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NOTES ON THE CHOICE OF EXCHANGE  
RATE RÉGIME.

G.E. WOOD

NUMBER 60.

**WARWICK ECONOMIC RESEARCH PAPERS**

DEPARTMENT OF ECONOMICS

UNIVERSITY OF WARWICK  
COVENTRY

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NUMBER 60.

December, 1974.

This paper is circulated for discussion purposes only and its contents should be considered preliminary.

Notes on the Choice of Exchange  
Rate Regime.

In this working paper are contained two short very closely related papers. The first discusses the efficacy of exchange rate changes. The second advances an argument, based on utility maximisation, on how the exchange rate ought to be changed; it therefore follows from the first, in that the second question is only of interest if exchange rate changes are an effective means of adjusting the balance of payments.

Devaluation and Money Illusion \*

It is widely accepted that exchange rate flexibility is a substitute for wage and price flexibility, in the sense that if we had the latter the former would be unnecessary. This view has recently been stated by H.G. Johnson (1974).

"It should perhaps be remarked in passing that in the wake of considerable theoretical exploration in recent years, the case for exchange rate adjustment has to be associated with rigidity in wages and prices: in a downward direction for devaluations; and in an upward direction for revaluations. Otherwise price level flexibility would eliminate price level misalignments unless these were supported by fiscal/monetary policy".

The efficacy of exchange rate flexibility as a substitute for wage/price flexibility has however [aside from any discussion of the values of the relevant - see for example Johnson (1972), below - elasticities] been questioned. The reason for this has been the belief that devaluation depends, at least to some extent, on the presence of money illusion for its efficacy. There appears to be no writer who has committed himself completely and without qualification to this view: as Fellner (1973) wrote

".....these views range from almost unqualified belief that when

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\* I am greatly indebted to Avinash Dixit, Alec Ford, Christopher Taylor and John Williamson for their very helpful comments on earlier versions of this paper. They of course bear no responsibility for the present version.

it comes to current-account effects the arguments favouring exchange rate reduction would have to be outright based on money illusion to (b) the belief that, to be convincing, the argument favouring exchange rate reduction would need to receive much help from money illusion".

Fellner suggests that R.A.Mundell (1961) is in the former category, and R.I.McKinnon (1963) is in the latter, while H.G.Johnson is in between, but nearer to Mundell. This last view is harder to document, for while Johnson (1974) contains the following :

"It should also be noted that while the need for exchange rate adjustment arises from wage and price rigidity, the possibility of using it for policy purposes depends on the presence of 'money illusion'", a denial of this view, and the argument that the efficacy of devaluation depends on the elasticity of substitution between domestic and foreign goods, is to be found in Johnson (1972).

Nonetheless, as Fellner (1973) notes, the view of all these writers has been widely interpreted as being that the presence of money illusion is of great importance for the efficacy of exchange rate flexibility. Fellner shares this interpretation. He argues, in response, that,

"The answer to the question (of whether money illusion is necessary) bears importantly on the flexibility issue, but does not decide it".

The aim of this note is to argue the quite distinct proposition that a willingness to allow real earnings to be cut by devaluation need not imply money illusion. It will be argued that it is consistent, rational, and compatible with full perception of the change in the real value of earnings for people to be unwilling to cut their real earnings by marking down their money value, while nonetheless allowing their real earnings to be cut by devaluation. It will not be maintained in this note that people actually will let their real earnings be cut by devaluation; that is an empirical matter (and one which, as will be pointed out later, has very wide implications.) This note is concerned only to advance the analytical proposition that real wage cuts can quite consistently be accepted if they come by one means and resisted if they come by another.

Before proceeding to defend that proposition, it is worth noting the relationship between the following analysis and a previous discussion of the meaning and significance of money illusion. The previous discussion which was surveyed by Tobin (1947) was in the context of Keynes' view that labour cannot eliminate unemployment by revising its money wage bargains. Tobin accepted the term money illusion to describe the behaviour of workers who would not accept money wage cuts at constant prices but who would accept real wage cuts by means of rising prices. He wrote

"...the (homogeneity) postulate means that a given real wage rate will bring forth the same amount of labour whatever the level of the money wage rate - that labour will react in the same way towards a 10% cut in its real wage whether this cut is accepted by a reduction of its money

wage rate or by a rise in current prices. Any other behaviour seems inconsistent and 'non-rational', based on a 'money illusion' attributing importance to dollars per se rather than on an understanding of their real value".

Tobin had no reason to consider whether such behaviour could be rationalised, for his concern was with how full wage-price flexibility, should it exist, could eliminate unemployment. Whether or not such behaviour can be rationalised is, however, important in the present context, for while, as Fellner (1973) argues, such behaviour is not essential for the efficacy of devaluation, it is certainly helpful. It is to such a rationalisation that this paper is addressed.

Money illusion is said to exist if people will not accept a cut in their money wages at constant prices, but do not react to a rise in prices at constant money wages. Such behaviour can be explained in three quite distinct ways. The first is quite simply that irrationality or failure of perception is being displayed - that the people involved really are under an illusion. If that were the only explanation, devaluation would indeed be a rather unreliable policy tool, relying as it would for its effectiveness on the persistence of an illusion.\*

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\* It should be pointed out that if the economy in question had a small foreign trade sector, such that devaluation had a very small effect on the price level, (or if the devaluation itself were small, as under the Crawling Peg régime) then there is a good chance that the persistence of an illusion could be relied on. The arguments which follow are additional to that point; while devaluation may, in certain cases, work in that way, this note aims to show that such a method is not necessary.



The second explanation gives devaluation somewhat more usefulness. This explanation of the behaviour called money illusion was advanced by Sir John Hicks (1953). He suggested that when money illusion, as described above, is observed, the economy has not reached full equilibrium after the price level change. The phenomenon is observed because workers, who will not accept a real wage cut brought about by any method, take longer to notice one brought about by a rise in prices than they do one brought about by a cut in money wages. If this is so, devaluation would be useful to a country which wanted to produce a once-for-all reallocation of the world reserve stock in favour of itself,\* but the effects of the devaluation would eventually be eliminated by workers obtaining increased money earnings to compensate for the fall in the value of money. This would be a very limited use for devaluation, and one which would disappear if the tool were used often, for the workers would then come to anticipate its effect.

The third explanation is the one which suggests that devaluation need not depend for its effect on any form of illusion. This explanation is prompted by the work of Alchian (1969) on the economics of job search, and of Arrow (1959) on price adjustment without a Walrasian auctioneer.

Consider what happens when an economy is deflated. The natural

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\* In this respect, the implications of this explanation are the same as that of the Monetarist approach to devaluation, as propounded by, for example, H.G. Johnson (1971). In that analysis, devaluation works via its effect on the real cash balances of residents in the devaluing country. The only way these balances can be restored to equilibrium is by running a balance of payments surplus, which is done by reducing absorption. Once real cash balances are restored, absorption rises again and the balance of payments surplus disappears. This implication emerges from the "Hicksian" explanation without the need to assume that the domestic monetary authorities respond in a particular way to a change in foreign exchange reserves.

response of individuals is to cut their work output, and spend some of the time thus obtained in searching for other employment. This is perfectly rational, on the assumption that conditions in other occupations have not changed; and that is a sensible assumption, since there is no auctioneer to give the information, simultaneously to all participants in the economy, that conditions over the whole economy have changed in the same way. The adjustment is, until the search process starts to yield information, Marshallian rather than Walrasian. There is a decline in output, due to a rational - in the light of initially available information - resistance to cutting money earnings. Money earnings and money prices only start to fall after the receipt of information obtained by searching.

Compare that pattern of events with a devaluation (carried out with the same aim, the reduction of domestic prices as measured in international units of account) and its consequences. The devaluation signals to all participants in the economy that the real value of earnings in every activity has simultaneously fallen by the same amount (setting aside the different tastes for the consumption of imports of different individuals). There is no need for search activity to find that out, so there will be no reduction in work output to permit search activity to be undertaken.

So far it has been argued that individuals who do not immediately cut money wages and money prices in response to a deflation can quite rationally accept a cut in real earnings following a devaluation; it has been argued, that is to say, that the latter behaviour does not require "illusion" as a pre-condition for its occurrence. That is as far as analysis can take us; it can show that, as a matter of logic, people can quite consistently resist wage cuts in response to a decline in aggregate

demand while not resisting real wage cuts caused by a devaluation. It may be maintained that in practice devaluation will not work because once people have attained a certain level of real income they will not let it be cut. This view has major implications for the effectiveness of every tool of stabilisation policy, not only for devaluation; but it seems to be inconsistent with observed behaviour in response to changes in direct taxation. Devaluations will, of course, eventually lead to a movement of labour and change in the pattern of relative rewards, but this will follow the change in the pattern of demand consequent upon devaluation; such movement will not offset the devaluation, but rather will further its aim.

There are two further points, both of which have a bearing on the choice of exchange rate régime, which arise from this argument. The first is that, if people become increasingly resistant to a decline in real income the longer they have experienced that income, then floating or a crawling peg, both of which imply a quick response to even a slight degree of overvaluation, are the types of exchange rate régime under which exchange rate changes will be most effective, for they will minimise resistance to the necessary real income changes. A point which at first sight suggests the opposite conclusion is that individuals may react differently to market-induced and government-induced real income changes, in that they regard the latter as part of the legitimate role of government. If this is so, then an explicit devaluation, an act of policy by the government, may encounter the less resistance. But even if this is so, the case for the adjustable peg is not necessarily strengthened, for under a flexible régime there would not always be a change in real income. If, for example, the exchange rate started to float down due to inflation at home, this would

serve to prevent the rise in real income that would occur during the temporary improvement in the commodity terms of the trade while the exchange rate was fixed by reserve use. Thus only in some cases would a market-determined exchange rate change affect real income. The question of which type of exchange rate régime the distinction between responses to market-induced changes and government-induced changes supports cannot therefore be given an unambiguous answer. The answer depends upon the extent of resistance to market-induced changes, and on what fraction of prompt, market-induced exchange rate changes would in fact change income.

Of course, this paper certainly does not say (even setting aside, as beyond the scope of this paper whether real wage cuts by any method will be acceptable) that devaluation alone will be effective. If the country is in balance of payments deficit because of an excessive rate of monetary expansion, the devaluation will have to be accompanied by a reduction in that rate of monetary expansion to one consistent, were the exchange rate floating, with the same rate of inflation as the rest of the world. But if we thought that devaluation depended on illusion for its effectiveness, the only way of correcting the deficit would be by bringing the rate of monetary expansion down for a time to a level where, were the exchange rate floating, the rate of inflation would be below that of the rest of the world.

To summarise, it has been argued that devaluation does not require any form of illusion or lag in perception before it is effective in reducing a country's prices in terms of international units of account. Devaluation cannot be written off as a useful tool for economic management by saying its efficacy depends on money illusion.

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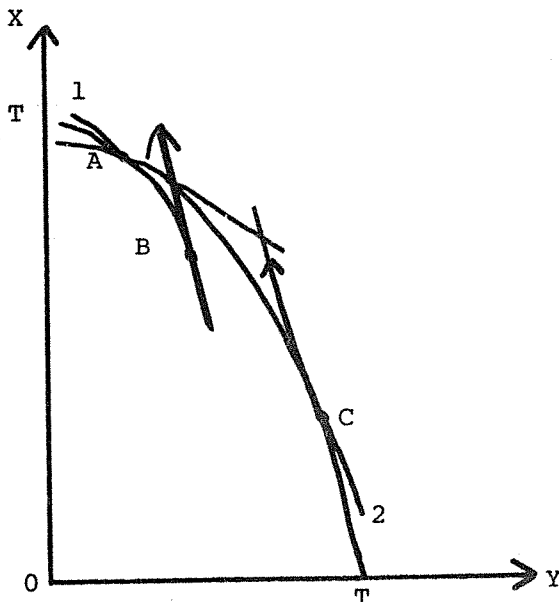
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Short-Run Adjustment and the Choice of  
Exchange Rate Régime.

In a recent issue of the "J.P.E." Professor Wolfgang Mayer (1974) analysed the short-run response of an open economy to a change in the relative price of goods. He principally employed his results to explain certain aspects of real-world behaviour - such as the general practice of all factors in some industry uniting in seeking protection from foreign competition - not explicable in the traditional trade model. He obtained these results by making one factor of production imperfectly mobile in the short run.

He also described the adjustment path of the economy to long-run equilibrium. It is shown in this note that the adjustment path he described is not the only one possible, but rather that it is a polar type of a range. The other polar type is set out in this note, and some implications for exchange rate policy, and an explanation of a certain economic phenomenon, are drawn from the contrast between the two types.

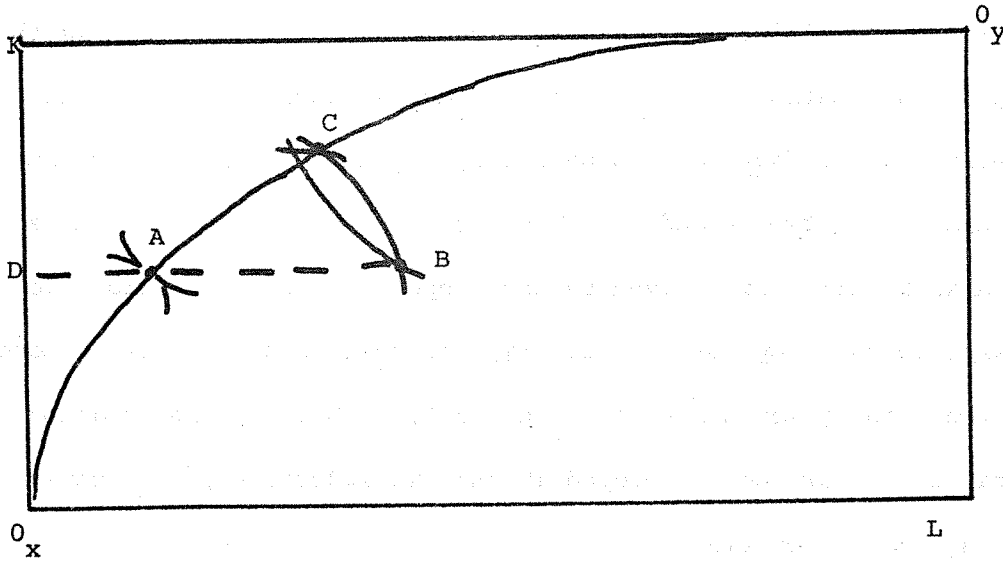
Consider diagram 1.



The framework is the usual Heckscher-Ohlin one, with constant returns to scale and diminishing returns along the isoquants.  $TT$  is the long-run transformation curve of the economy, produced by the optimal combination of factors of production, of which there are for simplicity assumed to be two,  $K$  and  $L$ . The economy starts from long-run equilibrium, at  $A$  with world price given by the slope of line 1. World prices then change to the slope of line 2. In the short-run  $K$  cannot be moved, so the economy moves not to  $C$ , but to  $B$ , on  $DE$ , a transformation curve obtained by varying  $L$  employed in the two industries, but keeping  $K$  at the same allocation as at  $A$ . Professor Mayer suggests that the economy will converge gradually to  $C$ , by a process of gradually re-allocating  $K$ , and will move round  $TT$ , on curves such as  $DE$ , until  $C$  is reached.

Adjustment does not have to be by such gradual convergence. Consider the economy to have  $n$  producers, each with (for simplicity)  $\frac{1}{n}$  of the economy's  $K$  and  $\frac{1}{n}$  of its  $L$ . Each of the producers has the same production techniques. A transformation curve could be constructed for each of these producers, and it would be identical to that for the economy, except that it would be only  $\frac{1}{n}$  of the distance from the origin of that of the economy. Each producer's production possibilities can also be represented by a box diagram,  $\frac{1}{n}$  the size of that for the economy.

Diagram 2 is such a representation.



We are originally at A. The change in relative prices make C optimal, but because K cannot immediately be transferred we move to a point such as B (DB is parallel to the horizontal axis). B is not a point of tangency of two isoquants, so it corresponds to B in diagram 1, in that it is inside the transformation curve. Our producer wants to get to C. If he knows the production possibilities open to him, i.e. his production function, he is only constrained from doing so if at the end of his first period at B, capital is still not fully mobile. If capital wears out fully and is totally replaced at the end of every period (i.e. if it is circulating capital), then he will move in one step from B to C in diagram 2, and the economy will take the same step in diagram 1. This is the polar opposite to the adjustment path described by Professor Mayer.



The assumption that he knows his production function is one that is very reasonable around A, but becomes diminishingly so the further we expect him to move from A. The assumption that the amount of K which needs to be moved to restore full optimality can be moved at the end of the production period depends of course on the nature of the industry, and again, the extent of re-allocation needed.

Taking the technology of production as invariant with the extent of adjustment needed, the above analysis suggests that the time taken to reach full equilibrium falls with a fall in the extent of resource re-allocation required; for although the incentive to move increases with the size of price change, if he does not know his production function he does not know where to go.

Plainly, in practice adjustment will be a complex process, affected by the nature of production, the structure of economy, attitudes to geographical factor mobility, tax allowances for capital depreciation, and many other variables. Neither Professor Mayer's adjustment process nor that set out in this paper describes more than one aspect of this complex process.

Even so, a policy implication can be drawn. While adjustment is going on, the economy is not as well off as it could be; not only because there are costs of adjustment, but also because the economy is, even aside from these, operating inside its transformation surface. As the period of adjustment falls with the size

of adjustment, if necessary adjustments can whenever possible be confined to small ones, the economy will benefit. This has plain implications for the exchange rate régime. The adjustable peg régime meant that when changes confronting producers do come, they are large. This is in contrast to floating or the crawling peg, where relative price changes are gradual (or may even not occur if the exchange rate change is the result of different inflation rates). Thus it can be argued, on efficiency of resource allocation grounds, that floating (or an approximation to it) is superior to the adjustable peg régime. This argument, it should be noted, is on the grounds that such a régime will keep the economy closer to its transformation curve; it is additional to arguments advanced elsewhere, by the present author (Wood, 1973) that such a régime will minimise adjustment costs. Both types of argument support rate flexibility.

This analysis also sheds some light on the J curve, which attained such fame in the U.K. because of its depth and length after the 1967 devaluation. That devaluation was large (14.2%). In terms of the adjustment process described in this note, it took the U.K. well inside its long run transformation curve, and for some time. The supply effects would reduce production of both exportables and importables (as defined by, for example, R.I. McKinnon [1963]). Demand for those at home would certainly not fall off proportionately, as permanent income had not fallen by as much as output. Thus the balance of trade would be worsened by home demand conditions and by the curtailment of supply for export markets.

Had the adjustment been sooner and smaller, there would not have been the problems for demand management experienced on that occasion.

It is now time to conclude. It has been shown that the process of gradual adjustment to a price change described by Professor Mayer is only one possible type of adjustment. Another has been described in this note, and it has been argued by contrasting the two that an efficiency argument, additional to those in Wood (op.cit.) for exchange rate flexibility can be advanced. It was also suggested that the analysis shows that if exchange rate adjustments are kept small, the J curve, and hence financing problems, will be reduced.

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