in line initially in the Corporations but moreover that this alignment held in all other parts of the economy. This point can be argued indefinitely but a closely allied issue has probably more importance; namely how is investment planning to proceed at present? One approach would be to base demand forecasts on the assumption that

the present price level is maintained. With high demand and low prices forecast rates of return would be low. British Railways have been cutting investment and the Gas Corporation has suggested that small natural gas finds in the North Sea are not commercially developable at present price levels. On the other hand, given the growth in unit costs and the obligation to continue the provision of certain goods and services, new investment may provide a cheaper way of producing output than the use of existing equipment and the Treasury has voiced concern that excessive investment may result from price restraint. An alternative approach would be to estimate shadow prices, plan investment on that basis and presume that prices will eventually be restored. This seems to be the official view at present.[39] The exercise which opened this section shows how many assumptions have to be made to estimate relevant price increases and the very real difficulties involved.

c) A third effect is that on management morale and incentives. In public industries with no obvious profit stimulae to Boards and managers, target levels of profit or rates of return can supply the inducements to efficient working and cost minimisation. The establishment of targets in the 1961 White Paper was continued in the second paper and an examination of these targets shows that the gap between them and performance widened considerably in the 1970s. In the period since 1971 the available data suggest that only the British Airports Authority and the British Transport Docks Board have met their targets. The Annual Reports of most of the Corporations since 1972 contain persistent complaints of such effects of price restraint. The targets are for all practical purposes now in abeyance.

d) Finally, it is worth noting how price restraint can affect the context in which wage bargaining takes place. With the kind of policy outlined in the 1967 White Paper - or at least a policy of breaking even - management can point to constraints on their ability to approve wage increases. The basic productivity and the product demand situations and the target profit rate

provide such constraints. Even though that profit rate could be pressured to low levels, as long as it is positive there are limits to wage increases. With governments countenancing large deficits however, managements have no policy with which to negotiate. Advantage might not be taken of this situation and indeed there is the possibility, as suggested earlier in this paper, that governments might use the existence of deficits to put pressure on wages. In the longer term however persistent price restraint can lead to an open door to exchequer finance with public corporation employees treated like the Civil Service or NHS employees. There may or may not be merits in this but it would mean a fundamental reappraisal of wage policy.

7. CONCLUSIONS

Government intentions to impose extra restraints on public corporations, relative to private industry, have become obvious since 1972 insofar as they are an explicit element of policy. Looking at the postwar period as a whole there is some basis for thinking that similar intentions were absent up to 1964 but in the 1965-72 period they were present first of all in the way in which the machinery of prices and incomes policy was developed and applied in the 1965-9 period, second in an even more disguised form of pressure in 1970/1 and third in the more effective control of public corporations in the execution of the CBI initiative of 1971/2. The evidence of such intentions is much less clear for wages than prices and indeed over the whole postwar period public corporation wage inflation has been rising relative to manufacturing industry and accelerated in the 1970s. The incidence of prices and incomes policy has to be assessed in the context of long-term relative trends in these sectors and of the shorter term economic cycles. Given this, the data suggest discriminatory price restraint was partly effective in the 1965-7 period and in the 1970s.

The analysis of intentions and results of this price restraint suggest the following guidelines for future government policy :-

a) In the 1960s pressure on the public sector was probably motivated by the desire to show, in the context of invocations for general price and wage restraint, that it could keep its own house in order. If there are no sanctions on the private sector this is doomed to failure.

b) As a short-run palliative to inflation, public sector price restraint will probably have no effect in restraining the average level of inflation, since the former has to be financed from somewhere.

c) The Corporations' claims on public expenditure have increased in the two periods of effective discriminatory price restraint. Such claims have been a relatively small part of the total however and need have no effect on government decisions as to the size of total public spending, or how that total is to be

financed by taxes or borrowing, or on how borrowing requirements are to be met. If price restraint is pursued more strongly as a policy weapon it could well have such effects since public corporation outlays on wages and materials are sufficiently large that the Corporations' claims could, on present figures, rise up to one-third of public expenditure.

d) Restraint on public sector price increases may have a part to play in mitigating some of the distributional effects of inflation. As it stands at present the argument is somewhat tenuous since it depends on how taxes are raised now and in the future. Moreover public corporation sales account for only 8% of purchases by domestic final consumers, some of whom will be middle-class rail and airways customers. Similarly as a means of reducing expectations as to future price levels, it can be neither a main arm of counter-inflation policies nor, in that minor role, would its impact be large since it accounts for only 10% of the gross purchases of domestic producers and final buyers.

e) Government economic policy towards the nationalised industries is in disarray and needs complete rethinking. The change in the relative demands for goods and services in the economy as a result of discriminatory price restraint is contrary to government strategy of the last ten years. Pricing policy is non-existent. Investment planning shows every sign of being in complete confusion as a result of the uncertainty associated with price assumptions. The gap between targets and performance is widening and management morale is low. Finally, the wage bargaining position of the management could be seriously eroded.

Robert Millward

September 1974

ANNEX AND NOTES

Statistical Annex

a) Coverage : The public firms covered in this paper are in the public corporation sector as defined in the UK National Income Accounts. They are characterised by being vested by Statute, having their Boards appointed by a Minister, or Parliament or the Crown, and having certain rights to independently borrow and hold reserves. The sector as defined excludes central government and local authority trading bodies and companies in which the government has merely an equity interest like British Petroleum or Rolls Royce. Of late it has accounted for 11% of GDP and 17% of UK fixed capital formation; the figures for manufacturing are 34% and 22% respectively. At the end of 1973 the following Corporations were classified in the sector. The nationalised industries have somewhat more financial independence than other public corporations and the biggest industries are the National Coal Board, the various Electricity Boards, British Gas Corporation, British Rail Board, British Airways, the Post Office, British Steel Corporation and the British Airports Authority. The other nationalised industries, as defined by the Treasury, are the National Freight Corporation, National Bus Company, Scottish Transport Group, British Transport Docks Board and the British Waterways Board. There are some public corporations which are not classed as nationalised industries but whose activities are examined by the Select Committee on Nationalised Industries, namely Cable & Wireless Ltd, the Independent Broadcasting Authority and the Bank of England (excluding the Issue Department). Other small corporations in transport are the National Ports Council, the N.Ireland Transport Holding Company, Civil Aviation Authority, and the Maplin Development Authority; the various Passenger Transport Executives, including London Transport, were included in the sector only in the 1974 Blue Book and do not enter the pre-1973 figures in this paper - aside that is from London

Transport which was in the sector under a different guise up to 1970. This finally leaves the various New Town Development Corporation and Commissions for New Towns and 11 other corporations mainly in broadcasting, finance and housing. Since 1949 there have been 5 other small corporations not mentioned above, all of which had been dissolved by the end of 1973. Coverage of the sector does vary also each year because not all the above Corporations had been established in 1949; steel and road haulage have departed and later returned and the activities performed by some corporations have changed over time. See "National Accounts Statistics : Sources and Methods" Central Statistical Office 1968, Chapter VIII plus the notes at the end of each subsequent Blue Book and the Treasury Memorandum on pp. 337-9 of H.C.65 December 1973.

b) Productivity Prices and Wages : For manufacturing wages, the data in the Department of Employment Gazette was used; that is, average weekly earnings of adult males in October of each year. The same Gazette was used for output and total employment to derive the productivity measure. The price series used was the wholesale price index for all home sales of manufactured goods in the Monthly Digest of Statistics.

The price series for public corporations is averaged from series for the individual Corporations, weighted by revenue. The individual Corporation series developed from their Annual Reports were:- average price per therm realised (gas); average revenue per kilowatt hour sold to all consumers (electricity); an average of the postal and telecommunication tariff indices weighted by revenue; proceeds per saleable ton of coal; total revenue per load ton (passengers and freight) miles sold (B.E.A.); finally, for British Rail

an average weighted by revenue of average fare per passenger mile and average receipt per net ton freight mile.

The public corporation productivity series was derived from the output and employment series. For output an average, weighted by revenue, of the following series was used : total number of therms produced; total kilowatt hours supplied from power stations; total correspondence posted and total telephone calls connected; saleable output of coal per manshift; total load ton miles sold by BEA; finally for British Rail estimated total passenger miles and estimated total net freight ton miles. Employment was simply aggregated over all Corporations and covered total number of employees (for electricity and BEA), total staff numbers in British Rail and the Post Office and, for each year, average weekly manpower in NCB mines.

The earnings data for public corporations is an average, weighted by the above employment figures, of the following series : average weekly earnings of all workers at NCB mines (including allowances in kind); average weekly April earnings of all adult British Rail wages staff (1963 interpolated); total payments by the Gas Corporation to and on behalf of employees divided by total employment; total wage and salary costs per employee, including superannuation, national insurance etc (Electricity); total pay and pensions per employee in the Post Office; total wages and salaries per employee in BEA (covering UK employees from 1966).

British Rail and the National Coal Board (up to 1962) produce their reports on a calendar year basis. The others cover the financial year ending March / April; such data are attributed to the first of the two calendar years straddled. Finally for the year 1973, the unavailability of the reports of BEA and the Gas Corporation necessitated estimates being made. The 1973 figures for gas and BEA were approximated as an average of the previous three years' figures. These were then combined to the known public corporation aggregate (excluding gas and BEA) by use of revenue weights.

c) Profits and Rates of Return : Gross trading profits exclude rental, non-trading and overseas income. The sources for profits, stock appreciation, capital consumption, value-added and net capital stock at replacement stock for both company and public corporation sectors and for subsidies and revenue sales (turnover) for the latter sector are the National Income Blue Books for 1973, 1972, 1971, 1970, 1967, 1966, 1960 and 1957 in that order of preference. The 1974 Blue Book became available only as this paper was nearing completion and it has therefore been used only for the 1973 figures. The July 1974 issue of Financial Statistics was used for profits and subsidies in the first quarter of 1974. Stock appreciation has little significance for public corporations; for the company sector its inclusion adds half a percentage point to the rate of return on capital in the early 1960s, one full point by 1967/8 and three points by the early 1970s but turning points and trends are unaffected. The disadvantage of using the company sector definition is that it includes financial companies, most of whose "trading" profits arise as the excess of interest receipts over payments. The latter two items are, however, treated as appropriation account transactions for national accounts purposes so that the bulk of the profits of financial companies will be credited to the trading profits of other sectors, such as the personal sector, public corporations etc.

d) Public Sector Finances : The sources of the data on the finances of public corporations were as follows. The total investment to be financed covers gross fixed capital formation and increases in stocks etc. together with small amounts of capital grants and long-term lending to non-public sector institutions; i.e. the expenditure part of the public corporation sector's capital account in the National Income Blue Books referred to in Note c . Saving is measured as undistributed income on appropriation account plus additions to tax and interest reserves less subsidies. The

subsidies figures are taken from the operating accounts for the sector in the Blue Books. The net stock issues include those redemptions which, in the accounts, are separately identified as being financed by central government loans. The data on the banking and overseas sector for 1963-72 were taken from Financial Statistics for January 1974, December 1966, January 1970 and February 1972. For the periods 1973 and the first quarter 1974 Financial Statistics July 1974 was used for all public sector financial data. The details of bank lending 1952-62 were taken from the article on "Domestic Credit Expansion" in the September 1969 issue of the Bank of England Quarterly Bulletin. The 'other funds' line in Chart V corresponds to the following Blue Book entries : central government capital grants (excluding those for writing-off debt), capital transfers from the private sector, miscellaneous receipts (net), the adjustment for subsidy accruals plus the two elements of "other identified borrowing" not so far mentioned and whose detail can be found in Financial Statistics, *viz* dealings in other public sector stock and borrowing from own superannuation funds. Finally it should be noted that there are no figures for cash expenditure on company securities 1949-63, net lending and investment abroad 1949-54 and net lending to the private sector 1949-55; all are implicitly included, as negative entries, in miscellaneous receipts (net) and to this extent this category and the total finance are less in coverage than in the other years.

The same sources were used for the first column of Table 1. The accruals adjustment in Table 1 relates to the excess of cash subsidy receipts over the amounts for which public corporations and local authorities were eligible that year as recorded in entry (4). Item (b) covers net sales of holdings of other public sector stock less those public corporation stock redemptions financed by loans from the central government. Items 5 and (a) exclude those transactions associated with writing-off debt.

The subsidy entry for local authorities in Table 1 relates only to central government subsidies for local authority housing as shown in the Blue Books' separate tables on housing subsidies. Note also that local authorities themselves have recently made small subsidies to nationalised transport undertakings but in the absence of any detail these have had to be credited, in Table 1, to central government. The miscellaneous receipts (net) entry relates to transactions with non-public sector bodies. For central government it covers receipts from pension funds, adjustments for expenditure taxes, refinanced export and shipbuilding credits and "other financial transactions (net)". For details of increases in notes and coins in circulation see the references in note (e) below.

In order to calculate the 1973 and 1974 entries for the first row of Table 2 it had to be assumed that the accruals adjustment for public corporations shown in Financial Statistics July 1974 corresponds wholly to subsidies. The deduction from the official public expenditure totals, for subsidies, saving (and Corporation Tax) and interest payments may be found directly as total outgoings on the public corporation sector appropriation accounts in the Blue Books. The data for the second line of Table 2 differ from that in Table 1 only insofar as dealings in other public sector stock are, in conformity with the official statistics, included as part of the Corporation's share of public sector borrowing. For amplification of all these sources see "Sources and Methods" *op cit* Chapters VIII - IX and the notes to subsequent Blue Books.

e) Money Supply : Total Money Supply changes and domestic credit expansion are taken from the September 1969 issue of the Bank of England Bulletin, *op cit*. For the years 1969 onwards the Bulletin for March and June 1974 were used. The split of public corporation bank and overseas borrowing between foreign currencies and sterling may be obtained from these later Bulletins.

NOTES

1. "Incomes Policy" D Smith, Ch III of "Britain's Economic Prospects" ed. R A Caves, 1968. See also "Incomes Policy : Retrospect and Prospect" A Cairncross, Three Banks Review, Dec 1973

2. "Incomes Policy : The Next Step" Command 1626, Feb 1962, p.5

3. Command 1337

4. See "Prices and Incomes Policy" Command 2639 April 1965, para 8; "Prices and Incomes Standstill" Command 3073, July 1966 paras 32-4; "Prices and Incomes Policy After 30th June 1967" Command 3235 March 1967 para 12.

5. "Ministerial Control of the Nationalised Industries" July 1968. 1st Report from the Select Committee on Nationalised Industries Session 1967/8, H.C. 371 - I (Volume I : Report and Proceedings of the Committee), H.C. 371 - II (Volume II : Minutes of Evidence), H.C. 371 - III (Volume III : Appendices and Index). The Treasury Statement is on p.6 of the evidence.

6. "Nationalised Industries : A Review of Economic and Financial Objectives" Command 3437, Nov 1967

7. Financial Times, London July 16 1971

8. Hansard, 19 July 1971

9. There is not enough space to fully document some of the arguments in this section but further details may be obtained from the authors' short paper "The Price Codes and the UK Public Sector" Mimeo April '74

10. "A Programme for Controlling Inflation : The First Stage" Command 5125 November 1972, p.3

11. "The Programme for Controlling Inflation : The Second Stage" Command 5025 January 1973 p.6. All the provisions in the Codes relating to Nationalised Industries equally apply to central government trading bodies. The first Price Code was "The Counter Inflation (Price and Pay Code) Order 1973". Statutory Instruments 1973 No.658 and the second one coming into operation on November 1st was "The Counter Inflation (Price and Pay Code)(No.2) Order 1973". Statutory Instruments 1973 No.1785

12. In practice the Price Commission seem to have interpreted the Code more generously in this respect. In its "Report for the Period 1 June - 31 August 1973" H.C.438 October 1973 the Commission suggests that the Code ".... allows industry to take its future level of costs and relate them to a past level of output".

13. "The Counter Inflation Programme : The Operation of Stage Two" Command 5267 March 1973 p.3.

14. "The Price and Pay Code for Stage 3 : A Consultative Document" Command 5444 October 1973, paragraphs 12, 23-27

15. The relevant parts of the Stage 3 Code relating to sections b, c and d are paras. 32, 34, 59, 68, 70, 71, 83, 84, 85.

16. Ministry of Power Memo, H.C. 371-II, op.cit. pp.355/6

17. In support of the last few sentences see H.C. 371-I, p.84; H.C. 371-II pp.129, 1963, 270; H.C. 371-III, pp.39-40, 210 and 226-8. The government's reply to the Select Committee report is in "Ministerial Control of the Nationalised Industries", Command 4027, 1969.

18. See H.C. 371-I, pp.164-5.

19. "Capital Investment Procedures", Dec.1973, 1st Report from the Select Committee on Nationalised Industries, Session 1973/4, H.C. 65, pp.106-8 and 247.

20. In support of this paragraph see H.C.371-II, pp.67, 224-6 and 405, and H.C.371-III, pp.39-40.

21. The Treasury statements may be found in Command 3437, op.cit., p.10, and in H.C. 371-II, p.6. Aubrey Jones's arguments are in H.C. 371-II, pp.677-87 and in his book "The New Inflation: The Politics of Prices and Incomes", 1973, pp.95-7.

22. Chart I starts only in 1955 but other calculations substantiate what is implied in the text about the pre-1955 period. The post 1960 pattern, in our data, of public corporation prices falling relative to manufacturing seems to conflict with a recent assertion by G. and P. Polaryi that "... in the period since 1962, the special control of nationalised industry prices has not held the increase of their prices below that of prices generally." Polaryi's indexes are however particularly sensitive to his starting year 1962 when the prices of three nationalised industry products actually retailed had risen considerably. In a separate calculation relating to price trends for British Rail passengers, gas and electricity sales to domestic consumers and B.E.A. domestic passenger flights, we have found that such an aggregate price index is 132 in 1972 with 1963 = 100. This may be compared with the Polaryi figure of 185 for 1972 with 1962 = 100. Moreover the prices of nationalised industry's retail sales have risen more in this period than those of its sales at wholesale level, and the latter are excluded from the Polaryi figures. Finally it is worth noting that manufacturing prices have risen less than the retail price index which the polaryis use for comparison, and our comments on relative price trends are not weakened at all. See "Failing the Nation: The Record of the Nationalised Industries", George and Priscilla Polaryi, (Fraser Ansbacher Ltd., September 1974).

23. Specifically it is calculated as $\left(\frac{100 + x}{100 + y} 100 \right) - 100$, where x is the annual percentage rate of change of public corporation prices and y is the annual percentage rate of change of manufacturing prices.

24. "British Capitalism, Workers and the Profit Squeeze", A.Glyn and B. Sutcliffe, Penguin Special 1972, p.163, and footnote. Note that they do recognise that public sector profit rates rose in the 1960s but offer no explanation and are more concerned with the decline from 1970.

25. "The Profits of British Industry", G.J.Burgess and A.J.Webb, Lloyds Bank Review, April 1974

26. McKibbon and Kee, 1971

27. "Policy Towards Nationalised Industries" M.Posner, Ch.7 of "The Labour Government's Economic Record" ed. W Beckerman, 1972, pp.253/4

28. The sources of the data on GDCF are the Blue Books plus Economic Trends for July 1974.

29. See, for example, "Finance of the Nationalised Industries", D.Munby B.O.U.I.S., May 1959

30. This point is reinforced if one deducts from the loans figure those amounts specifically identified as financing the industry's stock redemptions. From 1969 onwards such loans covered practically all net stock issues and in the Central Government accounts the borrowing to finance such loans is itself separately identified and deemed to have no effect on the government's borrowing requirement. See 1973 Blue Book, p.106.

31. See, for example, "Curbs on Public Enterprise", C Jones, CBI Review June 1972.

32. See, for example, the first quarter figures for public corporations for 1970 onwards in Financial Statistics, July 1974

33. It is similarly disguised in the Central Government accounts. See the Blue Books referred to in note d of the Statistical Annex. As compared to what otherwise would have happened the central government has the loan repayment as a receipt but it has, as 'expenditure', the loan repayments and interest that would have been made in the future plus the capital grant. It is the latter which allows the public corporation to match the liabilities to the written-down value of its assets. Note finally in this context that there have been reports (see Note 31 above) of Corporations securing a deferment of interest charges and this would also boost the level of measured savings.

34. *cf.* Financial Times leader, 13th March 1974.

35. See the article in the Bank of England Quarterly Bulletin September 1969, *op. cit*, also "Balance Sheet Analysis of Money and the Concept of Domestic Credit Expansion" M.J.Artis and A.R.Nobay in "Readings in British Monetary Economics", ed. H.Johnson and others 1972; "Public Sector Deficits" by D.Kern, National Westminster Bank Review May 1974.

36. See note c of the Statistical Annex for the sources and methods of the profit data.

37. *cf.* Note 14 above.

38. *op. cit.*

39. On all the points in this paragraph see "Capital Investment Procedures" H.C. 65 Dec 1973, *op. cit.*, pp. 130, 163, 279/80 and xxvi.

CHAPTER 6.

T R A N S P O R T

by

P.C. Stubbs and W.J. Tyson

In this chapter we shall examine the effect of inflation on passenger and freight transport, and the distributional effects of changing costs and of possible subsidies to transport.

(a) Passenger Transport

The Department of the Environment produces price indices for bus fares, railway fares and for motor car running costs. Both the railway fares and car running cost indices are derived from figures of consumers' expenditure at current and 1970 prices, which are published in National Income and Expenditure. Data on bus fare levels are derived from information which has to be produced before fares can be raised.(1) These three indices are the basic data source for this study and are given in Table 1 below, together with the index of prices of all consumers' expenditure on goods and services derived in the same manner as the railway fare inded. Table 2 shows the annual percentage increase in each index. Figures for individual years should be treated with caution because bus and rail fares tend to be raised in discrete jumps with several months, or years, in between and the largest single element of the increase in car running costs in the period was probably fuel tax and vehicle tax which, again, were raised in steps rather than part of a gradual process. For these reasons Table 2 also gives percentage increases over the whole period and for the sub-periods 1962-1967 and 1967-1972.

It can be seen from this that in almost every year and over each group of years, both bus and railway fares increased by more than total consumers' expenditure. Thus, they have been increasing in real terms (assuming that comparisons of the latter index can be used for defining "real terms"). In contrast, car running costs have fallen somewhat compared with prices of total consumers' expenditure. It should be remembered that these figures

refer to the period prior to the 1973-1974 fuel crisis,[2] and that the level of rail fare increases and, to a lesser extent, bus fare increases, have often been determined by government policy.

TABLE 1

PRICE INDICES OF PASSENGER TRANSPORT : 1962-1972

Index numbers of prices 1970 = 100

Year	Rail Fares	Bus Fares	Car Running Costs	Total Consumers' Expenditure
1962	69	60	72	72
1963	71	63	72	73
1964	72	67	73	76
1965	78	71	79	80
1966	82	76	82	83
1967	84	79	85	85
1968	87	84	91	89
1969	93	88	98	95
1970	100	100	100	100
1971	117	118	106	108
1972	136	125	110	115

Source: Department of the Environment, Passenger Transport in Great Britain, 1972, (London, H.M.S.O., 1973).

Having set out the present situation it remains to advance hypotheses to explain it. What follows can only be hypotheses and much research would be needed in order to substantiate them.

As a first step, labour costs can be examined as these comprise a high proportion of the total cost of bus and rail operation. Both are relatively labour intensive industries and whilst rail operation offers considerable scope for further labour productivity increases,[3] bus operation does not.[4]

In 1973 wages and salaries comprised 57 per cent of British Railway's total operating costs and 69 per cent of the National Bus Company's.(5)

TABLE 2

ANNUAL RATES OF CHANGE IN PRICE INDICES OF TABLE 1

Years	Rail Fares	Bus Fares	Car Running Costs	Total Consumer Expenditure
1962-63	2.90	5.00	0	1.39
1963-64	1.41	6.35	1.39	4.11
1964-65	8.33	5.97	8.22	5.26
1965-66	5.13	7.04	3.80	3.75
1966-67	2.44	3.95	3.66	2.41
1967-68	3.57	6.33	7.06	4.71
1968-69	6.90	4.76	7.69	6.74
1969-70	7.53	13.64	2.04	5.26
1970-71	17.00	18.00	6.00	8.00
1971-72	16.24	5.93	3.77	6.48
1962-67	21.74	31.67	18.06	18.06
1967-72	61.90	58.23	29.41	35.29
1962-72	97.10	108.33	52.78	59.72

Source: As Table 1.

Over the period 1962 to 1972 average earnings and weekly wage rates both rose by a greater proportion than the general level of prices. The percentage increases in each were, respectively, 93, 78 and 52 according to figures produced by the Department of Employment.(6) Average hourly rates of wages in the transport industries have increased by slightly more than the figure for all industries covered by the Department of Employment figures. For 1962 to 1972 the all-industry figure showed a 106 per cent increase, whilst that for the transport industries showed a 116 per cent rise. Average

hours worked declined by about the same rate, i.e. transport (5.41%); all industries (5.47%).[7] Thus, transport is a labour intensive industry which has had to increase its hourly wage rates by more than the average for the economy as a whole and by more than the general level of increase in prices. This will inevitably lead to an increase in the relative price of its outputs unless it has been accompanied by an increase in productivity.

Because it is so fragmented, no figures for productivity increases in the bus industry are available for this period. Some data can be obtained for British Railways, however. If an index of loaded train miles per employee is constructed this showed an 85 per cent increase between 1962 and 1972.[8] No indices of the increase in railway pay, as opposed to pay in other parts of the transport sector were available, but it can be seen that the increase in productivity has not been sufficient to offset the rise in hourly wage rates for the sector as a whole. Earnings of (adult male) railway workers rose between 1965 and 1972 by 90 per cent, so that total labour costs have outstripped productivity. During the period analysed at least two major productivity agreements had been made on the railways which resulted in large increases in wage rates and it seems likely that railway wage rates will have risen by more than the average for the transport sector.

In the bus industry the main source of increased labour productivity is one-man operation. This was negligible at the beginning of the period studied and accounted for about 50p.% of all bus miles run by 1972. However, national agreements with trades unions have resulted (a) in high pay increases for all staff in order to gain acceptance of one-man operation in principle, and (b) the return of 40% of the net savings from actual schemes to the staff concerned. Furthermore, one-man operation reduces operating speeds,

necessitating the provision of more vehicles and crews to maintain a given level of service.

It would appear from this, therefore, that whilst there have been increases in labour productivity in both the bus and railway industries between 1962 and 1972, this has only been achieved by increases in real wages and has probably still resulted in a need to increase fares by more than the general level of prices.

A second factor to account for this increase in the relative price of public transport is the cost structure of the industry. Both bus and railway operators have costs which cannot be altered very quickly in response to short-run changes in demand. On railways the costs of track, signalling and terminals are of this nature. (Train operation comprised only 46% of British Railways' total operating expenditure in 1973.) Bus operators are fortunate in not having to maintain their own track, but still had about 18 per cent of expenses which would not vary directly with output in 1969.(9)

On both modes this is accentuated by imbalances between peak and off-peak demands although the problem is more acute in the bus industry where a twice daily work-peak has to be catered for.(10) This can result in the number of buses in use at peak hours being up to twice the number in use outside the peak.(11) If peak demand is to be met there will be no reduction in the number of vehicles required if off-peak demand falls. In addition, labour cannot be hired by the hour and must be employed in eight hour units. Thus, a reduction in off-peak demand will usually result in a less than proportionate saving in labour costs. A fall in off-peak demand will thus not lead to a proportionate reduction in operating costs.

As a result of both factors (fixed costs and peak/off-peak imbalance) there is no guarantee that any fall in demand will result in a proportionate reduction in costs and can thus result in an increase in average cost per unit of output.

Over the period studied there has been a secular decline in demand for bus services in particular. Passenger miles travelled by bus fell by 24 per cent between 1962 and 1972 partly as a result of increasing car ownership. For the reasons outlined in the preceding paragraph it has not been possible to reduce costs in direct proportion to the reduction in demand and thus an increase in average costs and prices has ensued.

The two factors discussed above have combined to give an increase in public transport fares greater than that in the prices of consumer expenditure as a whole and, more relevant, greater than the increase in private car running costs. In a future period of wage inflation public transport will be badly placed if wages rise more than price levels in general, as scope for immediate productivity increases is limited and any shift to the left in the demand curve is likely to cause increases in average costs and, hence, in prices. The net overall effect would be a continuation of the trends apparent in Table 1 and a further rise in public transport fares relative to prices in general.

Finally, it is necessary to explain the slight decline in real terms in private car operating costs. There has been little systematic research into this, but the following points seem of relevance.

(1) The price of petrol has declined in real terms during this period. It rose by about 47 per cent compared with the increase in prices generally of 60 per cent.

(2) The rate of vehicle excise duty has only risen by about 43 per cent and has thus declined in real terms. Petrol and vehicle excise duty accounted for 46 per cent of car running costs in 1972.[12]

(3) The labour of driving the car does not enter cost calculations. Increases in wage rates and therefore in the opportunity cost of a person's hire thus do not affect car running costs; indeed, as the cost of other modes rise faster than car running costs, the savings which may be imputed to driving oneself will rise accordingly.

(4) It is possible, as the price of labour increases, to substitute one's own leisure time for that of hired labour for repairs and maintenance. It is also possible to have lower standards of maintenance to reduce costs. Such action is not available to public transport operators, the standards of whose vehicles are strictly regulated by law.

(5) During the period there have been technical improvements which have increased the efficiency of cars, for example more efficient engines and tyres, inter alia, have raised potential speeds and reduced specific fuel consumption. Urban congestion may constrain some of these benefits, but must be set against the growth of motorways.

The above points show that in the period under discussion certain important elements in car running costs failed to rise in price by as much as goods and services generally and also that car owners have some opportunity to mitigate the effects of increases in prices.

In contrast, public transport users, at a time of general inflation, are likely to be faced with above average increases in fares.

The trends shown in Tables 1 & 2, thus seem to be consistent with these hypotheses. Regardless of whether they are true or not, however, the facts are that the price of public transport has risen by a greater percentage than private car running costs. Thus, one group of the community (public transport users) have become worse off than others (car users) in this respect. Whether this has been redistributive can only be answered when expenditure patterns and income is taken into account.

Passenger Transport Usage and Income Distribution

The changing levels of cost inflation in public transport and private car transport have significant implications for different income groups. As one would expect, the car-owning class everywhere is invariably the richer class. The evidence of this is quite conclusive: econometric studies of the demand for cars in advanced countries all reveal the primacy of income as a determinant[13]; travel survey data for traffic forecasts show the importance of income levels; and family expenditure surveys reveal that the ownership of first, second and subsequent cars is closely related to household income levels,[14] as is the ownership of other durable goods. Moreover, income influences usage as well as ownership: the higher the income of a car owner, the more likely he is to use his car.[15] The London Travel Survey of 1962 showed that car owners with annual incomes below £1,000 generated about five trips daily, compared with nine trips by owners with incomes over £3,000. Other significant findings were that wealthier families made, on average, longer journeys by car than did less wealthy families, and that car owning families generated, on average, 6.8 trips daily, but households without cars generated only 3 trips.

It can thus be seen clearly that insofar as inflation has tended to increase the cost of public transport more rapidly than the costs of the

TABLE 3

WEEKLY EXPENDITURE ON TRANSPORT, BY HOUSEHOLD INCOME GROUP, GREAT BRITAIN, 1972

Income Group (£ per week)	Under 10	10-14.99	15-19.99	20-24.99	25-29.99	30-34.99	35-39.99	40-44.99	45-49.99	50-59.99	60-79.99	Over 80	All Groups
Expenditure on Transport £	0.25	0.67	1.13	2.26	3.26	3.55	4.27	4.61	5.74	7.24	8.60	8.60	4.97
Total Weekly Expenditure £	9.34	14.21	18.75	23.47	26.34	29.66	32.99	35.19	39.01	42.83	52.21	72.85	35.06
% spent on Transport	2.68	4.71	6.03	9.63	12.38	11.97	12.94	13.10	14.71	16.90	16.47	17.53	14.18
of which:-													
net purchases of motor vehicles, spares and accessories	(0.11)	0.56	1.01	3.07	4.59	4.35	5.03	4.89	5.79	6.68	7.01	7.62	5.6
maintenance and running of motor vehicles	0.54	1.83	2.29	4.18	4.63	4.99	5.43	5.51	6.31	6.70	6.40	6.42	5.6
Motor vehicle sub-total	0.65	2.39	3.30	7.25	9.22	9.34	10.46	10.40	12.10	13.38	13.41	14.04	11.2
Purchase & maintenance of other vehicles and boats	-	-	(0.05)	0.13	(0.08)	0.10	0.12	0.26	0.13	0.30	0.11	0.58	0.2
Rail fares	0.10	0.35	0.64	0.30	0.38	0.44	0.45	0.45	0.51	0.61	0.75	1.14	0.7
Bus & coach fares	1.50	1.69	1.76	1.75	1.94	1.69	1.49	1.62	1.46	1.47	1.30	0.91	1.4
Other travel	0.32	0.21	0.26	0.26	(0.76)	0.40	0.42	0.37	0.51	1.12	0.90	0.88	0.7

Note: Figures shown in brackets are subject to small sample size or to relatively high sampling errors.

private motorist, its distributional effects have been regressive. However, it would be premature to infer from this that subsidies for public transport - buses and trains - would be progressive, quite apart from the question of who pays for the subsidies. We have already suggested that wealthier families travel more than poor ones; and it could be that their use of public transport as well as private cars would ensure that they enjoyed an element of subsidy. In examining the relationship between income and expenditure on public transport, the Family Expenditure Surveys provide useful evidence. Table 3 shows the relationship between household income and expenditure on various forms of transport in Britain in 1972. The positive relationship between income and expenditure on cars is clearly apparent, and the rising proportion of expenditure on car running costs supports the earlier statement that usage of cars is also a rising function of income. The relationship between income and expenditure on public transport is composite. As income rises, so does absolute expenditure on rail journeys and so does the proportion of expenditure; this accords with an international cross-section study by Silberston[16] which showed a positive relationship between rail usage and income, negating the hypothesis that railways were a simple alternative to the private car. By contrast, once weekly income exceeds about £20 there is a negative relationship between income and the proportion of expenditure on bus and road travel.

The explanation of these characteristics is relatively simple. Car ownership and usage are functions of income, and this has been the generally preferred mode of surface travel, as the figuresin Table 4, below, show.

Similar trends in modal choice are evident in North America and Europe, with the private car advancing its share, and rail and bus services stagnant or in decline.[17] However, rail use may be preferred by car owners

in certain circumstances, notably inter-city business trips and urban commuter journeys into congested areas.

TABLE 4

CHANGE IN LEVELS OF HOUSEHOLD EXPENDITURE ON TRANSPORT, GREAT BRITAIN

1964/66 to 1970/72

	Ave. weekly expenditure, £		As % of total expenditure	
	1964/66	1970/72	1964/66	1970/72
Net purchase of motor vehicles, etc.	0.80	1.63	3.81	5.15
Maintenance & running of motor vehicles	0.97	1.78	4.62	5.62
Sub total	1.77	3.41	8.43	10.77
Purchase & maintenance of other vehicles	0.44	0.08	0.19	0.25
Railway fares	0.15	0.21	0.71	0.66
Bus and coach fares	0.39	0.48	1.86	1.51
Other travel	0.11	0.21	0.52	0.66
	2.46	4.39	11.71	13.87

The Family Expenditure Surveys provide a breakdown of transport expenditure on a regional basis in Britain, showing that expenditure on rail journeys is highest, at over three times the national average, in the Greater London area. It is also relatively high in North-West England and the Midlands, where there are large conurbations and where the rail network is relatively dense.

Hence, any increase in the level of rail subsidy would have inegalitarian distributional effects, in terms both of income and of regional distribution. It would accrue more to the wealthier, and, if applied as a blanket subsidy, to the long distance commuter. It is already well established in transportation studies that such commuters are members of higher income groups. It would

bring much less benefit to those areas where the rail network is thin or non-existent; and these areas, often peripheral ones, usually display below average income levels. This evidence is based on British data, but probably has a wider validity, such that rail subsidies would benefit Parisians rather than the people of Brittany, and dwellers in the Ruhr rather than German farmers.

Subsidies for buses would have a more progressive effect on income distribution, since they are used proportionately more by the poorer members of the community. However, it could be argued that even here, the degree of progressiveness would be more apparent than real, since the absolute level of expenditure on bus fares rises gently with income until the final income group, shown in Table 3; but if the subsidies were raised from progressive income tax, the net distributional effect would probably be progressive. The use of buses and coaches appears to be inversely related to the use of cars, both on the basis of family expenditure data for households of various compositions and on the basis of regional transport use patterns. Hence in those families, stratified according to composition, and those regions where car use is low, bus use is high. We have shown in the earlier section on relative cost inflation that over the past decade, bus fares have risen faster than train fares, and very much faster than car running costs. Over the same period, the quality of service offered by buses has declined, as diminished traffic has obliged operators to reduce operating frequencies. Thus, the bus user has been doubly hit, by rising costs and by falling quality of service, and as they comprise the poorer sections of the community they have had limited access to alternative modes. We therefore conclude that if there were to be any subsidisation of transport, the strongest case on egalitarian grounds could be made for assistance to bus services.

An objection might be raised to subsidies on bus operation because buses

have been an 'inferior' mode, experiencing secular decline in the face of increasing ownership of cars. But it is arguable that the circumstances of the 1960's were unique, with declining real prices of petrol and relative freedom for motorists from meeting the social costs of the congestion which their presence imposes on the road users of major conurbations. Political and, perhaps, technical problems of congestion road pricing are likely to defer its introduction, and inferior expedients such as high parking charges and outright vehicle prohibitions are more readily employed, together with general subsidies to urban public transport. If the decline in the quality of bus service could be halted or reversed, it is possible that some of the potential advantages of the bus could be realised: it is less fuel-intensive per passenger mile than the private car, so that if fuels continue to become dearer and scarce it may recoup some of the cost disadvantage it met during the past decade.

(b) Freight Transport

The analysis of cost inflation in freight transport is more difficult than in passenger transport because data on costs and receipts are scarcer and less reliable. Thompson and Hunter[18] suggest that over the period 1952-68 the real price of railway freight fell, but that road freight did not match this fall, notwithstanding the steady improvement in the productivity of road haulage. They cite figures, admittedly of the most impressionistic nature, which suggest that between 1952 and 1965, rail receipts per ton-mile rose by 7 per cent (without allowing for changes in the mix of items carried), while the cost of road haulage per ton-mile rose by 17 per cent. Both increases were much less than the rise in the general level of prices. Even so, road haulage gained traffic at the expense of the railways. Deakin and Seward[19] attribute this to the non-price advantages of road transport,

since in their study of 29 commodity groups, in only 5 was road transport cheaper. They also show that labour productivity in road haulage rose by almost six per cent a year between 1952 and 1962, partly because of extra capital inputs in the form of bigger more efficient trucks.
By contrast, railways and road passenger transport showed declines in labour productivity, reflecting the problems of a contraction of business. This is a world-wide phenomenon, with the road vehicle gaining traffic while the share of railways declined.

There are no definitive indices of freight costs by road or rail. It can be shown, however, that labour costs form a high proportion of both road haulage and rail operation

TABLE 5

COMPONENTS OF ROAD AND RAIL FREIGHT COSTS

(a) Rail cost structure (per cent)	1965	1968
Staff	63	62
Fuel	8	5
Materials, supplies, services	19	21
Depreciation and amortization	10	12

(b) Road haulage	Edwards & Bayliss (1965)	National Freight Corp.(1970)	(1971)
Wages	59	48	49
Fuel	13	9	8
Insurance, materials, etc.	15	37*	36*
Depreciation and repairs	13	6	7

* figure includes extensive depot costs and payments to sub-contractors.

Source: Rail:-British Railways Board; Road:-S.L. Edwards & B.T. Bayliss, Operating Costs in Road Freight Transport, Dept. of Environment, 1971, and National Freight Corporation, Annual Reports, 1970 and 1971.

The proportion of labour cost to total cost appears slightly lower for road hauliers, and in recent years, truck drivers' earnings have risen less than those of railway workers, and of manual workers generally, as Table 6 shows.

TABLE 6

INDICES OF COMPARATIVE EARNINGS, 1968-1972

	B.R. adult males	Drivers of trucks, 5-10 tons	All manual workers
1968	100	100	100
1970	124.7	117.3	-
1971	134.7	127.6	124.8
1972	153.8	143.4	145.7

Source: Dept. of Employment.

No definite answer can be offered at this stage to the question whether inflation has affected freight transport more severely than average. Although there are no indices of road freight rates, some trade publications issue regular estimates of running costs for road vehicles,[21] which were the major source of land freight traffic in 1971, accounting for 75 per cent of ton mileage compared with 21.6 per cent by railway. The indices are of limited use to the economist, as the figures are not totally consistent in the sizes of vehicles analysed; yet they show some clear trends. It would appear that between 1965 and 1973 operating costs rose considerably faster than the consumer price index. The rise was more pronounced among relatively small vehicles, such as 30 cwt. vans, where the wage component of total cost is high, but diminished with vehicle size, the cost of operating 20/22 ton trucks rising somewhat less than that of 10/12 tonners.

Railway freight costs and prices are extremely difficult to estimate from published sources. It is possible to calculate receipts per ton-mile wagon-mile[22] as rough indicators of rising charges, but British Railways do not charge per wagon-mile, operating rather on the principle of charging what the traffic will bear. Hence, changes in the capacity utilization, mix of traffic and the mix of wagon sizes may distort the apparent price, and changes in receipts per ton mile will reflect the traffic mix, which altered in 1972 in favour of bulk, low-charge loads, such as coal, oil and road stone materials. Between 1969 and 1972 receipts per ton-mile rose little but receipts per wagon-mile rose somewhat faster than the consumer price index.

Thus in recent years, road freight costs have risen faster than prices generally, but we cannot say positively what has happened to rail charges. If the charges are passed on, the inflationary effects of rising transport charges will depend on the incidence of transport costs upon relative prices within total costs of different goods. Periodic Censuses of Production show the purchases of transport services as a proportion of net inputs, as well as the transport expenditure of large firms, defined as employing at least 25 people.

In 1968, there were several two-digit industries with a high element of transport costs as a proportion of net output, notably mineral oil refining (20.5%), mining and quarrying other than coal (18.2%), bricks (7.9%), distributive trades (6.4%) and coke ovens (6.3%). Those figures exclude intra-industry transactions, so that a finer three digit set of the Standard Industrial Classification offers a more detailed and realistic estimate of the importance of transport costs to specific product groups. This is shown in Table 7, along with the importance of road transport for each product group.

It is evident from Table 7 that certain items in the consumer budget are more liable than others to rising transport costs, and that the cost of road transport is the dominant element of transport costs. Items such as stone and slate, sand and gravel, cement and canvas goods figure little in their direct impact on consumer expenditure, but many of the food products do have a direct bearing on consumers. The Family Expenditure Surveys show how much households with different income levels spend on food, and on particular types of food: data are stratified by household composition. Broadly speaking, food expenditure rises less than proportionately with income, so that the effect of rising freight costs on food prices will be regressive, impinging more upon the poor who spend a higher proportion of their total budget on food. If we examine the expenditure pattern of that group in the survey with the highest propensity to consume food, namely households with two adults and four children, we observe negative income elasticity of demand for bread, flour, sugar and, less clearly, biscuits. Income elasticity is low for bacon, milk and milk products; and similar relationships apply to smaller households.

TABLE 7

TRANSPORT COSTS OF "LARGE" FIRMS IN 1968 CENSUS OF PRODUCTION

Industry	Transport Costs as percentage of value of net output	Road Transport Costs as percentage of total transport costs
	%	%
Stone & slate quarrying	88.9	99.9
Canvas goods	46.7	89.5
Chalk, clay & gravel	46.3	90.0
Milk & milk products	33.5	97.8
Miscellaneous machinery	32.4	88.6
Bricks	22.6	94.5
Animal & poultry foods	20.4	90.2
Sugar	19.6	83.0

(continued)

Table 7 continued

Industry	Transport Costs as percentage of value of net output	Road Transport Costs as percentage of total transport costs
	%	%
Lubricating oil & greases	19.1	96.0
Cement	16.7	86.1
Coke ovens & manufactured fuel	16.5	30.1
Grain milling	14.5	88.9
Bacon curing, meat & fish products	14.1	95.5
Brewing & malting	13.7	95.8
AVERAGES: Weighted	7.3	86.9

Source: Census of Production, 1968.

The impact of rising freight transport costs on the food component of consumer prices has probably been slightly faster than the general level of price increase in recent years, and since the recent rise in oil prices and the continued rising trend of wages, transport costs will probably continue to exceed the rate of inflation. The prospects for productivity increases are limited, especially as road vehicles increase towards some sort of ultimate size and exhaust the economies of scale that were exploited through the nineteen-fifties and sixties.

Since the distributional effects of rising freight transport costs are likely to be regressive, subsidy measures would be progressive. The full effects of such subsidies would require analysis which probably goes beyond the current state of the art in input-output analysis, and allowance would have to be made for the fact that any subsidy of freight transport would favour those items and those processes which were geographically scattered, and that this has serious implications for general productive efficiency.

(1) Levels of bus fares in the U.K. are controlled by the Department of the Environment.

(2) This might not have had much effect on relative rates of increase, because it has been the pre-tax price of fuels which have risen. As railways are exempt from tax on fuel oil and bus operators are taxed at a lower rate than general users, the lowest increase in percentage terms will have been in private car fuel.

(3) For example with automated signalling, automatic train operation, higher operating speeds.

(4) The main source of this is one-man operation which now accounts for a high proportion of all bus-mileage operated in most areas.

(5) British Railways Board: Annual Report & Accounts, 1973 (London, British Railways, 1974, p. 42), and National Bus Company Annual Report & Accounts, 1973 (London, National Bus Company, 1974, p. 48).

(6) Department of Employment Gazette, January 1971 and July 1974.

(7) Ibid.

(8) Located train miles is an indication of supply rather than demand, but there is no unambiguous means of measuring demand. See C.D. Jones, "The Performance of British Railways", Journal of Transport Economics & Policy (Vol. IV, No. 2, May 1970), pp. 162-170. Basic data are from British Railways Annual Report and Accounts.

(9) Derived from Table 29 of Passenger Transport in Great Britain 1969, (London, H.M.S.O., 1970) and substantiated by data produced to the author by several operators (in support of subsidy applications) since 1971. This comprises the costs of buildings and management, in the main.

(10) Peak periods for railway passengers and freight movements are at different times of the day.

(11) See W.J. Tyson, "The Peak in Road Passenger Transport", J.T.E.P., (Vol. VI, No. 1, Jan., 1972), pp. 37-84.

(12) Automobile Association, Schedule of Estimated Running Costs, (London, Automobile Association, 1972).

(13) See, for example, G.C. Chow, Demand for Automobiles in the United States, North Holland, Amsterdam, 1957; W.J.H. Mogridge, "The Prediction of Car Ownership", Journal of Transport Economics and Policy, Vol. 1, Jan. 1967, pp. 52-57; P.C. Stubbs et al, The Australian Motor Industry, Cheshire, Melbourne, 1972, chapt. 9.

(14) See Department of Employment, Family Expenditure Survey, 1972, H.M.S.O., London, 1973.

(15) The evidence for this is analysed by M.Q. Dalvi, Distributional Aspects of Investment in Urban Transport, Working Paper 26, S.R.C. Transportation Planning Project, Institute for Transport Studies, University of Leeds, 1973.

(16) Aubrey Silberston, "Automobile Use and the Standard of Living in East and West", Journal of Transport Economics & Policy, Vol. IV, No. 1, Jan., 1970.

(17) See A.H. Tulpule, An Analysis of Some World Transport Statistics, Transport and Road Research Laboratory Report No. 622, Crowthorne, Berkshire, 1974.

(18) A.W.J. Thompson & L.S. Hunter, The Nationalised Transport Industries, Heinemann, London, 1973, pp. 150-1.

(19) B.M. Deakin & T. Seward, Productivity in Transport, Cambridge U.P., 1969.

(20) See A.H. Tulpule, op.cit.

(21) Estimates in this section were made from data published by the journals Motor Transport and Commercial Motor.

(22) Using statistics published in the annual Report and Accounts of the British Railways Board, 1972.

CHAPTER 7.

INFLATION AND THE HOUSING MARKET

D.E.W. Laidler

I. Owner occupied housing is one of the major forms in which British households may hold real as opposed to financial capital. Moreover, one of the most important types of non-wage and salary income in the economy is that which accrues to owner occupiers of housing. More than half the households in Britain own their own homes and therefore do not need to make provision from their other income for the payment of rent. Of course, to the extent that ownership is financed by loans from financial institutions provision does need to be made for payment of interest and repayment of principal.

In recent British history this particular form of income has been subjected to no form of government control during periods in which prices and incomes policies have been in force, and, in addition, is no longer counted as income for tax purposes. One of the more remarkable features of recent British inflation has been a rise in house prices which has far exceeded that in the general price level, and there must have been dramatic increases in the money value of this income in kind accruing to owner occupiers. The purpose of this section of our study is to make some rough preliminary assessments of the sums involved and to discuss what measures, if any, might usefully be taken to bring this form of income within the purview of government policy towards the distribution of income and wealth. A full study of this issue would require time and space far beyond that available in the context of the present report, but the broad outlines that emerge from our preliminary work suggest that such a more thorough study would be well worth doing.

A preliminary step to the present study must be to establish the falsity of a common fallacy in discussions of the economics of owner occupied housing, namely that the anomolous income tax treatment of the imputed income

from owner occupied housing arises from the tax deductibility of mortgage interest payments. It does not. It arises from ignoring this source of income altogether in the calculation of taxable income. The tax deductibility of mortgage interest payments simply ensures that those with mortgages receive the same tax treatment as out-right owners. This is best seen by considering a simple numerical illustration. The reader who is already clear about this matter may pass directly to section III of this study without reading the next few pages.

II. In constructing the accounts set out in table 1, we have made the following assumptions which, though they greatly simplify the analysis, do not detract from its substance. We assume an economy in which the income tax is so structured that tax payers may deduct a flat £1,000 plus any mortgage interest payment from their gross income from all sources to arrive at their taxable income. We assume that income tax is levied on the remainder at a rate of 30%. In addition, we assume that the capital market in this economy is sufficiently perfect to ensure that the net rate of return on capital in all investments is 10% per annum. Thus, the imputed net rental value per annum of any owner occupied house is 10% of its market price. We then consider the accounts of two households, identical in every recpect save one, that the second of them has a mortgage debt equal to 50% of the value of its house. We assume that each household has a before tax income from all sources of £2,500 per annum, and that each lives in a house whose market value is £6,000 and whose annual net rental value is therefore £600.

The table should be virtually self-explanatory. It shows that, if we ignore the rental value of the owner occupied house in calculating a family's income, then that with the mortgage appears to be paying less tax on the

same income. However, if we include the imputed income from the owner occupied house in our calculation of income, it will be apparent that the net income (before taxes) of the family with the mortgage is £300 per annum less than that of the outright owner and that he is equitably enough paying £100 less in taxes. Table 2 drives home the point more thoroughly. Here, we assume that, though mortgage interest is still tax deductable, tax laws have been changed so that the imputed rental value of the house is subject to tax. In this case the tax liability of each household increases by £200 leaving the family with a mortgage still paying less tax on what is still a smaller income. Alternatively, table 2 would equally apply if our two households simply exchanged ownership of, but not residence in, dwellings and paid each other rent. What was income in kind would then become income in cash, and liable to taxation.

Finally, in table 3 we show what would happen if tax laws were changed from the situation depicted in table 1 to a state of affairs in which mortgage interest was no longer tax deductible. Evidently, the household with a mortgage would end up paying the same tax as that with no mortgage, despite the fact that the "true" income of the former was lower.

Now the foregoing examples are illustrative of general principles. A thorough study of the income tax treatment of owner occupied housing in any particular economy, would of course have to take account of the structure of tax rates in that economy, including taxes levied specifically on real property by both central and local governments; it would also have to take account of capital market imperfections, risk premia and the like, that would undermine the simplifying assumption used in our example that net rates of return on capital were equalised everywhere in the economy; and so forth. These complications would of course greatly affect the quantitative

significance of the failure of income tax to be levied upon the money value of the income in kind accruing from owner occupied housing. However, they would not affect the qualitative nature of the case made by our very simple example. This example illustrates clearly enough that ownership of housing permits the consumption of a stream of income which, because it is taken in kind, is not subject to tax. Hence it falls outside the scope of the income redistribution mechanisms set up by government.

III. Inflation impinges upon households in a number of well-known ways. Money incomes rise faster than real incomes and, in the presence of progressive income taxes, the real burden of taxation increases. The real value of nominal assets depreciates, as does the real value of nominal liabilities (although, once inflation becomes fully anticipated, these effects are cancelled out by interest rate adjustments). The incentives that these consequences of inflation produce are clear enough. Households are encouraged to take income in forms that are not subjected to income tax; they are encouraged to acquire real assets and to emit nominal liabilities. In the British institutional framework all of these incentives operate to put pressure on the owner occupied housing market.

As we have already seen, the acquistition of an owner occupied house gives command over a stream of income in kind that is not subject to income tax. Moreover, the house is a real asset whose real value does not automatically depreciate with inflation. In addition, and of special importance, it is possible in Britain to finance the purchase of owner occupied housing on particularly favourable terms. The great majority of mortgages are granted by Building Societies at interest rates which, as a matter of government policy, are kept at low levels. Thus their adjustment to inflation has been slow and incomplete as table 4 shows. The typical term

for a mortgage is twenty five years, and anything up to 95% of the purchase price of the house may sometimes by financed on such terms. It is hardly surprising then that the recent inflation has produced a particularly exaggerated effect on the owner occupied housing market, an effect which has, as we shall argue below, given a large part of the population a vested interest in having inflation continue.

Given the nature of published data on the housing market it is not possible to quantify with any precision the effects that inflation had on the housing market, but the data are probably good enough to give a rough and ready impression of the orders of magnitude involved. The most readily available statistics come from a ten per cent sample survey of all Building Society mortgages granted during each month. In addition to Building Societies, mortgages are also granted by local government authorities, insurance companies, and a variety of finance houses. Local authorities tend to concentrate their activities on lending for the purchase of old and cheap houses where building societies are reluctant to lend while insurance companies and other institutions tend to concentrate their activities at the top end of the market. Thus data based solely on building society mortgages are not necessarily completely representative of what is happening over the whole spectrum of the owner occupied housing market. In addition to this, though the survey in question does yield data on the income of owner occupiers and the value of their houses, the data in question are generated at the moment of purchase of a house. They tell us about people now <u>buying</u> houses, about houses now being <u>bought</u>; this information is not necessarily representative of people currently <u>owning</u> houses, or of houses currently <u>owned</u>. Also the quality of the houses being traded could vary from time to time so that average prices recorded at different times are not necessarily prices for houses of the same quality.

Nevertheless, we must not exaggerate the difficulties with available data. First we will mainly be concerned with changes in the housing market during a period of inflation. We have a data base in which the extremes of that market, particularly cheap and particularly expensive housing, are under-represented; this only matters if the changes at these extremes of the market were different from those taking place in the middle. There is no reason to believe that there were any great differences here. Second, though a sample of data generated by observing house purchases will inevitably over-represent new houses relative to the housing stock as a whole, the data we have do discriminate between new and second hand houses. There is no reason to believe that the second hand houses being traded are systematically unrepresentative of the housing stock as a whole, and in any event the price behaviour of new and second hand houses seem to have been about the same over the period of this study. Similarly for data on house owners; new households must inevitably be over-represented in data based on house purchases. Again, however, the data are broken down between first time purchasers and others and hence permit us to come to grips to some extent with this problem. Finally, when it comes to the question of the quality of the average house traded over the period of this study, it should be noted that housing technology does not change very rapidly. It would be surprising if the average quality of houses traded had changed very much over a four year period. Moreover, casual empiricism (based for example on observing what has happened to the price of the same houses when they have been traded at various times over the last few years) tends to confirm the impression of the behaviour of house prices that is given by our sample survey data.

Thus, the data on which the following analysis is based are far from perfect, but they are probably not so imperfect as to be unusable. Of course

only a good deal of further detailed analysis of them would enable us to be completely confident about this. As we shall see, the results that are presented below are sufficiently dramatic that more careful work designed to discover whether or not they are just a statistical artifact would be well worth doing.

IV. The current inflation began in earnest in Britain in about 1969. The last year for which complete data of the type we require here are available is 1973; these years therefore form the basis of this part of our study. The first thing to establish is what happened to the price of housing over this period relative to the prices of goods in general. Table 5 presents the basic data, and as can be seen, house prices rose by far more than the general price level, slightly more than doubling over the four year period. As noted above, despite the shortcomings of our data for measuring changes in the price of a standard quality house, the order of magnitude of the change indicated here seems to be roughly right on the basis of causual empiricism. Not only did housing prices rise much more rapidly than prices in general, but as table 5 indicated they rose a good deal more rapidly than incomes in general.

At least three significant facts are implicit in the statistics reported in table 5. First, anyone who was an owner occupier over the period 1969-'73 made substantial capital gains. Second, the importance of the imputed rental income from home ownership as a tax shelter increased significantly over the period. Finally, over the period, it became more and more expensive and difficult for first time buyers to acquire homes. This latter fact is of considerable importance in the British context since private unfurnished rental accommodation is virtually non-existent; this state of affairs being a direct consequence of over half a century of rent

controls. The alternative to home ownership is thus furnished rental accommodation - also now being subjected to rent control legislation which will ensure its disappearance in due course, and subsidised local authority housing for which there are, in many parts of the country, long waiting lists. Thus any increase in the difficulty faced by first time buyers in acquiring an owner occupied house is a much more serious state of affairs in Britain than it would be in countries where alternative forms of accommodation were more readily available.

Available data enable us to say something about the quantitative significance of these factors, and to do so it is crucial to break down our data between first time buyers and previous owner occupiers who enter the sample when they buy a new house. The reason for this is straightforward. As we noted in the previous section of this essay, mortgages are made available up to a certain proportion - sometimes as high as 95% of the value of the house to be bought. Thus a buyer must accumulate a certain amount of capital himself before he is able to buy his house. The availability of capital puts an important constraint upon the price which a purchaser is able to pay for his house. In a time of rising house prices things are more difficult for first time buyers, but the capital gain made from the ownership of one house makes it easier for existing owner occupiers to improve the quality of their housing by "moving up" the market.

Now let us consider the time path of the imputed income from owner occupied housing. Table 6 presents relevant data. As the reader will see from Table 6a the ratio of house value to income increased slightly for first time buyers over the period, but significantly for existing owner occupiers. The correct rate of return to impute to an owner occupied house is hard to assess, and hence, in table 6b we present figures based on a

range of assumptions about its order of magnitude. 5% is surely on the low side, while 15% is probably too high. The central figure of 10% is we believe, defensible, and the figures in table 6 speak for themselves. Capital gains made on home ownership enabled those owner occupiers who bought new houses to increase their untaxed income in kind from 27.3% to 38.2% of their cash income between 1969 and 1973.

It is already evident from table 5 that the differential in house prices paid by first time buyers and previous owner occupiers widened over the period of this study. Table 7 presents information on this matter in a more straightforward form. Though the incomes of first time buyers increased more rapidly than those of existing owner occupiers, the value of the house they purchased increased much less rapidly. The fact that new owner occupiers mortgages increased in size more rapidly than did those of previous owner occupiers confirms the importance of capital gains on the sale of an existing house as a source of funds for the purchase of a new one on the part of existing owner occupiers. Note though that mortgages increased in size relative to income for both groups. In table 8 we compare the time path of the incomes of first time buyers, previous owner occupiers and of income from employment generally in the British economy. That of first time buyers rose more rapidly than the other two, confirming the suggestion that rising house prices did in fact squeeze a significant number of potential owner occupiers out of the market entirely. This interpretation of the data receives further support from the fact that whereas in 1969, 57.4% of all Building Society mortgages went to first time buyers, in 1973 this figure had fallen to 47.2%.

To sum up then, the picture that emerges from our inspection of the data for the period 1969-'73 confirms the suggestion that the ownership of

housing conferred significant benefits in the form of untaxed income in kind and untaxed capital gains on a substantial proportion of the British population; we have already noted that over half of British households are owner occupiers. Not only were these benefits subject to no taxes but no attempt was made to bring them under the aegis of any prices and incomes policy. The inequity between owner occupiers and other members of the population implicit here is obvious enough, and is reason enough for considering what kind of policies might have prevented the situation arising. An even stronger reason for taking this particular problem seriously is that, when half of the population have so much to gain from inflation, it is hardly surprising that the political will to bring inflation under control is hard to find.

V. As we have argued in the last section of this paper, the housing market has behaved in what many would regard as an unsatisfactory fashion over the last few years. It is well worth asking how such behaviour might have been avoided, not only as a matter of historical interest but also in order to draw lessons for future policy.

One policy that might be suggested would be to tax capital gains made on the purchase and sale of houses. However, such a proposal seems to us to be at best highly inequitable and at worst unworkable. To begin with, there is a standard problem inherent in capital gains taxation as to whether taxes should be levied upon accrual or upon realisation of a gain. To levy taxes on the accrual of value of an owner occupied house, when this is often the only major asset owned by a household, would, we suspect force realisation of the asset in a sufficient number of cases - particularly among older people - as to make a system of taxation of accruals unworkable. To levy taxes on realisation of capital gains on houses however, would discriminate

unfairly against those forced to sell their homes because they were changing the location of their work. There are already many disincentives to labour mobility in Britain that result from the nature of the rental housing market and we cannot see that there is any case for adding to them.

In any event, the problems in the owner occupied housing market in Britain arose from particular causes, and we earlier identified the causes in question as follows: owner occupied housing provides an income in kind that is not subjected to income tax; income tax is levied progressively on nominal incomes so that, with inflation, the incentive to take income in non taxed forms increases; finally, the interest rates at which it was possible to borrow for house purchases were held at levels which were so low as to be negative in real terms. If these factors were responsible for what happened in the owner occupied housing market, then a policy of removing them would presumably prevent a repitition of such problems in the future. Moreover, their removal, particularly the last of them, would bring benefits vis-a-vis the control of inflation far beyond the confines of the owner occupied housing market.

Consider first the exclusion of income in kind from owner occupation from income tax. This is a relatively recent phenomenon in Britain. Such so-called "schedule A" income was taxable until the early 1960's, but taxes had not in fact been levied at anything more than nominal rates since before the second world war. The great difficulty with collecting such a tax arises from the problem of valuing the owner occupied house and then imputing income to it. The only feasible way to do this would be to rely on self-assessment as far as valuing the house was concerned and using a "rule of thumb" rate of return to impute the income accruing from the house. It should be noted that the institution of such a tax would yield a considerable

amount of revenue, and there should be no suggestion that it be added to the battery of taxes already levied in Britain without anything being removed. The overall level of income tax rates could for example be lowered as a result of such a tax being instituted. There are many who would regard this as desirable, but to argue its pros and cons does not come within the provenance of this paper.

Of course, in a period of inflation, with rising house prices, the revenue from such a "Schedule A" income tax would increase even if real income was not rising. It would operate as a tax on inflationary gains. This is true, but, as we have pointed out, the income tax as currently levied already does just this to income from other sources. Thus, to institute a "Schedule A" income tax would simply equalise the tax treatment of income from owner occupation with that of income from other sources. The progressive nature of the income tax as levied at present has given an increasing incentive to the ownership of housing and the institution of this extra tax would remove the incentive. In any event, if the fact that inflation increases the real burden of income taxation is a source of worry, then the problem is easily enough dealt with (in principle at least). Income tax regulations can be written in terms of real income levels instead of nominal levels; or, to put the same point another way, nominal tax rates could be indexed to the cost of living.

The third factor which we have identified as a cause of the particularly steep rise in the price of owner occupied housing in Britain during recent years has been the maintenance of low interest rates on mortgages. Table 4 speaks for itself in this respect, (but also shows, with the steep increase in rates that finally took place in 1973, that this was not a policy that could be maintained indefinitely). Even the reform of British monetary

institutions that was undertaken in 1971, and which was largely designed to give market forces a much bigger role in the determination of the level and structure of interest rate, made an explicit exception of building societies. The interest rates which they charge to borrowers and pay to lenders were supposed to be insulated as far as possible from competitive forces in order to keep down housing costs, particularly for first-time buyers.

We have already seen how badly this policy failed. Low interest rates simply led to high capital values, and these, interacting with down-payment requirements actually led to increasing difficulties for first time buyers. It would follow immediately then, that a policy of letting interest rates find a higher level would have removed a major factor leading to a higher houseprices thus avoiding many of the difficulties outlined earlier. However this matter goes much deeper. We would conjecture that the desire to maintain low interest rates for house purchase has been a major factor in producing the expansive monetary policy that has contributed so much to generating inflation in Britain. Why this should be the case is easy enough to see. The building societies obtain their funds by borrowing from the public. Although much of their borrowing is done from small savers who do not have ready access to the whole of the capital market they nevertheless must compete <u>on the margin</u> with other borrowers. Any upward tendency of market interest rates puts pressure on the building societies because they begin to lose funds in such circumstances. Their response to this may be either to raise both their borrowing and lending rates, or to engage in morgage rationing, or a mixture of the two. In either case difficulties are created for would be borrowers. Thus, if a government wishes to keep mortgage interest rates down and prevent the supply of morgages contracting, it must also take steps to keep down the general level of interest rates.

As is well known, this can only be accomplished through relatively easy monetary policy, a policy which must ultimately lead to inflation, and, as expectations of further inflation begin to develop, to rising interest rates.

In short, the policy of keeping mortgage interest rates below a market determined level is inevitably self defeating. However, before the breakdown of such a policy takes place, and it now has more or less broken down in Britain, it can have all the adverse effects outlined in the last section of this paper. It is therefore, we would argue, a policy to be avoided.

TABLE 1

	HOUSEHOLD (a)	HOUSEHOLD (b)
Income before Tax	2,500	2,500
Value of House	6,000	6,000
Mortgage interest payment	0	300
Taxable income	1,500	1,200
Tax liability	500	400
Imputed income from house	600	600
Taxable income and imputed income from house	2,100	1,800

TABLE 2

	HOUSEHOLD (a)	HOUSEHOLD (b)
Income before Tax	2,500	2,500
Value of House	6,000	6,000
Imputed income from House	600	600
Mortgage interest payment	0	300
Taxable Income	2,100	1,800
Tax liability	700	600

TABLE 3

	HOUSEHOLD (a)	HOUSEHOLD (b)
Income before Tax	2,500	2,500
Value of House	6,000	6,000
Mortgage interest payment	0	300
Taxable Income	1,500	1,500
Tax liability	500	500
Taxable income plus net income from House	2,100	1,800

TABLE 4

BUILDING SOCIETY MORTGAGE INTEREST RATES

Year	Interest rate
1969	8.5
1970	8.5
1971	8.0
1972	8.5
1973	11.0

TABLE 5

RETAIL PRICE INDEX, AND INDICES OF AVERAGE PRICE OF HOUSES BOUGHT WITH THE AID OF A BUILDING SOCIETY

MORTGAGE 1970 = 100

YEAR	RETAIL PRICES	HOUSE PRICES	NEW HOUSES	OTHER HOUSES
1969	93.9	93.3	93.8	93.0
1970	100.0	100.0	100.0	100.0
1971	109.5	113.2	110.0	114.0
1972	117.0	148.2	138.2	152.0
1973	126.8	199.8	191.7	203.1

TABLE 6 (a)

RATIO OF HOUSE VALUE TO INCOME FOR HOUSE PURCHASERS

YEAR	Ratio of House Value to Income.	
	1st time buyer	Previous owner occupier
1969	2.53	2.73
1970	2.45	2.69
1971	2.42	2.70
1972	2.67	3.26
1973	2.89	3.82

TABLE 6 (b)

IMPUTED INCOME FROM HOUSE AS PROPORTION OF ALL INCOME AT VARIOUS HYPOTHETICAL RATES OF RETURN

YEAR	5%		10%		15%	
	1st time buyer	Previous Owner Occupier	1st time buyer	Previous Owner Occupier	1st time buyer	Previous Owner Occupier
1969	.126	.136	.253	.273	.378	.408
1970	.122	.134	.245	.269	.366	.402
1971	.121	.135	.242	.270	.363	.405
1972	.134	.166	.267	.326	.402	.498
1973	.144	.191	.289	.382	.432	.573

TABLE 7

INDICES OF INCOMES OF HOUSE PURCHASERS, VALUE OF HOUSE PURCHASED, AND SIZE OF MORTGAGES. 1970 = 100

YEAR	First time buyer			Previous Owner Occupier		
	Income	House price	Mortgage	Income	House price	Mortgage
1969	91.6	94.6	93.5	91.7	92.8	89.8
1970	100.0	100.0	100.0	100.0	100.0	100.0
1971	113.0	111.7	113.0	113.7	114.2	114.3
1972	129.2	140.5	143.0	126.8	153.6	143.7
1973	154.8	182.6	176.5	143.8	203.9	162.8

TABLE 8

INDICES OF INCOMES OF HOUSE PURCHASERS AND OF GENERAL INCOME FROM EMPLOYMENT FOR HEADS OF HOUSEHOLD IN GENERAL. 1970 = 100

YEAR	Income of 1st time purchasers	Income of previous owner occupier	Income of head of Household from employment
1969	91.6	91.7	88.8
1970	100.0	100.0	100.0
1971	113.0	113.7	112.3
1972	129.2	126.8	127.5
1973	154.8	143.8	143.5

Sources:

In the foregoing tables all index numbers pertaining to house prices and incomes of owner occupiers are based on data taken from various issues of Department of the Environment "Housing Statistics".

Data on the Retail Price Index in table 5, and that on income of head of household from employment in table 8 come from the National Institute Economic Review.

CHAPTER 8.

PROFESSIONAL EARNINGS

by

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PROFESSIONAL EARNINGS

1. Introduction.

It is only recently that economists (in English-speaking countries at least) have shown much interest in the professions. The national Prices Commission of the Republic of Ireland when announcing last year studies of the fee structure of both the legal and architectural professions remarked that it had been able to find very little in the way of economic studies of the professions. In the United Kingdom the growing concern on the part of the authorities to control or to influence levels of wages and salaries has led to increasing official attention being paid to professional fees.

The main interest so far has been in the professions connected with land, i.e. architects, surveyors, estate agents and the legal profession. There has also been some interest in the various branches of the medical profession but, in Britain at least, these present different problems in that most medical practitioners are wholly or largely dependent for their earnings on the state.

That the professions of the land should attract attention is not surprising. In most cases earnings are derived from fees expressed as a percentage of property values. This means that earnings will, in general, rise in line with the cost of living or, as happened recently, may rise faster than the cost of living if property values are rising in real terms. However, the position is not as simple as this as the volume of work tends to vary appreciably over the trade cycle. In the U.K. partly by accident and partly by design cycles in construction have had greater amplitude than cycles in national income and this has

had a significant effect on the earnings of the professions concerned.

Furthermore it is necessary to distinguish an increase in gross fees from an increase in the earnings of individual practitioners in cases where there is freedom of entry into the profession. In most cases there is not complete freedom of entry and by law or by virtue of other restraints certain jobs may only be performed by qualified and registered practitioners. In such cases the size of the profession can only increase in the long run. However, in some cases there are few or no restrictions at all and new entrants can enter the profession, as has happened with estate agency, or outsiders can compete with established professionals over a certain range of services. Thus a whole range of skilled and semi-skilled book-keepers, the tax-specialists of the clearing banks and management consultants are all competing for what once would have been considered accountancy work.

Very few, if any, professions are without any outside competition. Even the legal profession much of whose work is by statute reserved to baristers or to solicitors finds itself in competition with outsiders for some of its business. Persons doing their own conveyancing and the trustee and executor departments of the large banks are examples.

Having said this it remains the case that this outside competition has seldom been met by any reduction in fees on the part of the established; where fees have risen faster than other earnings this has usually resulted in excess capacity and/or competition through the provision of more services. Estate agency is a good example of this.

The adherence to one given method of calculating fees is characteristic of most of the professions and is worth commenting upon. Professional men hold to the view that it is the giving of a personal service to each individual client without regard to the reward involved in the particular case that is the basis of professionalism. They much prefer that fees be prescribed from outside as it were rather than their having to set their own charges or to negotiate case by case. To the onlooker such views appear suspect and it is easy to criticise them on various grounds; but here we are concerned solely with the fact that they exist. That they do imparts a rigidity to the professional scales and where the application of these scales results in increasing turnover this may result in greater (and excess) capacity and/or competition on service rather than price.

There is some surrepticious price-cutting but this in itself is less surprising than is the extent to which established scales of fees are adhered to. Since neither excess capacity nor the provision of more elaborate service (without any indication that the public would, if given a choice, wish to purchase such service) is desirable there would appear to be a role for the state in regulating professional fees. However, such a role raises many problems.

Chief among these is the difficulty in measuring professional services. It would be difficult, if not impossible to measure the output of a doctor or a lawyer. It is one of the traditional defences of a fixed scale of fees and of restriction of entry that with many professional services the client cannot judge the quality of service he receives. Not only can the client not do so but civil servants are unlikely to be able to do so either. Attempts to regulate by statute professional fees

would involve judging services where it is difficult to assess quality and where quality varies greatly among practitioners. This is not to say that it could not be done but rather that it would be very difficult.

Attempts to measure service on a time basis provide no solution. Some practitioners will be quicker than others and there is no reason why they should in consequence earn less for any given piece of work. Further, payment on a time basis reduces the incentive to seek quicker methods of doing things.

Not only are professional services difficult to judge as to quality but they are infinitely varying in detail and very often depend on skill and experience the value of which is also difficult to assess. Attempts at close control of fees by government are likely to produce numerous problems and anomalies and are also likely to be difficult to enforce. Existing scales of fees laid down by professional bodies give rise to many problems as it is but there are not totally rigid downwards and of course are not at all rigid upwards: higher fees can be charged for greater service.

Government control of professional fees would be difficult but not impossible. Moreover the degree of difficulty would vary from profession. It should not be ruled out. However, to justify detailed controls it would be necessary to show that professional earnings, in the absence of such controls were likely to rise faster than other earnings. In general past evidence suggests that this is unlikely. It is to this that we now turn. We shall begin with the professions of the land, architects, surveyors, engineers and estate agents.

2. Architects' Fees.

Architects are in the main remunerated by a scale which yields a fee of 6% of the cost of building work for which they are responsible. A higher fee is chargeable for small contracts (under £ 25,000) and for alterations and improvements to existing buildings whilst a lower fee applies in the case of repetitive work. However, the amount of work being remunerated at 6% of total building costs is a sufficiently high proportion of total work that if we assume this to be the sole rate of commission we shall get an accurate estimate of architects' earnings.

Since there is then for practical purposes no tapering of the scale architects' fees, for a given amount of work will rise in line with construction costs. An index of these is given below for the years 1963-1973 along with index figures of retail prices and average earnings over the same period.

TABLE 1

	Cost of New Construction (1970 = 100)	Retail Price Index (January 1962=100)	Index of Average Earnings (January 1966=100)
1963	75	103.6	84.0
1964		107.0	90.3
1965		112.1	97.0
1966		116.5	103.3
1967	84	119.4	106.7
1968	88	125.0	115.3
1969	93	131.8	124.3
1970	100	140.2	139.8
1971	108	153.4	155.2
1972	122	166.3	175.2
1973	150*	179.4	198.4

*Provisional.

Source. Cost of New Construction from housing and construction statistics; Retail price index from the Monthly digest of statistics; Index of average earnings from the Department of Employment and Productivity gazette.

From the table it can be seen that over the ten-year period construction costs and hence architects' earnings for a given amount of work have risen by 100%. This compares with a rise of 73.2% in the cost of living as measured by the retail price index and a rise of 136.2% in average earnings. Thus whilst the cost of architectural services has risen faster than other costs earnings of architects have been rising by less than earnings generally. It would be interesting to look at the rates of change of these figures for different sub-periods within the ten-year period. However, rather than do this we shall look at two sub-periods, those for 1963-1970 and 1970-1973 using a different set of data: that produced by the Royal Institute of British Architects and arising from its triennial survey of architects' earnings.

Table 2 below shows median earnings of principals in private practice, salaried architects in private practice and other salaried architects for the years 1964, 1967, 1970 and 1973. This shows that for all three categories of architect income rose faster over the whole period than did the cost of living (though in the case of salaried architects in private practice not much faster) but that in all three cases the rise in income was less than the increase in average earnings. This confirms the picture presented by table 1.

TABLE 2. ARCHITECTS MEDIAN EARNINGS (£)

	Principals in Private Practice	Salaried Architects in Private Practice	Other Salaried Architects
1964	2,700	1,714	1,800
1967	3,021	2,077	2,371
1970	3,613	2,497	2,856
1973	5,641	3,200	3,752

Source: Royal Institute of British Architects Journal, June 1974.

The rates of increase of earnings for the sub-periods 1964-1970 and 1970-1973 are given in table 3 below along with the changes in the retail price index of average earnings for the same sub-periods. The table also includes the rates of change over the whole period for all the indices.

TABLE 3. RATES of CHANGE of ARCHITECTS EARNINGS, RETAIL PRICES AND AVERAGE EARNINGS

	Principals in Private Practice	Salaried Architects in Private Practice	Other Salaried architects	Retail Price Index	Index of average earnings
	%	%	%	%	%
1964-'70	34	46	59	31	55
1970-'73	56	28	31	28	42
1964-'73	109	87	108	68	120

This table shows that in the years 1970-'73 when construction costs rose rapidly architects who were principals in private practice did see their income rising faster than the national average, salaried architects did not. The rise for the principals however came after a period of virtual stagnation in real earnings. There is nothing in any of the

figures to suggest that the architects' scale of fees has over any sustained period of time enabled them to profit by inflation.

If, notwithstanding the above evidence it were desired to control architects' earnings then this could only be done by the authorities turning the existing scale which is a scale of minimum charges into a scale of maximum charges and then reducing this to offset increases in construction costs. This would raise considerable problems in that it would rule out departures from the scale in an upward direction, which occur now when an architect takes on extra work such as landscaping. If exceptions were made to allow such extra work to continue the likelihood of the controls being avoided would increase.

The Monopolies Commission is currently investigating the business of architect including the fee structure. There is some feeling both inside and outside the profession that this will lead to either the abolition of, or at least, a reduction in the importance of the existing scale of fees.

3. Quantity Surveyors' Earnings.

The job of quantity surveyor may vary from contract to contract and from firm to firm. At its simplest it involves drawing up a bill of quantities of materials necessary for a building contract together with estimates of cost but in addition the quantity surveyor may do the ordering of the material and may also exercise some supervision of the actual construction. Fees vary dependent upon work done. In the great majority of cases however the fee is expressed as a percentage of total

building costs and this usually amounts to 2-2½% of such costs. Hence for unchanged volume and type of work the earnings of quantity surveyors will rise in line with changes in building costs.

From table 1 above we saw that construction costs had risen by 100% over the decade to 1973. This would have produced a rise in quantity surveyors' earnings of the same percentage; a rise that may be compared to the increase in retail prices of 73.2% and in average earnings of 136.2% over the same period. If we just take the years 1970-'73 we find that earnings rose slightly faster than the average (50% as opposed to 42%) but this was only a partial compensation for increases in earnings having lagged behind the average during the preceding seven years.

As with architects it is apparent that a fee scale based upon a percentage of building costs has not produced a secular rise in quantity surveyors' earnings relative to other earnings.

4. Consulting Engineers' Earnings.

Consulting engineers perform various services and there are several different specialist types of engineer. The conditions of engagement published by the Association of Consulting Engineers gives separate scales of fees for each of the following classes of work: -

1) the design and supervision of civil, mechanical and electrical works;
2) the design and supervision of structural engineering work in buildings and other structures;
3) the design and supervision of engineering systems in buildings

and other projects;

4) structural engineering services in connection with industrialised building.

The four scales are all expressed as a percentage of the value of the contract in connection with which engineering advice is being given. In the main the scales are tapered, that is to say the percentage declines as the value of the contract rises. Scales 1-3 are similar, being identical at low levels but differing in the extent to which the percentage declines with higher contract values. Table 4 below shows the fees which would accrue to a consulting engineer according to scales 1-3 for a range of different contract values.

TABLE 4. CONSULTING ENGINEERS FEES FOR SELECTED CONTRACT VALUES

Value of contract	Civil, mechanical and electrical work (scale 1)	Structural engineering work (scale 2)	Engineering systems (scale 3)
£	£	£	£
10,000	1,100	1,100	1,100
25,000	2,450	2,450	2,450
50,000	4,325	4,325	4,450
100,000	7,575	7,575	8,200
200,000	13,575	13,575	15,200
500,000	30,075	28,575	35,450
1,000,000	55,075	53,575	69,200
2,000,000	100,075	103,575	
4,000,000	185,075	203,575	
8,000,000	345,075	403,575	

Source: Association of Consulting Engineers; Conditions of Engagement.

Table 1 above showed that construction costs have risen over the past decade by 100%. Table 5 below shows the percentage increase in fees arising under scale 1 from an increase in the value of the contract of 100%. The left-hand column shows the contract value after the increase hence the increase in fees shown against £ 20.000 is the increase in fees earned from work on a contract worth £ 20.000 as opposed to one worth £ 10.000 and so on.

TABLE 5. PERCENTAGE INCREASE IN ENGINEERS' FEES AS A RESULT OF A 100% INCREASE IN CONTRACT VALUES

increase in contract value to	fee	percentage increase
£	£	£
20,000	2,000	82
50,000	4,325	77
100,000	7,575	75
200,000	13,575	79
400,000	24,575	81
1,000,000	55,075	83
2,000,000	100,075	82
4,000,000	185,075	85
8,000,000	345,075	86

The percentage increases may be compared with the increase of 73% in the retail price index and the increase of 136% in the index of average earnings which occured over the same period. Such comparisons show as in the case of architects and of quantity surveyors that engineers earnings have not been rising relative to other earnings over the past decade. Table 5 shows increases in fees arising from the application of scale 1, the percentage increases generated by scales 2 and 3 would be higher but would in all cases be significantly below the rise in national average earnings.

Engineering earnings are not in general high when compared to earnings of other professional groups. According to a survey conducted in summer 1973 by the council of Engineering Institutions, forty per cent of all chartered engineers earned less than £ 3,000 per annum and 70% earned less than £ 4,000.

5. Estate Agents' Earnings

The overwhelming majority of estate agents in the United Kingdom adhere to one of two scales of charges for the sale of all immovable property. (Sales of immovable property or real estate constitute the main form of business; sales of chattels or of livestock are relatively unimportant; valuations and surveys are an important source of business for only a small number of agents. They are discussed below.) The scale recommended by the three important professional bodies for all classes of immovable property other than private dwelling houses situated within England and Wales provides for a fee of 2½% of the selling price of the property up to a value of £ 5,000 and 1½% thereafter. This fee is the one usually charged in the south of England, in Wales and in Northern Ireland. In the north of England a fee of 2% of selling price for all values is common. In Scotland estate agency is only beginning to become widespread; until now most sales of dwellings have been arranged by solicitors at lower fees than those mentioned above.

Since 1971 it has been illegal for any professional association to enforce or to recommend fees for the sale of private dwellings in England and Wales. This prohibition resulted from the implementation of a recommendation in a report by the Monopolies Commission[1]. The evidence is however that it has had little effect in practice and that the great

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[1] A report on the supply of certain services by estate agents. H.M.S.O. 1969.

majority of estate agents are continuing to charge as before. Apart from a few isolated cases of agents advertising reduced fees the only notable change in practice in recent years represents an increase in fees: some southern agents have adopted the north-of-England fee scale now that property prices are high enough for this to be profitable.

Table 6 below gives average house prices over the decade to 1973 together with the amounts of commission that would result from sales of such average priced houses when calculated according to the two different scales referred to above. To facilitate comparisons the retail price index and the index of average earnings is reproduced from table 1 above.

TABLE 6. AVERAGE HOUSE PRICES AND ESTATE AGENTS' COMMISSION

Years	Average House Prices £	Commission $2\frac{1}{2}$-$1\frac{1}{2}$% scale £	Commission 2% scale £	Retail Price Index (January 1962=100)	Index of Average Earnings (January 1922=100)
1963	3,195	80	64	103.6	84.0
1964	3,433	86	69	107.0	90.3
1965	3,768	94	74	112.1	97.0
1966	4,030	101	81	116.5	103.3
1967	4,283	107	86	119.4	106.7
1968	4,499	112	90	125.0	115.3
1969	4,819	120	96	131.8	124.3
1970	5,128	127	103	140.2	139.8
1971	5,775	137	116	153.4	155.2
1972	7,398	161	148	164.3	175.2
1973	10,101	202	202	179.4	198.4

Source: Average house prices from Housing and construction statistics, Retail Price Index and Index of Average Earnings see table 1.

Over the ten-year period house prices rose by 216%. Those agents charging a constant 2% commission would have seen their income rise by the same percentage for a constant volume of business; those charging on the reducing scale would have seen their income rise by 150% for a constant volume of business. The cost of selling a house has thus risen appreciably over the last decade and estate agents' incomes appear to have risen everywhere faster than the average and in the north of England by nearly 60% faster than the average.

The rise in house prices was not uniform over the decade. If we study the figures in table 6 we find that house prices were rising steadily but unspectacularly until 1970 but that in the three years 1970-'73 they all but doubled. Table 7 below gives the percentage increase of the five series of table 6 for the two sub-period 1963-'70 and 1970-'73.

TABLE 7. PERCENTAGE RATES of INCREASE of HOUSE PRICES AND ESTATE AGENTS' COMMISSIONS

Years	Average house Prices	Commission		Retail Price Index	Index of Average Earnings
		$2\frac{1}{2}$-$1\frac{1}{2}$% scale	2% scale		
1963-'70	61	59	61	35	67
1970-'73	97	59	97	28	42

In the period prior to 1970 the cost of selling a house was rising faster than the general cost of living as expressed by the retail price index but the incomes of estate agents were not rising at a faster rate than the national average. In the three years from 1970 however house prices shot up and the absolute cost of selling a house not only rose far faster than the cost of living but incomes of estate agents rose much faster than average earnings.

The three years in question were exceptional. House prices since late 1973 up to the time of writing (October 1974) have remained static or fallen slightly in money terms and thus have fallen significantly in real terms.

In general the trend is for private dwellings to appreciate in real terms and accordingly the total income accruing to estate agents for a given volume of business rises faster than the cost of living, though in the long-run it may not exceed the rate of rise of incomes generally.

Unfortunately the value of these remarks is lessened by their being no index of volume of business in private dwellings nor any indices of volume or value of transactions in commercial property. Statements by representatives of the profession suggest that changes in the volume of business may be large relative to those usually experienced by other professions. During times of rising prices and sellers' markets less property is given to agents and more is sold privately. When it becomes more difficult to sell a higher proportion of the properties on offer are given to estate agents. The volume of business thus has a tendancy to move inversely with trends in prices. This adds weight to the view taken above that one should give less attention to exceptional years and more to secular trends.

Commercial business also appears to vary greatly in volume. This business is not important for the majority of estate agents but is very important for a small number of large specialised firms. There we however no official indicators of volume or value of commercial transactions. Unofficial assessments of rental values of office space tend to suggest that this has grown less fast than the price of private dwellings over the

last ten years in most parts of the country. Central London is on important exception however and is clearly a special case.

The same firms who deal in commercial property also earn important sums of money from valuations and surveys. In the absence of any reliable general indicators of commercial property values we cannot calculate any changes in income from this source. However, we may note that the scale of fees in operation is sharply tapered such that it is unlikely that incomes from valuing and surveying would for a constant amount of work be rising in real terms. Table 8 below gives the scale of charges for valuation as laid down by the Royal Institute of Chartered Surveyors and the Incorporated Society of Values and Auctioneers.

TABLE 8. FEES FOR VALUATION OF FREEHOLD PROPERTY

Value of Property	Percentage Fee
up to £ 1.500	1.5
£ 1.500 - £ 12.500	0.5
over £ 12.500	0.25

Source: Royal Institution of chartered surveyors; Professional charges.

6. Solicitors' Earnings

The remuneration of solicitors is heavily influenced by government action in that charges for certain classes of work are controlled by statuteand all charges are potentially subject to taxation, i.e. being reviewed by an officially constituted body to see whether they are 'fair and resonable'. No recent figures of earnings of solicitors are available but a great deal of information relating to the middle and late 1960's was provided by the Prices and Incomes Board. We shall first of all

summarize this information and then discuss the methods of charging of solicitors including some recent changes in these.

Table 9 below is reproduced from report no 54 of the National Board for Prices and Incomes; the remuneration of solicitors. It shows the earnings of solicitors and members of certain other professions for 1956 and for 1966; it also gives the percentage change in these earnings over the roughly ten-year period and compares these with changes in average earnings of manual workers and salaried employees. The rise in retail prices over the period was 37%.

TABLE 9. COMPARISONS OF CERTAIN INCOMES 1956 - 1966

		1955/56	1966	Per cent increase
Solicitors				
Principals in private practice	mean	£2,678	£4,870	82
	medium	£2,212	£4,180	88
	lower quartile	£1,448	£2,640	82
	upper quartile	£3,348	£6,135	83
Employed in commerce and industry	mean	£1,720	£3,545	106
Employed in law firms	mean	£ 815	£1,630	100
Architects				
Principals in private practice	mean	£2,393	£4,102	71
	medium	£1,772	£2,996	69
Employed in private practice	medium	£ 802	£2,075	159
Employed elsewhere	medium	£ 941	£2,366	151
Doctors				
Principals in NHS general practice	mean	£1,975	-	90 (estimate)
Dentists				
Principals in general practice	mean	£2,182	£3,300	51

Table 9 continued.

	Per cent increase
Average weekly earnings of manual workers (Oct. 1955-Oct. 1966)	84
Average earnings of salaried employees (Oct. 1955-Oct. 1966)	86

Source: National Board for Prices and Incomes, report no 54; Cmnd 3529.

In the decade up to 1966 the earnings of solicitors in private practice rose by almost exactly the same amount as did the earnings of manual workers and salaried employees. Compared to other professionals the rise does not appear exorbitant. The earnings of employed solicitors (not subject to official controls) rose faster than the earnings of solicitors working in their own practice.

A later report by the Prices and Incomes Board showed that between the years 1966 and 1968 the mean earnings of solicitors rose by 10%. During the same two years the retail price index rose by 7.5% and the index of average earnings by 12%. Again there is nothing to suggest any excessive increase in solicitors' remuneration. There are no later figures available.

The work undertaken by solicitors can be divided into contentious (i.e. which may involve court action) and non-contentious. In principle charges for contentious work are regulated by Rule Committees of which there are one for each different type of court. The initial object of this control was to limit the costs which could be imposed upon the unsuccessful party in a litigation. Such costs determined according to

tne appropriate scale are known as 'party and party costs'. However, for a long time extra charges have been levied by many solicitors and it has been common to refer to 'solicitor and own client costs', these exceeding the party and party costs.

According to the second report of the National Board for Prices and Income on the remuneration of solicitors (Cmnd 4217) this practice of charging extra costs had become almost universal. And whilst such costs might be formally justified in terms of extra work over and above that strictly necessary it was clear that in the main they represented the informal revising upward of a scale of charges held to be out-of-date and uneconomic. That the charges were so viewed was further evidenced by growing numbers of solicitors who chose not to undertake county court work.

The National Board for Prices and Incomes recommended a substantial increase in the scale of charges for contentious business and expressed the hope that this would lead to a decline in the habit of charging above the scale. From our point of view the most significant thing here is the evidence of the difficulties that arise with imposed scales of charges. If these do not seem fair to practitioners then they either decline work (a far more drastic step than quoting a high price) or find ways in which to make supplementary charges. Given the personal-service nature of professional work and the infinite variety in the details of individual cases it would probably not be too difficult to provide a justification for such supplementary charges.

Of the non-contentious business of solicitors little is now controlled directly although there is still a requirement that charges be 'fair and

reasonable'. Prior to January 1st 1973 there was an official scale for conveyancing work. Although this was a tapered scale (charges rose by a smaller percentage than property prices) it did ensure that earnings from conveyancing work rose steadily over the 1960's. The National Board for Prices and Incomes found these earnings to be excessive and advocated a new and reduced scale of fees. The recommendation was adopted and a new scale was introduced in early 1971. It was however abolished as from January 1st 1973 and solicitors became free to set their own fee subject to this being 'fair and reasonable'. If a client objects to a solicitors bill for non-contentions work he is entitled to ask that a certificate be obtained from the Law Society stating what would be a 'fair and reasonable' fee for the work in question. Should the fee advanced by the Law Society be less than that originally asked by the solicitor the client is only liable to pay this smaller fee.

As an illustration of the many factors which have to be taken into account in seeking to assess what is a just fee it is worth quoting from the Solicitors' Remuneration Order of 1972. This, dealing with charges for non-contentious business asserts that solicitors should charge 'such sum as may be fair and reasonable having regard to all the circumstances of the case and in particular to -

(I) the complexity of the matter or the difficulty or novelty of the questions raised;

(II) the skill, labour, specialised knowledge and responsibility involved;

(III) the time spent on the business;

(IV) the number and importance of the documents prepared or perused, without regard to length;

(V) the place where and the circumstances in which the business or any part thereof is transacted;

(VI) the amount or value of any property involved;

(VII) whether any land involved is registered land within the meaning of the Land Registration Act. 1925; and

(VIII) the importance of the matter to the client.'

Detailed though this catalogue of circumstances may be it is still the case that what is fair and reasonable is and can only be a subjective notion.

In conclusion we would say that control of solicitors charges is not an easy exercise. Control already exists in one form or another but as the National Board for Prices and Incomes found in the late 1960's this was not necessarily effective. There is no evidence to suggest that solicitors' earnings have in the main been rising at a rate which might be considered excessive. If some control over higher earnings were desired however this might best be limited to the larger partnership (and it is generally here that the highest incomes are earned) and be based upon some restriction of profit margins. This possibility is developed further in the next section in relation to accountants' earnings.

7. Accountants' Earnings.

Very little can be said about accountants earnings and this for two reasons, accountants, almost alone among professions working in private practice have no official scales of fees. Charges are a matter for the individual or firm in question and the professional bodies neither impose nor recommend scales of fees. Secondly since chartered accountants, in common with most other professionals, cannot form limited liability companies, they are not obliged to publish their own accounts and thus

figures of earnings are not available. The professional Bodies have not published any information on levels of remuneration.

In general most accountants appear to charge for their services on a time basis and one would expect the range of hourly rates (for persons of different experience and qualification) to move both with changes in the cost of living and with the supply of and demand for accountants services. In recent years the impression given by various pronouncements by practitioners is that the demand for accounting services has grown rapidly and has permitted a steady increase in earnings. Various press reports confirm this impression though reliable figures are hard to come by. A report in the magazine Accountancy Age in August 1974 suggested that earnings were rising in the second quarter of 1974 at annual rates of between 18 and 36%. The same report found a very wide dispersion of earnings amongst accountants: average earnings of accountants in the 40 - 44 age group were reported to be £ 4.165 but the difference between highest and lowest salaries was £ 6.500.

The recent increase in the demand for the services of accountants and the resulting rise in accountants earnings have led to a large increase in the numbers entering the profession. In time this may be expected to moderate the rate of growth of earnings. Figures supplied by the Institute of Chartered Accountants of England and Wales as to their current membership and given below in table 10 indicate a rapid expansion of the number of practicing accountants in the near future.

Very little is known definitely about accountants' earnings but it should be pointed out that accountants are less protected in their work than other professions. This may explain the absence of any official

enquiries into accountancy. The only work reserved by statute to qualified accountants is the audit of the accounts of public limited companies. For the rest the work is open to all and accountants are in competition for their business. Professional earnings may be expected to respond to market forces more immediately than in most other professions

TABLE 10. MEMBERSHIP OF THE INSTITUTE OF CHARTERED ACCOUNTANTS OF ENGLAND AND WALES

Members practicing as accountants	14.074
Members working in industry, commerce, etc.	31.573
Total	45.647
Total student membership	26.000

Source: Institute of Chartered Accountants of England and Wales.

It would clearly be difficult for any government to control the charges of accountants. The heterogeneity of the work done, the frequent uncertainty as to how difficult work will be before it is undertaken and the element of skill and experience attaching to individual practitioners would all make any detailed control very hard to operate. A possible line of approach would be to limit profit margins in the larger partnership. This would not be without its difficulties and it would involve the disclosure by partnerships of their earnings. It would also be inapplicable to sole proprietors and many small firms where any limitation on earnings would be more likely to reduce effort than charges. The highest earnings are generally believed to be in the larger firms and much of these are in the nature of profit from running an (unincorporated) business rather than from the practice of own professional skills. Some control of profit margins for larger firms

would be possible, it would effect the highest earnings, and it would have fewer complications than any attempt to draw up and umpose a scale of maximum charges.

8. Medical Professional Earnings

The medical professions include doctors (of whom there are several classes) dentists, opticians, a whole range of medical technicians, specialists in certain categories of medicine and hospital nursing staff. Examples of professions coming within these latter categories are radiographers, physiother apists, chiropodists and nurses. The reason for treating all of these disparate professions together is that nowadays in the U.K. the vast majority of members of all of these professions are salaried employees of the State - even if in some cases the word salary is not used as unbecoming to professional dignity.

In almost all cases the earnings of the members of the medical professions (apart from earnings from private practice) are determined by national bodies, for the most part Whitley Councils. These are bodies composed of representatives of the staff concerned and of representatives of the authorities. The earnings of doctors and dentists is dealt with separately by an independent body currently under the chairmanship of Lord Halsbury. This body was set up in 1971 and is similar to the review bodies covering the remuneration of members of the armed forces, senior civil servants and certain other special groups. It replaces a previous review body for the remuneration of doctors and dentists under Lord Kindesley which resigned in 1970 following the rejection by the Government of its proposed salary increases for that year.

The object of having Whitley Councils (there are separate councils covering most categories and grades of workers within the public sector other than the nationalized industries) and of having a special review body for doctors and dentists is to avoid direct political influence in the fixing of the remuneration of the employees of the government. However, public-sector employees cannot escape from the influence of official economic policy and in the past various awards recommended for medical personnel have been reduced or postponed by governments of the day. Conversely when particular groups of workers have protested sufficiently about their earnings special **ad hoc** committees have been set up to consider the alleged grievances outside the established machinery for fixing pay. The Halsbury Committee on the pay and conditions of nurses and midwives of 1974 is an example of such ad hoc committees.

It is clear then that there is no reason for members of medical professions to profit or to lose from inflation any more than other groups in society. Nor would there seem to be any difficulty in applying an incomes policy to them given that it is the state which is paying the salaries. Indeed in the past there has been a general belief that earnings of nurses and other hospital staff have been held down by incomes policies which have been applied to public-sector employees but not applied effectively to employees in the private sector.

Over the long-run doctors and dentists earnings have in most cases risen in line with or faster than average earnings. The following table is taken from the supplement to the British Medical Journal of 1970.

TABLE 11. PERCENTAGE INCREASES IN DOCTORS' REMUNERATION 1960 - 1970

Average General Practitioner	103%
House Officer (first year)	141%
Senior House Officer minimum	94%
" " " maximum	112%
Registrar minimum	86%
" maximum	106%
Senior registrar minimum	84%
" " maximum	71%
Consultant (basic scale) minimum	77%
" " " maximum	62%
Retail Price Index	46.7%
Change in Average Earnings (Index of Average Earnings adjusted back from 1963 by reference to indices of average wages and salaries)	87%

More recent surveys of doctors' earnings have been able to make use of the recently introduced new earnings survey which gives details of earnings over a wider range than hitherto available. The fourth report of the Review Body on Doctors' and Dentists' Remuneration using statistics obtained from the Inland Revenue, from its own enquiries and making use of the new earnings survey was able to compare movements in medical professional salaries over the period 1960 - 1972 with movements in salaries of similar level. The technique was to calculate the percentile of income distribution in which particular grades of doctor or dentist figured in 1972, and then to compare movements in the earnings of each grade of doctors and dentists with movements in that percentile in the period since 1960 - 1961. Table 12 below gives the findings of the review body.

TABLE 12. MOVEMENTS IN DOCTORS' AND DENTISTS' EARNINGS COMPARED WITH CORRESPONDING PERCENTILES (Indices 1960 - 1961 = 100)

	Earnings April 1972		Corresponding Percentile April 1972	
	Amount £	Index	Percentile	Index
House Officer (minimum)	1,749	259	50th	222
(maximum)	2,025	245	50th	222
Senior House Officer (minimum)	2,280	207	25th	223
Registrar (minimum)	2,634	211	25th	223
Senior registrar (minimum)	3,120	208	10th	216
(rtn point)	3,714	206	10th	216
Consultant (minimum)	4,836	190	2.5th	203
(maximum)	7,350	188	1.5th	200
(with c award)	8,742	188	1st	195
General Medical Practitioner	5,575	249	5th	216
General Dental Practitioner	5,050	210	5th	216

In summary we can say that the medical profession, or at least the senior branches of it, have seen their incomes grow very much in line with comparable incomes in recent years. The profession appears to have done better than many other professions over the same period. That it is a profession very largely remunerated by the State and not by private practice shows that official control over earnings does not necessarily mean that these will grow less fast than would otherwise have been the case.

9. Conclusions

Data on professional earnings is incomplete and it is impossible to get as full a picture as one would like of the changes in professional

incomes over recent years. The data is also very variable with at one extreme the comprehensive and regular information provided by the Royal Institute of British Architects about the earnings of its members and at the other the virtual absence of any information about the earnings of accountants. However, it has been possible to put together a substantial amount of information from different sources and to get an impression, albeit imperfect, of changes in professional incomes in recent years.

In the main, professional earnings have tended to lag behind movements in average earnings. The two exceptions would appear to be the medical profession and as far as one can judge the accountancy profession. The first of these depends upon the government for the greater part of its income and the second earns its income in a competitive market with only one small area of reserved business. In neither case then could one ascribe the rises in incomes to professional restrictive practices. Of the professions which do enjoy some degree of protection the solicitors appear to have maintained their relative income vis-a-vis other workers whilst architects, surveyors, and consulting engineers have seen their incomes rise less fast than the national average. Estate agents who enjoy no legal privileges whatsoever have seen their earnings as a body rise but this was largely due to an exceptional three years at the start of the 1970's.

Control over professional charges is difficult and as the example of solicitors shows is likely to be avoided. Any policing system to prevent avoidance would be very costly. Further given the range of services provided by most professionals any control over charges which was enforced would probably lead to some services being more profitable than others and to some practitioners declining to accept the less

profitable types of work. This would, in many cases, be serious. Any attempt at unit pricing would in general be impossible given the infinite variability of professional services.

There would seem to be three ways in which the state might seek to influence professional earnings without becoming embroiled in a mass of detailed and vitually unenforceable legislation. Firstly where earnings are derived from a scale of charges as in the case of the professions of the land the state could impose maximum percentage charges. This was done until 1973 in the case of solicitors' charges for conveyancing. A good case could have been made for some imposed reduction in estate agents' commissions in the early 1970's. This measure, although apparently simple, is far from foolproof. It is likely to lead to a growth of 'extras' being charged additionally to the scale fee rather like the wage drift phenomenon.

Secondly in the case of large partnerships of lawyers, accountants, and others one could apply some form of limitation of gross profit margins as has been done successfully with trade in goods. This would not be without its problems and would need careful definition of what was profit, hitherto undistinguished from income in partnerships. However, the modern large professional partnerships increasingly resemble large companies and much of the surplus available for distribution among the partners is more in the nature of a profit earned from capital employed rather than income from the exercise of the partners particular professional skill. There is some evidence of economies of scale in services which points to the highest incomes being earned in the larger partnerships. Also in some areas the larger firms have an influence over the fees obtainable by the whole profession. There would thus

be some hope that if one could influence their charges one would also affect the charges of others.

This line of attack is a possibility but it too is not without its problems. In particular it would be important not to apply such a drastic limitation of profits that all benefit of large partnerships was lost and in consequence there was a return to smaller firms.

Finally less immediate but more hopeful perhaps in the long run the authorities could examine existing professional restrictions and where these were found to be unnecessary make suitable changes. And if earnings were regarded as too high steps could be taken to increase the supply of resources into the profession. A tendancy toward such actions has begun in the U.K. in the last few years. If detailed official control over professional earnings is very difficult then at least one can try to get the market to work.

CHAPTER 9.

C O N C L U S I O N

In the last few chapters we have dealt with the way in which inflation has manifested itself in particular sectors of the economy, and with the way in which incomes policies - or lack thereof - have impinged upon the functioning of those particular sectors. However, we began this study with an account of the inflationary process from the point of view of the economy as a whole. In that introduction we stressed the macroeconomic nature of the phenomenon and also had a good deal to say about its international character in a world of fixed exchange rates. The latter point is particularly important in the context of the E.E.C. which is still aiming, albeit on a longer than originally envisaged time horizon, at establishing a monetary union.

It is vital that, when looking at the details of inflation as dealt with in the bulk of this study, the reader does not lose sight of the way in which the details fit together into an overall picture. We have seen hints of the way in which matters hang together in individual chapters, but it is worthwhile devoting a few pages of our concluding chapter to making the principal linkages that have emerged in our work more explicit. It will be convenient to deal with two sets of questions separately. First we will look at the way in which individual sectors are linked together from the point of view of the generation of changes in the overall level of incomes and prices; second we will discuss certain issues concerning the determination of the structure of relative incomes and prices, about the effects of inflation upon the distribution of real income that emerge from our work. Of course the two sets of questions are intertwined in practice, and we keep them separate here solely for purposes of expositional clarity.

From the point of view of the progress over time of the overall level of prices and incomes, the important linkages are those that lie between

particular markets and the fiscal-monetary system. As we have seen (Chapter 4), the effects of taxes on the inflation rate are to a degree ambiguous. Tax increases do seem to produce incentives towards wage increases and hence put upward pressure on prices from the supply side; but they also tend to dampen demand and hence exert downward pressure from the demand side. Be that as it may, a particular structure of taxation and government expenditure will imply a particular surplus or deficit in the budget of the central government, a deficit whose financing must have implications for the financial system. It is here that specific policies towards certain sectors of the economy impinge with particular force on the overall inflationary process. We have seen in Chapter 3 that there have been times when the banking system has been acutely embarrassed by high profits. This embarrassment has combined with a natural reluctance on the part of central government to see the interest rates at which it has to borrow rise to put downward pressure on interest rates. Such pressure has not of course kept rates from rising but they have not in recent years risen by nearly as much as orthodox economic theory would have led one to expect. Nominal interest rates have not, on the whole, been high enough to yield a positive real return to lenders for several years.

Now the two factors just mentioned are not the only ones putting pressure on interest rates. We have discussed (Chapter 7) the role of building societies in financing the purchase of owner occupied housing. It has, and remains, government policy regardless of political party to keep such lending rates low in the (as we have argued) mistaken belief that this will reduce the cost of owner occupied housing. But of course building societies must compete, at least on the margin, with other institutions for funds, so that it is impossible for their rates to be held down without downward pressure being exerted on the general level of interest rates. Policy towards wages and prices in the nationalised industries is also important here, for as we have seen in Chapter 5 the last two or three

years have seen this sector making losses, partly as a result of controls, both formal and informal, imposed upon their pricing policies. Borrowing by public corporations has not, as has been shown, been an important contributor to domestic credit expansion in Britain, but subsidies paid to them by the central government now make a substantial contribution to the central government borrowing requirement.

Now the conclusions to be drawn from all this are straightforward. Policies designed to keep certain costs and prices down have had consequences in the monetary sector because, as is well known, an expanding money supply is needed to relieve upward pressure on interest rates when government borrowing is increasing. One does not have to believe that monetary expansion is the sole cause of inflation to recognise the problem here. If one merely agrees that monetary expansion is one factor that puts upward pressure on the price level, then it is apparent that the policies which we have been discussing in the last few paragraphs have an inherent contradiction built into them. What might seem like a good way of holding prices down when looked at from the point of view of one particular sector of the economy turns out to have monetary consequences that will work in exactly the opposite direction when the linkages between sectors of the economy are examined.

Let us now turn to the question of the effects of inflation and such on income distribution. Here the links between the various aspects of the work reported above are much less obvious, but they do nevertheless exist. First, and most clearly, it is interesting that of all the professional groups whose incomes were examined (Chapter 8) that which most clearly had benefited from inflation and completely avoided restraining influences of incomes policies was estate agents. This stems directly from the house price boom of 1969-73 whose causes were analysed in Chapter 7. But of course estate agents were not the only beneficiaries of this phenomenon. As has already been shown existing owner occupiers received substantial windfall gains

during this period. But this has not been the only source of income redistribution in recent years. To the extent that nationalised industries have been subsidised to keep down their prices, this represents a redistribution of income towards their users, a redistribution which in the passenger transport sector (cf. Chapter 6) at least seems to have been regressive. Overall the picture is much less clear, but we have noted the view of Glyn and Sutcliffe that such subsidies have largely gone to increase profits in the private sector of industry.

Now incomes policies in Britain up to the mid-1960s did not have any particular distributional aims, but their more recent versions, in addition to attempting to control the overall inflation rate, have tried to achieve the subsidiary goal of attempting to better the lot of the lower paid worker.[1] Clearly, to the extent that the end product of certain policies have been as outlined in the last paragraph, this objective has not been fulfilled. Again, we see that there has been a certain element of self-contradictoriness about policy as far as its effects have been concerned, whatever may have been its intentions. However, there can be no doubt that one of the most serious social consequences of inflation is its effect on the distribution of income and wealth, and there can be little disagreement that government might reasonably have policies towards the effects of inflation on distribution, policies which have just as much right to the label "incomes policies" as do the wage and price control mechanisms, both formal and informal, that are more usually associated with the phrase. What form might these policies take ?

The second chapter of our study dealt with the question of measuring profit income in an inflationary environment, and concluded that inflation could severely distort the usual accounting measures of profit towards which incomes policies might be directed. But it is also true that taxation is based upon accounting measures of profit so that inflation must distort the

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[1] For a discussion of this see R.Ward and G.Zis: Manchester School, March 1973.

structure of taxes on profits as well. Moreover it is not just the meaning of profits, but of other categories of income that are affected by inflation. In short, the whole structure of taxation is distorted by inflation. This must affect the distribution of after tax income, and, if it is reasonable to presume that taxation codes have initially been drawn up in order to provide a socially desirable distribution of post-tax income, then inflation must be having undesired consequences. In an inflationary environment then, there is a strong case for so designing the tax structure that price level movements do not alter its real consequences. In short, it seems to us that an indexed tax structure would make a desirable component of an incomes policy designed not so much to stop inflation as to mitigate its consequences.

One could go further than this. We have seen how, as far as the overall control of inflation is concerned, the policy of maintaining interest rates at artificially low levels has been self-defeating. However, we have also noted that certain groups in the community - notably owner occupiers of housing - have actually been able to gain as a result of this policy. They have gained to a large extent at the expense of the small savers who make up the bulk of building society depositors who have had to be content with significantly negative real rates of return on their savings. Such small savers have thus lost as a result of inflation and a regressive redistribution has taken place. Again it should be possible to deal with this problem by making available to small savers an index linked security as an alternative outlet for their savings. The existence of such a security would not only help with a distributional problem produced by inflation but would also make some contribution to controlling the inflationary process. Private savings institutions would have to raise their borrowing rates to compete with such a security and hence would have to raise their lending rates. This would at least mitigate an important source of inflationary pressure whose influence we have already analysed.

It would be tempting to argue that similar index linking should be enforced by legislation on wage contracts and such, but we can see no case for doing so. In Britain, at least, wage bargainers are already free to make index linked contracts if they so wish. We can see no reason for compelling parties to a bargain to include in its clauses what they would not include voluntarily, but equally we would object to legislation preventing such clauses being included if both parties so wished. Now this is not the place to go into an extensive discussion of index linking. There is not space to do so here, but enough, it is hoped, has been said to show how this particular policy device is interlinked with the subject matter of this study.

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