

A KEYNESIAN APPROACH TO STRUCTURAL CHANGE

BY

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(A 'substantial piece of work' submitted for the first year progress exam.)

NOTE TO THE READER.

This is not what I had planned to submit as 'a substantial piece of work' for my first year progress examination and it has been prepared under protest in seven days. The present paper is an attempt to summarise into one fifth of the space a much more carefully thought out and better presented piece of work which gives a much better impression of what I have been studying so far and why I have reached certain conclusions - the bibliography from that work is included at the end of the present piece to show **that** I have been doing rather more reading this year than may seem evident from the compressed exposition presented here and also serves as a guide to useful references since pressure of time has prevented me from stating the precise origins of published ideas which I have used to support some of the arguments contained herein.

While some points have attained greater clarity in the process of condensation I am not particularly happy with the way other ideas come across when compressed and not fully substantiated as in the original work and a number of arguments have had to be completely omitted. I am still keen to submit the original work to any examiner who wishes to read it but I feel that it is deplorable that a university should be so badly run that a student should have to spend over a hundred hours of one week compressing a highly readable work to save a few hours of hard-pressed examiners' time when there is nothing in the regulations stipulating how long or short 'a substantial piece of work' should be.

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A KEYNESIAN APPROACH TO STRUCTURAL CHANGE AND THE CO-ORDINATION OF ECONOMIC
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This paper is divided into three sections. In the first part we suggest that the reason why Keynes came to such different conclusions about the behaviour of an economy when left to itself compared with his predecessors is that he explicitly or implicitly recognised four features of the real world that orthodox theorists had tended to ignore and fashioned his theory around the consequences of having these features. The four characteristics of the real world that we shall be emphasising are uncertainty, transactions costs, durable goods and human, mortal, economic agents. In part two we show that because these features are incompatible with conducting all economic activity through completely specified contingent claims contracts, models which assume free entry and perfect markets are unable to say anything about the co-ordination of activity through time and structural change in a production economy except that there will be extreme instability; something which we do not observe in the real world.

With orthodox neoclassical microeconomics thus seemingly incompatible with Keynesian macroeconomics we turn in part three to a more detailed consideration of the consequences of admitting our four Keynesian characteristics and find that while the real world will not usually be explosively unstable it may get itself into a structural disequilibrium. It may take many years for a country to realise that such a disequilibrium exists for it will only really become apparent when the country is unable simultaneously to enjoy full employment and a balanced pattern of international payments at the existing level of real wages. High real wages are not, however, the cause of the failure to adjust to changes in underlying conditions - real wages could have been much higher and the economy not at the mercy of the cumulative causation process had market forces been able to force firms in the economy to make active attempts to adjust to changing underlying conditions at the right time. Our contention is that just as in Keynes' model the power of market forces was insufficient necessarily to change the relationship between the interest rate and wages in a monetary economy and bring about full employment, so in our model market forces may be

insufficient to make firms adjust their patterns of production and techniques used to enable a community to enjoy the highest standard of living consistent with its objective economic circumstances. We claim that our theory of the origins of a structural disequilibrium is a Keynesian one because it is based purely on the recognition of the consequences of having the four Keynesian characteristics mentioned above. While we emphasise the role of the firm as the cause of trouble instead of money it will be shown that both of these features emerge and are able to produce disequilibrium situations only in economies where it is impossible to do all transacting via completely specified contingent claims contracts.

Since economics is supposed to be about the 'logic of choice' it cannot build models which assume perfect foresight and has to admit there is uncertainty and see how agents can make rational choices when they can never know in advance the full consequences of their actions. When there is uncertainty for an economy to satisfy demands through time in a pareto optimal way there must be some means of preparing for possible changes in the pattern of goods required so that agents are not surprised by the need to change the composition of output and do not have to worry about how others are reacting to this need. If it were possible to arrange transactions so that there could be no situation where agents were surprised by events then the economy could be said to be in general equilibrium through time even though the pattern of production is not constant through time. The device used by General Equilibrium theorists to suggest that such a situation could, in principle, be possible is the contingent claims auction...

Before any production takes place agents get together and arrange binding contracts to buy and sell various goods defined according to their physical characteristics, location in time and space and the state of the world. Thus I may agree to dig X yards of trench using Y tools on the M11 bypass scheme two miles north-west of Grantchester on January 1st 1979 in return for a certain bundle of goods, just as rigorously defined, if and only if it is not raining. I receive payment whether or not I actually have to dig the trench and can use the payment directly for consumption when it is delivered or I may agree to sell or rent out the goods with which I am paid if the state of the world at a particular

is such point/that I will not wish to consume them and will prefer something else which I also arrange to have delivered in another contingent contract. While at the end of the auction there will exist many contracts which could be implemented at any moment, only one set will be binding, depending on which state of the world occurs.

In this kind of model agents maximise their utilities subject to their budget constraints and they need four kinds of information to do this. They need to know the state of technology, their preference ordering over all possible goods, the set of relative prices at which trade is to take place and they need at least a subjective probability ranking of all possible states of the world. The auctioneer calls out different sets of relative prices until supply and demand balance in every market and only then is trade allowed and after this agents leave the marketplace and get on with the job of production and consumption according to the conditions specified in the contracts and the various states of the world that happen to occur. As production takes place no agents will be surprised by what occurs for the only uncertainty is about the state of the world and there are contracts to cover every contingency so given an environmental path of successive states of the world an agent knows exactly how well he will be doing and he has a subjective probability listing of how likely is each environmental path. (States of the world are defined as features of the environment which greatly affect economic activity but which are not themselves affected by the state of the economy. Thus if whether an earthquake occurred depended on how many times a train ran across a fault-line this would be included in the known production function data and if in all such cases economic events were decisive in producing an environmental feature there would be no uncertainty at all once dealings at the auction had been settled according to known technological relationships and a pattern of relative prices had emerged.)

The contingent claims model as it is usually set up (including the assumption of independent utility functions) thus enables all economic decisions to be taken purely in the light of relative prices as they are suggested by the auctioneer without agents having to worry at all about the transactions being made by others; there is no involuntary unemployment and the economy, given the

initial distribution of endowments always reaches a Pareto optimal point with everyone doing as well as they can given the objective economic circumstances. The trouble with the model is that it will not survive the simultaneous introduction of transactions costs, durable goods and mortal, human economic agents.

Firstly, if we allow for transactions costs and admit that the problems faced by agents are not known but have to be discovered then we can make no presumption that this would be the optimal way of organizing economic activity. Even if agents knew their own preferences and the state of technology they would still have to arrange contracts for all possible states of the world and would therefore have to have opinions on the subjective probabilities of the likelihoods of all possible states of the world, but if the universe is stranger than it can possibly be imagined this implies that the economy must consume an infinite amount of resources in ensuring that no contingency has been missed. (This also casts doubt on the notion that agents could know what they would like to consume in any situation). If the allocation mechanism is a significant consumer of resources it cannot be optimal to allow for every contingency, but if we do not allow for every contingency then we cannot have fully specified contracts. For example, if we leave out a set of contracts allowing for a meteorite to hit a particular factory but the meteorite does arrive then none of the fully specified contracts for a later date would be implementable for the expected output of the factory has been directly or indirectly written into all of the subsequent contracts.

Secondly, even if there are contracts for every contingency, where the states of the world are very hard to distinguish and there is uncertainty about the quality of goods at the moment of supply strategic behaviour by agents in a world of transactions costs will also lead to the breakdown of the system of fully specified contracts if there is no deus ex machina to pronounce on the state of the world and the quality of a good supplied. In the absence of a deus ex machina, if there was any dispute about the state of the world resolution would either have to be achieved after a search for further information (but this use of resources cannot be included in the contracts) or left to the best informed party. The best informed party, however, might, like the disputants have a strategic interest in which state of the world is proclaimed but if an incorrect

state is proclaimed no future contracts will be implementable. The same trouble arises where, even when the state of the world is known, agents act strategically and do not supply the specified goods - e.g. if I order a car but cannot tell initially that I have been supplied with a 'lemon' and accept it, I will not be able/^{to honour} my contract to supply a secondhand car of a given type in a particular state of the world. Where contracting is carried out on a once and for all basis suppliers have every incentive to act strategically for there is no fear of what will happen when contracts are renewed, but agents can only ensure that this has not happened by paying certain transactions costs.

Even if we assume transactions costs to be zero we cannot logically construct models which simultaneously contain durable goods and mortal, human maximising agents with ^{once and for all} contingent contracts because such contracting is only possible as a way of coping with non-economic (environmental) uncertainty if the objective economic data about preferences, technology and the size and distribution of endowments are fixed. While death can be catered for in contingent claims contracts birth obviously cannot since unborn agents cannot make their preferences known and when they arrive the size and distribution of human capital are changed. Agents will refuse to make binding contracts to buy now, for delivery in twenty years time, the labour services of existing agents if they believe that new agents entering the labour market in twenty years time would offer to supply services for less so the idea of a once and for all auction breaks down and transactions will have to be done in a continuing series of spot market auctions. Technical progress would cause a similar break-down of the idea of a once and for all auction of completely specified binding contracts unless there were an authoritarian dictatorship to force people to make and honour such contracts.

Once we turn the General Equilibrium model from a once and for all auction followed by production with no further transactions into a model of many openings of the market and periods of production it is no longer possible to say that agents will face only environmental uncertainty unless there are no durable goods to be carried from one period to another. This is unlikely to be the case for two reasons - firstly there is the question of divisibility, for the strength required of an implement incidentally makes it durable, while secondly, agents

will in any case have to make decisions about the allocation through time of their human capital and titles to natural resources. When durable goods feature in more than one auction agents can no longer be said to be exchanging a known disutility for a known utility when they sell their labour, even given their subjective probability ordering over possible environmental states (which, if they occur will affect the use values of any particular goods they happen to hold), because they can never be sure of relative prices at the next auction. In this case it will matter what other agents are trying to transact at today's auction, what will be their preferences at the next auction and what any new economic agents will wish to transact; current relative prices do not provide enough information for rational choice even if agents have the usually assumed information about their own preferences, technology and subjective probabilities of various environmental states.

When there is the risk that relative prices may change agents who do not wish to consume all of their wealth immediately will be unwilling to enter into contracts tying themselves irrevocably to a particular good to be delivered for consumption at a later date for later they may have acquired more information about the likely state of the world during the consumption period, and even if they do not, relative price changes, if they anticipate them correctly, may enable them to obtain the required goods at less cost. Thus because a decision to refrain from consumption today is not a decision to consume anything in particular in the future there will be a demand side deficiency inhibiting the use of futures contracts at each auction and decisions to invest in equipment to supply goods in following periods are thus taken before the decisions to demand anything in particular are reached.

While changing populations and technical progress rule out a once and for all auction, as long as new inventions or agents become economically relevant over a finite period which is known (e.g. a day or a week) it would be possible to conduct activity through fully specified contingent claims contracts to cover the environmental paths that could be taken by the economy in the period between, say, the appearance of one vintage of a commodity and the next vintage, as long as transactions costs were zero. Such an economy would differ from the usual

General Equilibrium model in only one major respect - since machines may cost more than any one individual agent can afford in one period (since through our assumption of durability we admit indivisibility), unless they are purchased there by teams/will have to be loans made by other individuals to be repaid in subsequent periods and there will thus be the possibility that bankruptcies will occur.

Like the once and for all model the multiple auction model of the co-ordination of activity through contingent claims contracts breaks down when transactions costs are introduced. Firstly agents cannot be assumed to have a subjective probability ranking over all possible outcomes of environmental states or even economic features such as prices in the future - uncertainty exists in the sense used by Keynes of being impossible to reduce to suit the probability calculus and make the present values of various outcomes comparable; we simply do not know. Secondly transactions costs affect the ways people devise to try to get round the problem of relative values changing in an uncertain way between one transactions period and another. In particular they lead to the development of two features of real world economies that have no rationale in a zero transactions costs world, namely a commodity functioning as money in payments and institutions that we would recognise as firms.

Agents who are uncertain of their future needs and who do not wish to consume all of their wealth right now have to choose how to hold their ~~wealth~~ wealth in a way which reduces the risk of it losing value relative to the unspecified commodities they will later wish to consume without requiring them to pay the enormous transactions costs that would be involved in constantly watching and speculating on relative price changes and adjusting the composition of their portfolios. Whenever we hold a portfolio for a finite period we always run the risk that transactions made at the beginning of the period will not be reversible at the end of it because of relative price changes and if there are not frequently massive discontinuities in price movements the chances for gain/minimisation of loss will be greater the more often we can enter the market and re-arrange our portfolios. There will be a limit to how often we can do this before the certainty of transactions costs to be paid exceeds the anticipated gain from re-arranging our portfolios. To help overcome further the clash between reducing risks and transactions costs economies

evolve the twin features of firms and the institution of money payments.

Let us take first the origin of the firm. When there is no basis for 'rational' choice the hirer of labour always faces the risk that a completely specified labour contract lasting over a finite period will be inappropriate to meeting his objectives because conditions may change during the period - relative prices of final output may change, for example, so the producer would prefer to change his pattern of output but he cannot because the labourers have been contracted to perform a particular physical task; or production may be hampered by changes in the state of the world. To reduce the risk that the value of a hired labourer will be lower than hoped the hirer could hire his workers at more frequent intervals so that the perfectly specified contracts can more nearly match what he wishes to do given the set of relative prices and the state of the world, but there will come a point when the transactions costs of such a policy exceed the advantages he expects to gain through shortening further the duration of completely specified labour supply contracts. Beyond this point he will gain by rejecting completely specified contracts in favour of loosely specified contracts which give either party the right to terminate at a certain notice and give the hirer some discretion in what he asks the worker to do (while the worker may have some discretion in deciding how he will carry out the orders).

The characteristic feature of a firm is not the physical combination of factors associated with it but the fact that it is an organization where complete specification of tasks through contracts is replaced partly by the use of discretion by agents at various levels in the hierarchy. When there are transactions costs in using the market mechanism longer, imperfectly specified contracts (where managers direct instead of market prices) are a more efficient way of organizing activity than short-lived completely specified contracts. The example of the shop assistant may be used to show that the arrangement benefits the worker as well - while the worker is not sure what physical task he will face at any point because customers arrive at infrequent intervals and in varying densities he does not have to go looking for a new job every time business is slack and does not leave when the shop is crowded because he believes it will not be worth searching for an alternative occupation offering higher remuneration for the same effort. Once

we view the firm as an organization where the hierarchy supercedes the price mechanism we should not avoid a consideration of how decisions are taken when contracts are loosely specified. Neoclassical writers tend to ignore this point and assume that market forces automatically force a firm to behave in a particular way but in our third section we will show that because a firm is an imperfectly specified organization in a world of uncertainty and transactions costs its behaviour conforms to no predetermined pattern.

When workers agree to supply labour in an economy where production takes time there will always be the risk that if they are paid in the commodity they produce, when payment takes place at the end of the production period the relative value of the commodity may have fallen and they will thus try to arrange contracts that reduce this risk, for it is one that should be borne by the entrepreneur who otherwise carries no risk since he does not have to sell the final product. Payment in terms of final product is also inconvenient for a worker when he is trying to decide what job to accept for unless there is a numeraire good whose value in terms of goods in general may be presumed to be reasonably stable between contract renewal point, the worker would need each time to compare the return from a job with a basket of all other commodities calculated afresh by looking at the pattern of all relative prices (and then he still faces the first risk once he completes a contract). Both of these factors cause a pressure for the development of a system of payment in the form of a commodity not produced as part of current output. Firstly workers can reduce the risk of loss through a fall in the relative value of goods in which they are paid by demanding payment in terms of a basket of goods in general, but because of the costs of arranging to supply these goods as payment through forward purchases entrepreneurs will prefer to make payments in only one kind of good if it is possible to find one which has a predictable value relative to the value of output in general. Workers will already be using such a good, if one exists, as numeraire in calculating the values of various jobs at any point in order to reduce the number of relative prices they have to consider so such a method of payment will be mutually acceptable, especially if it reduces carrying costs, given that producers trying to offer payment in the actual good produced will find it harder to attract workers.

In general the kind of commodity acceptable as a means of payment will be a non-reproducible good with low carrying cost so that an increase in demand for it cannot, by causing an increase in its production, change its price relative to goods in general. For a non-reproducible good to be suitable wages must be relatively sticky in terms of the money commodity so that a tendency to over-full-~~of~~ unemployment does not lead to a wild rise ~~of~~ fall in the price level in terms of money. For example, suppose we start in full employment equilibrium and there is then an increase (fall) in demand for money leading to a rise (fall) in interest rates and a tendency to unemployment (excess demand for labour), then if the actions of workers in the labour market are insufficient to change the real wage to its new equilibrium level there will be a collapse (explosion) of the price level leading to bankruptcies due to the increased burden of fixed money debt payment obligations and the collapse of monetary institutions (the failure of the existing currency or greater transactions costs as contracts are made at more frequent intervals).

Having shown that when there are transactions costs and uncertainty in the sense of Keynes the desire of agents to avoid complete commitment to fully specified contracts for the supply of labour of a particular physical kind or particular physical goods whose value may fall relative to other goods leads to the development of firms and money we conclude this section by showing why Keynes only felt it necessary to discuss unemployment in a monetary economy. In Keynes' model what matters is not the physical nature of the money commodity - it could be money as we know it, titles to land or old masters or rare postage stamps - but the fact that it is a non-reproducible good which is used in the remuneration of workers rather than their current output. Suppose we start at full employment and there is a shift in liquidity preference - people feel it is safer to hold particular non-reproducible goods to avoid the risk of loss of value. In equilibrium all goods must offer the same yield (return less carrying cost plus liquidity premium) but one rate of return will rule the roost - this will be the rate of return earned on holding non-reproducible goods. If people expect to earn 10% by holding land for a given period it makes no sense to use their resources in the production of new assets to earn only 9%, but if at least 10% can be earned

new assets will be produced.

The increase in liquidity preference causes a rise in the rate of interest and threatens to choke off expenditure on the production of new assets at the existing real wage. While the rise in the rate of interest may come about due to a flight into a non-reproducible good which is not being used as money involuntary unemployment will only occur, with flexible wages, if workers are not paid in the form of current output divided up in an agreed way. Suppose I work in a steel mill and have been paid X tons of steel a week for my labours but now the interest rate has risen my employer tells me that he might as well stop steel production and get into land if he can only earn 9% on additional expenditure in the steel mill. On hearing that people in other industries are in similar difficulties I offer to accept fewer tons of steel a week as payment. A new bargain is reached where the output of the steel mill is as before but of the steel produced I get only Y tons a week, while the rest is divided up to give the employer a 10% return on his additional expenditure and pay for other inputs by barter at agreed rates of exchange. If these adjustments take place immediately relative prices adjust in the ~~NEW~~ true neoclassical manner with profits going up and wages going down and no unemployment will emerge. Decisions by workers to increase saving from current income cannot cause unemployment in a barter economy for workers are initially paid in the commodities they produce and while after payment their choice of portfolios for holding their wealth may affect interest rates, wage flexibility will, as we have seen, lead to an adjustment of relative prices and thus employment will be maintained.

Where workers are paid in money there is no presumption that they can necessarily reduce their real wages to make continued full employment possible by accepting cuts in money wages of any magnitude because a cut in money wages leads to a fall in aggregate monetary demand and hence in the price level. One price relative is wrong - that between money today and money in the future - and the price mechanism, even with all other prices perfectly flexible, cannot correct this. To restore full employment requires an increase in confidence or the marginal propensity to consume if the interest rate does not come down. Reductions in money wages, which lead to a fall in the price level, reduce the transactions demand for money but although more money is available for speculatio

this need not lead to a fall in the interest rate at all or to the right rate quickly enough because the rate of interest is determined by expectations rather than objective economic data. As long as the interest rate is wrong money wages flexibility can never be right and their ~~flexibility~~ when a tendency to depart from full employment appears may merely lead to wild swings in the price level and the destruction of the monetary system and the loss of the benefits of transactions cost reduction that it offers. For Keynes rigid money wages were a policy prescription rather than an assumption - flexibility is not necessarily desirable in an uncertain world.

The arguments of this section may be briefly summarised - when the world is characterised by uncertainty, transactions costs, mortal, human economic agents and durable goods it is neither possible nor optimal to organize economic activity through completely specified contingent claims contracts and transactions have to be confined to spot markets where existing goods may also be re-sold. Because there is uncertainty about relative values in future and there are transactions costs agents will seek to hold their wealth in the form of assets that they do not ultimately intend to consume and will arrange to be paid in a commodity functioning as money. In such a world interest rates may suddenly become 'too high' for full employment at the existing real wage without there being any change in objective economic data, but the use of a non-reproducible asset as a means of payment prevents even perfectly flexible price movements from reducing the real wage and thus involuntary unemployment may occur.

When contingent claims contracting is ruled out through the existence of our four Keynesian features the economy will never be in a General Equilibrium through time, with no agents being surprised by events and always content with what they are doing, except purely by chance. In a spot market economy there are several reasons why the chance to make a profit through a change in activity will be an inherent feature. Firstly, durable goods purchased in previous periods without full knowledge of future patterns of demand may be inappropriate because agents change their consumption patterns from period to period even if their sets of preferences do not change (e.g. because of indivisibilities). Secondly, the size and age structure of the population will change and there will be

unexpected technical change (note that the life of many assets may exceed that of the average household). Thirdly, even if one and two do not operate, unexpected states of the world will be occurring. Fourthly there is the problem revealed in the Cambridge Controversies in the Theory of Capital - for there to be a general equilibrium the prices of existing capital goods must equal the costs of producing new examples of such durable goods and there is no reason why this should be the case (see P. Garegnani "A Problem in the Theory of Distribution From Ricardo to Wicksell" - Ph.D. in U.L.) and hence there is no reason why the rate of return earned by people who happen to be holding a particular existing capital good should equal the average rate of return. In this case in each period the best one could hope for is a curious form of hybrid equilibrium with agents doing the best that they perceive they can do but no unique rate of profit.

Scope for structural change will therefore continually be appearing in a spot market economy but if in such an economy there is perfect competition (an infinite number of producers) or even just general competition (more than one producer) with free entry and no collusion then an economy relying purely on market signals will have no tendency to reach any form of equilibrium whatsoever. Neoclassical theory does not survive the transition from the logically questionable world where the four Keynesian features are assumed not to exist to the Keynesian world where they do. It is our contention that Neoclassical theory, with its policy prescriptions that perfect mobility and free entry are good things and that market imperfections and restrictive practices are unequivocally bad, can say nothing about the economics of structural change and the co-ordination of activity in general in a spot market economy and therefore cannot be joined in a synthesis with Keynesian economics. Let us examine the reasons behind this powerful claim...

When there are only spot markets structural adjustment can only take place after a lag in which market signals reveal where production should be increased and where it should be cut back. The nature of the signal is that a difference appears between the price at which the commodity sells today and the current cost of producing the commodity. If the current price is above the current cost of making the product then there is an incentive to enter the industry if it is

felt that this is not just a transitory phenomenon of leave the industry if prices do not cover variable cost and avoidable overheads. If there is perfect competition each producer will have no worries about the shape of the industry demand curve for his contribution to output is so small that he can sell as much as he likes at the going price and buy inputs at their going prices. The trouble is (and this is why it occurs whenever there is more than one producer) that apart from the costs of machines ordered today and any futures contracts for goods to be delivered when the plant is in operation all the prices he needs to know are future prices but these are not known; all he can observe are the present prices of physically similar goods. The future prices will depend on the amount of complementary and competitive investment undertaken by other producers but if he believes that all know of the profit opportunity then he has no basis for any price expectations whatsoever - the amount of potential competitive investment in any market is unlimited no matter what assumptions are made about returns to scale.

Where there is free entry and potential profit opportunities are generally known the investment decision becomes a particularly extreme case of the oligopoly problem which may sound a rather novel proposition to anyone who has been taught that the existence of many sellers eliminates the problem of indeterminacy. The plans of his rivals will not be affected by whether our particular infinitely small producer enters the market or not but this fact does not help him to forecast the amount of competitive supply that his rivals will collectively put on to the market. The theory of games can offer ~~no~~ no way out of this impasse unless we abandon the assumption of no collusion or postulate imperfect entry due to ignorance of the state of costs or production techniques and also decreasing returns to scale. Only when a producer has this sort of information can he try to work out what is the maximum harm that the competitor firms, whose plans he does not know can do to him, and arrive sometimes at the conclusion that this is less than his complete ruin (and their's). When there is free entry an economy always faces the classic 'prisoner's dilemma' problem for when a profit opportunity appears it will lead to a glut and universal ruin if all try to take advantage of it, but if this is realized by all and nobody enters the market then the profit opportunity

is still there for the taking.

It appears to be a general problem when we deal with a private enterprise economy where activity is not co-ordinated by fully specified contingent claims contracts that unless we allow for some imperfections we cannot say anything at all about the amount of investment that will be done in any period and cannot explain why there is not a rush to monopoly in each industry so long as we assume that firms know fully their own production possibilities and can never improve their performances to stop the growth of the lowest cost firm. The writings of Mrs Robinson and Chamberlin were supposed to have provided a solution to the question raised by Sraffa in 1926 - that if there could be no technical barrier to increasing returns to scale why was every industry not monopolised? - but since both authors assumed free entry they could only 'solve' the problem and have increasing returns without monopoly by either fudging their arguments or by ruling out any possibility of industrial analysis. In Mrs Robinson's "Economics of Imperfect Competition" firms produced a homogeneous product and there was free entry so there was absolutely no justification for her assumption that since firms were not infinitely small they faced downward sloping demand curves, which then made possible the neat tangency solution while sidestepping the oligopoly question - firms have no ability to raise their prices above the prevailing level without losing all their customers unless there is ignorance for no rational consumer would buy from a producer who offered an identical product to another firm's but at a higher price. In Chamberlin's monopolistic competition theory the products of an industry are not homogeneous but there is free entry so we can only have downward sloping demand curves if every product is defined strictly with reference to physical characteristics and location but this precludes any meaningful industrial analysis. (If, in the car industry there was free access to building cars physically the same as Fords then in the long run Fords would have no ability to raise their prices without losing all their customers - they would face a horizontal demand curve.)

Thus if there is no collusion and more than one firm in an industry with each firm facing a horizontal demand curve for its product because of actual or potential production by rivals then to prevent monopoly or make the size of any firm determinate we must somehow introduce rising costs to limit the size of the firm to below

the total output of the industry. We cannot do this through technically decreasing returns to scale or by input prices being bid up by a firm as it tries to buy more - if anything it is likely to get quantity discounts - so the only solution appears to be to postulate Penrose-style problems of getting managerial teams to work efficiently but these difficulties will go away in the long run (when there appear even to be economies of scale in management through the use of the multidivisional structure headed by a policy-making general office). Since even managerial factors appear to impose no limit to the size of a firm in the long run the only way to develop a plausible theory to explain the real world observation that industries do not usually appear to be monopolised by the first firm to enter the field (taking industries in the sense of Marshall rather than in the almost meaningless sense of Chamberlin) is to postulate the continuing ignorance of consumer (to get downward-sloping demand curves and hence the tangency solution in the long run) or take the road suggested by Downie and suggest that one-time lowest cost firms let things drift and are overtaken for a time by previously poorer performers who manage to improve their performances through rationalisation.

Downie's explanation is completely incompatible with the orthodox theory of the firm for it rests entirely on the consequences of ignorance and transactions costs - production functions are imperfectly known and labour contracts are imperfectly specified. The implications of this are discussed further in the third section but for the present we merely point out that rationalization is excluded from the neoclassical theory as is the taking of a quiet life (until the monopoly stage has been reached) by its implicit assumption of a taut economy. The assumption that there is no slack in the economy is necessary to enable general predictions to be drawn, but this means that there is a paradox that while the economy as a whole produces a surplus no individual firm can consume any of it; every firm has always to perform at the peak of its form (hence the assumption of no scope for rationalisation) in the face of competition for in spite of society's surplus it is only just getting by and to put one foot wrong would be its undoing (hence the assumption that as long as there is not monopoly firms cannot take it easy and let things drift). While we would wish to emphasise that whenever there are uncertainty and transactions costs there will be slack, it is also

important to see that if we can suppose we have not yet reached the monopoly situation - and there is no reason to expect this in the absence of consumer ignorance or Downie's innovation process - then we must recognise that neoclassical theory has failed to notice the implications of trying to have a taut economy with necessarily perfect markets (even assuming away our prisoner's dilemma investment problem) in a world where there is a deficiency of forward markets. We illustrate this problem by showing what would happen if firms suffered lapses in performance in a world where everyone was an avid reader of Consumer Association publications and where capital markets would not tolerate poor financial performances.

Economists who argue in favour of strong competition on the assumption that the fear of being knocked out of business is supposed to concentrate the mind wonderfully, like hanging, and that firms would therefore always operate on peak form and if less profitable firms are observed these are then considered to be run by incompetents and their loss does not matter since they will be replaced by organizations run by more vigorous entrepreneurs. Poor profits do not necessarily indicate bad management and a lapse in output quality - a firm may have not had the luck to be first with an innovation, or it may itself be very efficient but be let down by the failure of its suppliers or by its major customers' incompetence if it supplies an intermediate good. A single divergence of a realised outcome from the most probable might not be evidence of bad forecasting if there was insufficient information for objectively rational decision-making. The management of a company may be doing the best that can be done given the fossils of investment decisions of previous management teams and may have used marginal units of capital funds very efficiently but be unable to prove this without cost owing to the highly aggregated nature of company statements. If recuperation from reserves is not possible in a taut economy there will be widespread bankruptcies unless the capital market is sufficiently imperfect to give entrepreneurs a second chance to prove they are not poor managers and lack forecasting ability. The likelihood that business plans will be falsified however good the quality of management is particularly high in a Keynesian world where the expenditure of consumers may depend not merely on their ability to buy but also on their willingness to replace durable goods that they do not keep to maturity (i.e. confidence should

figure in the consumption function as well as in the investment decision - there is no sense in buying a new car today which could only be ~~traded in~~ ^{traded in} at a loss if to make the purchase would use up most of your liquid assets and you fear you may lose your job before you can build up new reserves.) In a taut economy where the capital market will not give firms a second chance, firms which falter, for whatever reason, are liquidated rather than restored to health and notwithstanding the question of set-up costs of new enterprises the absence of continuity and order in the ownership and control of resources would involve great social cost.

If firms have no slack to take up and the financial markets will not give 'failing' firms a second chance then the only way we can expect to get reasonably orderly behaviour and continuity in activity when firms fall behind in terms of quality due to not being first with a new vintage is to introduce slack on the side of the consumer via assumptions of goodwill resulting from ignorance leading to inertia. Just as to get orderly adjustments when profit opportunities emerge it is essential that the opportunities are only known to a limited number of firms with a limited ability to respond, so for competition to work effectively and lead to a recuperation by firms who are not first to introduce a product it is generally best to have a mixture of alert and inert customers. The alert customers, through their withdrawals of purchases or letters of complaint, provide the signal that something is wrong while the inert customers keep up a large part of the revenue and provide time and the means with ~~which~~ to correct things. If all customers were fully alert to relative quality declines firms would be liquidated before they realised that anything was wrong, much less had time to do anything about it. In a world of perfect markets the only explanation for the continuing purchase of a product in the face of a known quality decline is that the consumer fears a further loss of utility if to withdraw his purchase leads to the firm going bankrupt and his becoming unable to purchase a second of the firm's products (or a duplicate made by another firm) on such favourable terms. *(like dilemma of banks in property boom collapse)*

We pointed out in the first section how Keynes argued against the desirability of perfect labour markets in an uncertain world and Davidson (in a comment on Friedman's monetary framework in the 1972 Journal of Political Economy) has argued

that Keynes also seemed to be opposed to freely floating exchange rates in an uncertain world where traders are unlikely to be matched and there would be the risk of destabilising speculation or wild swings in exchange parities which would hinder international trade and domestic price stability. The arguments of this second section of our paper appear to show that in a world of spot market transactions and deficient futures markets the Keynesian argument that perfect markets and perfect flexibility are not necessarily desirable appears to have much more generality than even Keynes dared to suggest. In questions of structural change imperfect mobility may not directly aid adjustment to the optimal position, but perfect mobility would make any form of orderly adjustment impossible, especially when coupled with perfectly informed consumers and a capital market which would not give a second chance to entrepreneurs unable to prove that their ineptitude had not been the cause of below average profitability. Where a profit opportunity is known by some entrepreneurs who are able to act upon it they will only be willing to do so if they can assume that most other agents are ignorant of it and that the others who know about it are only able to act to a limited degree. Unless imperfections are put in the model so that it is not a picture of a taut economy we appear to be unable to say anything at all about reasonably orderly structural change and the workings of the competitive process in a way which does not seem to lead to monopoly in every industry - one must either use the complete Arrow-Debreu model with equilibrium produced via complete contingent claims markets (which, as we have seen, are logically questionable and cannot handle two of the main causes of structural change; population changes and technical progress) or no neoclassical model at all in the analysis of these particular issues. If we abandon the taut economy model then we are discussing an economy containing slack and in this case market forces can never be guaranteed to lead to a generally predictable response to a change in circumstances. When we recognise that to make the orthodox models work we must introduce certain degrees of imperfection (e.g. the right mix of active and inert producers and consumers or an optimal rate of willingness of the capital market to give entrepreneurs more than one chance) we appear to fall into precisely the difficulty that neoclassical economists accuse the behaviouralist school of having - the models give a picture of the

texture rather than the direction of the economic process and to know the direction one has to consider each case separately and thus risks becoming largely descriptive.

As a bridge to our final section we comment on the state of mainstream thought on the economics of structural change even if one could assume the above difficulties did not exist. In fact there appears to have been very little written about the subject at all. This is probably because it has been viewed as an area of investment theory which did not warrant separate study...when the pattern of demand changes or new products and techniques appear investment opportunities will appear in certain industries while other industries will tend to become unprofitable and decline with workers being released from the latter to the former as it becomes no longer viable to employ them on machines even with an opportunity cost of a low scrap value. The products of an industry, of indeed of whole industries, can be viewed rather as trees in the whole forest of economic activity; they grow and reach maturity and may then decay, with their remains - workers, factory sites and scrap - being used by the newly growing industries which by offering more technically advanced and relatively cheaper products have caused the decline of existing products. Incomes would obviously grow more rapidly where there was the most rapid transfer of resources between products but in any case the transfer would eventually take place, being delayed only by irrational preferences, barriers to factor mobility (e.g. council housing policies) or market imperfections such as patents. The invisible hand would thus eventually do its job so there appeared to be no need to develop any particular theory about while it might fail altogether, although it might be helpful to develop some policy measures to speed up the transfer of resources - such as the 1959 Cotton Industry Act or labour retraining schemes.

When applied to an open economy in a world of uncertainty the orthodox approach, insofar as we can discern it, appears to have grave deficiencies. It makes the tacit assumption that newly favoured products causing the decline of old products are being produced

in the same country as the declining products and that they would be in elastic supply as long as resources were being released from the declining industries. The second tacit assumption is that it does not matter when the transfer takes place - a slow transfer will not lead to a fundamental disequilibrium

with ever mounting structural unemployment with the paradoxical requirement that although real wages are not as high as they could have been they must be reduced to correct the problem (as Mrs Robinson says: The hidden hand will always do its work, even if this has to be by strangulation) - the market mechanism will ensure that it does take place at the optimal time given the limitations imposed by barriers to mobility and imperfections. When there are economies of scale and uncertainty (about which products will appear and when and about learning by doing advantages in production) there will be considerable scope for the working of the process of cumulative causation suggested by Professor Gunnar Myrdal - it will matter a great deal when a country's firms begin to produce a new product. If you cannot be first in the field it pays to enter as soon as possible before first movers get cost advantages due to learning by doing, quasi-rents to plough back into the development of a mark two model and customer goodwill due to the proven success of their model. The late entrant will need to begin production on a very large scale to get low costs in a market which is already being saturated, will need to advertise on a large scale to show why his product is preferable to the several existing designs and may in any case be rather late to jump on the band-wagon if the first-movers have another new product concept on the way.

With a given money wage and exchange rate, if the first-movers happen to be overseas rivals the firms in a country producing mainly older vintages of products will be at a severe disadvantage for their profits on existing lines will be squeezed, limiting their scope for investment in fixed capacity and product development. If only a minority of the country's firms are among the first movers inadequate access to finance and Penrose-style managerial difficulties may prevent them from expanding quickly enough to occupy a large share of the market in the new product and thus/stop the country from becoming a heavy net importer of the product. Once it has got behind in this way industries producing the old vintages in the country will begin to be knocked out faster than new capacity is being created. A reflation will not solve the problem because unless relative prices are changed (through cuts in firms' labour costs, import controls or devaluation) ~~much~~ much of the extra purchasing power will leak through the balance of payments to pay for imports (which are likely to be in more elastic supply than home-produced new vintages) rather than raising domestic profitability to

a high enough level to permit re-equipment and product development.

The need to reduce real wages and increase the share of profits to avoid structural unemployment whenever a country is not among the first in the field with a new product vintage (in the limit the first) will be mitigated the less taut is the economy. As long as firms have spare funds for investment, or can obtain them by reducing costs on the threatened lines of production, and can perceive the superior properties of foreign products more readily than their consumers they will have scope to stage a recovery without their workers having to accept voluntary cuts in money wages or the government having to cut real wages by VAT financed wage subsidies, a real effective devaluation or import controls (which may raise the total output of the community but will only permit more investment if they raise the share of profits). If firms operated in the taut market situation implicitly assumed by orthodox theory there would be a strong likelihood of frequent fluctuations in real wages (or at least their rate of growth) or high structural unemployment if innovations were not randomly distributed and the all-pervasive cumulative causation process is likely to ensure that a random distribution does not occur.

In this final section we suggest a very simple theory of the origins of a structural disequilibrium which fits perfectly into our view of what Keynesian economics, considered as a distinct approach to the subject in general, is all about. Instead of using the idea that the use of money as a device for making wage payments and contracts while economising on transactions costs opens up the possibility that market forces may be unable to bring about a correct configuration of relative prices, we have as our maverick feature the firm, viewed as an organization which does not necessarily have to react immediately to changes in underlying economic conditions.

It is our contention that in an uncertain world firms will tend to operate with a certain amount of slack which is inherent rather than due to a policy choice made by firms to take a quiet life. This slack may be taken up when underlying conditions change so that the firm can stand a chance of adapting actively to these conditions before the cumulative causation process takes hold. In this case no structural problem emerges and real incomes do not have to be reduced during the transition. Slack may however be used to cut costs in current activities

so that it may even appear worth putting more investment into these activities if firms fail to perceive that they face an ongoing increase in their rivals' competitiveness rather than a once and for all shift. The longer slack is misused in this way the more perilous the position of the economy becomes for it comes increasingly to resemble the neoclassical taut economy, while incomes grow relatively slowly because the economy is not enjoying the cumulative advantages of active investment in new activities. The full extent of the menace of the cumulative causation process only becomes apparent once so much slack has been used up that firms can no longer cut costs through rationalisation and cannot afford to change their activities; unemployment can then only be avoided through a cut in the firms' wage bills or a rise in the prices of their products relative to their costs.

We have already seen in the first section that the firm arises for exactly the same reasons as money - transactions costs and uncertainty about relative values in a world where it is impossible to conduct activity through fully specified contingent claims contracts and that in a Keynesian world we must view firms as organizations rather than decision-making atoms since managerial discretion partly replaces the market mechanism as a co-ordination device. The introduction of slack which may or may not be misused by firms also fits well into the basic implication of Keynesian economics that when there is uncertainty "the future is not merely unknown to the economic man, it is undetermined" (H. Townshend, reviewing Hawtry, E.J.1937). Just as the interest rate may or may not move to the right point when the money supply is increased, but may suddenly come down through a change in confidence, so the firm may or may not contribute more to economic growth by using positively the slack provided by devaluation or import controls (c.f. increasing the money supply with elastic or inelastic interest rate expectations) or may suddenly improve its performance of its own accord due to a change in attitudes (see Checkland and Knight on the history of Courtaulds as an example). This view of the role of the firm is evidently incompatible with the special case of the neoclassical model where firms face known problems and always perform at the top of their form. (Notice the parallel between this special case and the monetarist special case of crowding out in financial markets where there are no idle balances or, in our terms, slack.)

This analysis leads to a somewhat paradoxical result: given that there is a reluctance to change to a new activity - and we explain briefly below why this might be the case - the more slack an economy has, the slower structural change will be. The economy might not appear to be becoming more efficient in the sense of adopting ^{the}new/techniques and outputs of its more dynamic rivals yet it is reducing costs per unit of output by the progressive rationalisation of its existing activities. Economies with no/slack cannot avoid making adjustments by cutting unit costs and are therefore forced to use their financial reserves (non-organizational slack) in attempts to adapt to changing conditions in the neoclassical manner and adopt new techniques or output plans. The latter kind of economy will have higher factor incomes both from a more efficient use of inputs and through the advantages due to cumulative causation. It should be made clear that the slackless form of economy is a special case at one extreme and that an economy which tries to grow only by rationalisation is a special case at the other extreme; what is important for the power of the cumulative causation process is the existence of different degrees of slack which permit different rates of response to changing underlying conditions.

The basic idea fits in rather well with a stylised view of the performance of the U.K. economy since 1945 - it would appear that the U.K. has for thirty years been a poor performer in terms of growth of per capita income in comparison with her major OECD rivals but in spite of their consistently better productivity and trade performance it is only recently that the full force of the cumulative causation process has begun to make itself felt in the sense of full employment no longer being possible without massive balance of payments difficulties, despite effective devaluations of the pound. (See Singh 1977 on this). Higher wage countries such as Germany and Sweden have successfully faced up to competition from outside Europe whereas in recent years the U.K. has appeared much less able to cope with such competition. To test the idea we hope in future work to see if, for example, industries currently doing very badly have pursued persistence policies and improved their performances on existing (or slightly revamped) outputs and production methods even though these policies were non-viable in the longer run rather than just being knocked out suddenly. As an example of what we might be looking for we offer an example from Lamfalussy's (1961) study of the Belgian

economy in the 1950's. He found strong persistence tendencies in spite of falling profits in the coal, textiles and rolling stock industries. For these three industries average profits were rather low - in 1956 real net profits were only 66% of the 1948 level and coal and rolling stock were actually making losses, but in spite of this apparent profit disincentive to investment there was positive growth in all three industries. His most remarkable finding in line with our arguments about the take-up of slack by firms in declining markets came in the case of the textiles industry, which he compared with the performance of a typical prosperous industry, food processing, in the period 1948-57. In the textiles industry output rose by 42%, productivity by 52% and fixed assets by 25%. By contrast in food output rose by 41%, productivity by 35% and fixed assets by 46%. This led Lamfalussy to ask a number of questions; how do we explain the sizeable gains in output and productivity which appear loosely, if at all, related to the increase in fixed assets in the textiles industry and why was there investment in fixed assets at a time of falling profits?

Lamfalussy himself postulated the idea of defensive investment in declining industries because of the low scrap values of machines compared with their replacement values which meant that the marginal return to expenditure on keeping them going could appear very high and that even though such investment might be wasted in the long run because market conditions continued to become unfavourable firms would have to have very long planning horizons to realise that they should be planning to scrap machines in a decade's time and should therefore not continue to reinvest depreciation allowances. He also mentioned rationalisation or 'organizational innovation' as a way of permitting continuing viability - for a time - but did not explain why such schemes were possible and why they had not been implemented before and we briefly try to fill this important gap in the final part of the paper by discussing the origins of slack and persistence tendencies.

Whereas in the General Equilibrium world all problems are properly defined and specified at the outset in the real world of uncertainty and transactions costs firms are never sure what is the nature of their objective economic environment without engaging in search activity to find out. However, just as in a game of chess when there is a time limit it is not optimal to look briefly at all possible

moves, one has to give a more detailed consideration to a limited number of moves chosen from a set of self imposed rules of thumb. In the world of business, as in a chess game, the search agenda chosen may be too narrow and the evaluation procedures used may fail to identify the best possible option, even from the reduced set considered. This is particularly true in the process of transforming an invention into a successfully marketed product. When a particular consumer need is seen the firm can try to design a product to suit it but cannot consider all possible solutions in depth for reasons of cost and has therefore to adopt a selective search policy - either sequential search trying the most promising cheap 'solutions' till a solution is found or, where the most promising solutions require the most costly investigation and the likely failures are rather easier to decide upon, a progressive rejection strategy. Both methods may miss even more suitable solutions if search, because of transactions costs, always stops once an acceptable solution has been found. Even if a product is discovered by a research and development department whether the firm goes on to make any money from it will depend on the firm's decision-taking process and how the product is perceived by the organization as a whole - a highly successful water pump almost failed to get off the drawing board because those who engineered it regarded it as a crude device but it was spotted by company economists as a highly cost-effective solution to a peasant's irrigation problem. (see Bradbury et al, 1972)

The need to restrict search helps to explain why there is imperfect entry when profit opportunities emerge - in deciding what industry to be in firms cannot consider all alternatives and confine their attentions in the light of their current positions to areas which they think may have strong synergistic potential. These search policies may also miss preferable policies and, if search is not carried far enough, even projects with strong synergistic potential may fail - a good example here is the attempt of Pressed Steel to get into the domestic refrigeration market in the 1960's. They thought that skilful large-scale production engineering, a competitive price and a design centre award would ensure easy access to this market but they seriously underestimated the problems of building up goodwill quickly enough to spread overheads.

Our first main form of slack is thus a consequence of the fact that transactions

costs force a restricted search agenda but one can never know the benefits to be obtained by widening the agenda unless the costs are paid, and it consists of potentially preferable decisions that will not be considered as long as the existing decision-making process is performing adequately. In times of adverse market conditions firms may revise their decision rules and management relationships and spot better policies thereafter performing better as innovators and requiring lower inputs per unit of output.

The introduction of transactions costs logically requires the abandonment of the idea of profit maximisation in favour of satisficing - when further search is costly it has to be cut off at some point and this will be where an acceptable solution is thought to have been found; acceptable solutions must suit aspiration levels of sales and rates of growth rather than maximal positions. Because aspirations are not necessarily fixed we have a second form of slack - while aspirations tend to adjust to actual performance in normal circumstances, in a crisis managers may suddenly realise that their previous criteria of acceptability will not ensure their long run survival and thus aggressively raise their aspirations, increase search activity and improve the company performance considerably (see Knight, 1974 for the case of Courtaulds in the early 1960's); this will be in addition to the widening of the agenda due to the failure of performance to meet their original aspirations. The notion of satisficing is not only a logical feature of Keynesian economics but it is also something that Keynes himself seemed to be coming to recognise, especially in the 1937 Q.J.E. summary of his basic ideas where he discussed behaviour under uncertainty. (While we stress that satisficing is the logical form of behaviour of organizations, profit maximisation may be a suitable assumption for analysing situations where firms face a known change in circumstances - satisficing theory will here predict the same choice.)

The third kind of slack is the rather narrower concept of organizational slack associated with the work of Cyert and March. They emphasise that the firm is a coalition of various groups with competing interests and aspirations who, in good times, may receive a higher return than is necessary as their transfer fee for remaining members of that coalition. They call this excess payment the amount of organizational slack and it can be shown that this too is the result of ignorance.

Managers might wish to offer lower dividends to shareholders to permit better pay and conditions for themselves and the ability to carry out per projects but they do not know how far they can squeeze dividends before they run the risk of shareholders trying to install a new management team and only in a crisis where they stand to lose their jobs anyway will it seem a risk worth taking. In the bargaining process over departmental budget allocations or firm strategy the finance department, for example, may prefer a rather lower sales target if sales above a certain point are achieved at the expense of profits or may prefer a tighter inventory policy but will only be prepared further to press the issue in difficult times. These savings thus realised in bad times give the firm a protective margin but are not available to be shared out in good times to a particular group unless that group is prepared to undertake further costly search and accept more risks. The demands of the various coalition members are moderated by their failure to appreciate the full value of alternative policies - if all members of the coalition could costlessly discern each other's transfer fee no slack of this kind could possibly exist.

The filtering and distortion of information, either unintentionally for psychological reasons (perceptions discordant with out frame of reference are filtered out before they reach consciousness or are reinterpreted to remove the discrepancy, especially in the social transmission of information among members of groups with a common frame of reference) or intentionally in the pursuit of subgoals provides a fourth form of slack which may be taken up in adversity to improve a company's performance. A change in the frame of reference through a new company policy may lead to the superior use of fragmented information whose existence/^{is recognised} but whose precise significance is not, while a reorganization of the management structure may reduce the harmful effects of subgoal pursuit. The most obvious example of this kind of slack being taken up is in the changeover from a U-form, functionally based management system to an M-form multidivisional structure. (See Chandler (1962) for a study of how the M-form system developed as a result of search to find a way out of market difficulties by Du Pont Chemicals General Motors and Standard Oil, and Channon(1973) on its introduction into U.K. companies over forty years later.) In the M-form structure a policy-making general

office watches over different product units, each arranged like a small firm, so that it is able more easily to monitor which divisions are performing badly instead of having the inherent conflict of the U-form structure with production divisions blaming sales for not disposing of their output and it being very difficult to decide on the marginal returns to a particular model. Also, in the M-form structure the policy makers are separated from those who actually administer their decisions and unless they retain loyalties to their former departments are likely to be able to take a much tougher approach when a particular model appears to be performing badly since the status of their department (the head office) is not threatened. In the U-form structure because there is no guiding body and executives are tied up with the daily operations of the company the pursuit of subgoals by subordinates unsure of their positions and the company's policy may lead to the communications system becoming clogged as they transmit signals with an urgency that is unwarranted to make their own positions secure. As a result executives feel overworked and the company drifts because they have no time for policy formulation, but it is largely the lack of clear guidance that causes the demands on their time from the lower levels. (See Carlson, 1951, for evidence on this.)

Specialists in particular have great scope to use their discretion to suit their own ends - e.g. in good times they may promote pet projects and seek to overcome resistance at the top by representing them as technical imperatives but it is by definition impossible for managers to review a decision by a specialist unless they use another. In an M-form structure such activities may be partly kept in check by the knowledge that a poor product performance will not go unnoticed, while a general shake-up in times of adversity may reduce the harmful effects of subgoal pursuit by changing certain personnel and power relationships inside the firm.

Our final kind of slack associated with uncertainty and transactions costs and inherent in the nature of firms is due to the imperfect specification of labour contracts - the productivity of a given labour force depends in large measure on how well motivated workers are or how appropriately motivated those in charge are. This kind of slack would not be possible if workers were hired

according to completely specified labour contracts where they received so much pay for performing a particular physical operation in a given environment. When contracts are incomplete it becomes impossible to ignore the fact that social factors and workers' perceptions rather than the objective nature of the environment determine productivity (as was shown in the famous Hawthorne studies) while attitudes of workers may be more important in determining productivity than the degree of supervision (see Gouldner, 1955). Conflicts in the workplace can partly be mitigated if there are general rules so that a foreman can show that he is not using close supervision on his own behalf to persecute a worker but sets of rules cannot be designed to cover every contingency and may preclude arrangements that would be beneficial unless the rule book is changed. Imperfect specification of labour contracts means that there may be great scope for improving productivity and thus remaining competitive without taking up the other kinds of slack if only attitudes can be changed - e.g. in a crisis situation the socially enforced output norm rises as would-be rate busters increase their productivity while pointing to the threat to jobs if they do not. The clearest indication that this slack exists is the performance of the U.K. economy in the three day week in 1974 where 60% of working time produced 80% of normal output.

In addition to these organizational forms of slack which may be misused by firms unaware of the dangers of cumulative causation to prop up the rate of return in existing activities we mention briefly slack provided by monopoly power, devaluation and tariff protection. The last two may have been provided in a conscious act of policy but there is a strong risk that they may not help the situation and could make it worse if there are strong persistence tendencies which lead to firms further delaying necessary changes while their rivals meanwhile enjoy further cumulative advantages.

We conclude with a brief discussion of reasons why firms may delay changing to activities that, to the onlooker, would appear more profitable. For reasons of space we confine ourselves mainly to internal organizational factors apart from again mentioning Lamfalussy's (1961) defensive investment idea where misguided decisions are taken to invest in updating old plant and models (for which there are strong pressures when a firm is short of cash and unlike Fords at the end of the Model T cannot stop production altogether to install a wholly new plant and

cannot wait for the fruits of a research programme). Funds may be wasted if an insufficiently long time horizon is taken by managers or if they are unaware that they face more than a once and for all shift in their competitive position.

The usual theories of choice tend to talk as if all investment decisions are made by firms starting from scratch and ignore the set-up costs of establishing new organizational procedures and relationships. In the real world, however, the choice is often between the continuation of an existing programme of action and a change to a new programme. Once we recognise that an organization is composed of conflicting interest groups and that change involves effort we can begin to see why there is inertia and why even if preferable policies from the company's point of view are stumbled upon they may not be implemented as long as present performance is in some sense acceptable.

Where a manager sees performance as his success in maintaining or increasing his budget because of the status that goes with it there is an obvious incentive for him to resist any threat to the size of his department. It is hard to conceive of any situation where a manager's utility will be increased by a reduction in the amount of resources he controls. In particular managers will be unwilling to take part in abolishing their their existing posts unless cast iron guarantees are given about their future status and promotion prospects within the company. If a manager is the first to see scope for cutting down his department as a way of increasing company profitability there is no point in promoting such a scheme unless he can appropriate some of the company's gain for himself - if he is more likely to lose status instead it will pay to keep quiet about it and give himself a buffer for the future should cost-saving measures be demanded by the board. (In general slack and persistence are closely interlinked).

Even when managers can get some benefit from promoting an innovation they may not press for it if the benefits would accrue in the distant future (by which time they ~~may~~ may have left the company) while they face the very obvious costs of extra effort in the present if they do adopt it and as long as their departments are performing satisfactorily they are under no pressure to come up with something new. (It should be made clear that the quiet life policy is not a collective firm decision but results from the pursuit of subgoals when other

member of the coalition are not fully aware of possibilities or minimum acceptable payments.) Behaviour consistent with this implied discounting process of managers was found in Sutherland's (O.E.P.1959) study of the adoption of shortened processing in the Lancashire textiles industry - those firms which failed to adopt it were taking a very short run view that the best policy was to hang on while investing as little as possible with the time horizon often fixed by the date of retirement of the managing director.

In the case of organizational innovation or the cutting of certain product lines every proposal for change is an implicit criticism of existing procedures and arrangements so agents will be unwilling to press for innovations where they risk upsetting members of the organization on whom they depend for promotion or support in obtaining departmental budget allocations. The case of the development of the M-form management idea show how it may require a determined effort by a zealous individual or committee prepared to take blame to get innovations through in the face of resistance from those who will be responsible if the innovation does not succeed. Resistance to changes which seem essential to those looking at an organization from the outside may result in part from the strategy and goals adopted by the organization which have given it a comparative advantage in a particular field in the past at the cost of a blinkered attitude when the time comes to change - Selznick (1957) gives a number of examples of this, the most well-known of which is the case of the failure of the Ford company to appreciate the change in market conditions for cars in favour of style rather than cheapness that eventually forced the abandonment of the Model T.

The last organizational cause of persistence we will discuss here rests on the idea that utility functions are interlinked and an individual's welfare is affected by whether and how a current action taken by himself or others makes his behaviour in the past appear to have been ill or well advised. Sunk costs are seen therefore as something to be justified rather than as merely so much water under the bridge. Wolf (1970,1973) has provided a formal model of behaviour in this situation in which a connection between present actions and investment in past time is provided by a decay rate (a backward looking interest rate to give a present value to the past) and where present choices may differentially

affect the decay rate. The model is solved by optimising the present choice over both future and past asset values. As an example of this sort of behaviour we suggest the case of an agent unable to prove costlessly that the present difficulties of a certain model are not his fault and who therefore presses for a programme extension in the hope that conditions will change and save his reputation. Such behaviour would be excluded where activity was conducted wholly through fully specified contracts where a tough approach would be taken due to the separation of advocacy from administration or in a world of slackless (or single process) firms where no cross subsidisation was possible.

The reader may have come to the end of this paper in some doubt as to the acceptability of an hypothesis which claims to be a Keynesian approach and yet uses a largely behaviouralist view of the firm as an organization to explain how inadequate structural adjustment may occur and let the cumulative causation process take hold. If this is the case we refer him back to the first section on the origins of the firm and money while leaving the final thought with Keynes himself in the form of an extract from his essay 'The End of Laissez Faire' (in Keynes, 1972):

"...But more interesting than these is the trend of joint stock institutions, once they have reached a certain stage and size, to approximate to the status of public corporations rather than individualistic private enterprise. One of the most interesting and un-noticed developments of recent decades has been the tendency of big enterprise to socialise itself. A point arrives in the growth of a big institution - particularly a big railway or big public enterprise, but also a big bank or insurance company - at which the owners of capital, i.e. the shareholders are almost entirely dissociated from the management, with the result that the direct personal interest of the latter in the making of great profit becomes quite secondary. When this stage is reached the general stability and reputation are more considered by the management than the maximum of profit for the shareholders. The shareholders must be satisfied by conventional, adequate dividends; but once this is secured the direct interest of management often consists in avoiding criticism from the public and from customers of the concern.....The same causes (the self-socialising tendencies of private companies) promote conservatism and a waning of enterprise. In fact we already have in these cases many of the faults as well as the advantages of state socialism."

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