

The Formation of Fix and Flex Prices and Monetary Theory: An Appraisal of John Hicks' *A Market Theory of Money*

John Hicks' contributions have been incorporated into nearly every aspect of mainstream economics. Yet, one theme dominated his work: economic dynamics. *Value and Capital* (1939), was an attempt to build an economic dynamics on the general equilibrium theories of Walras and Pareto joined to the intertemporal approaches of Hayek and Lindahl. This book is perhaps his best known work; yet Hicks was dismayed that this was on account of its introductory static analysis, rather than the full dynamic analysis contained in Parts 3 and 4. Hicks was particularly dissatisfied with his analysis of the process of price formation and disequilibrium price adjustments and in 1956 he initiated what he has described as "A New Start" on the problems of economic dynamics¹ based on combined stock-flow price-quantity adjustment models, or what he called P and Q models of stock-flow and *ex ante-ex post* variety. This new approach to dynamics produced a series of major books such as *Capital and Growth*, *Causality in Economics* and his rethinking of the Hayek and Austrian approach in *Capital and Time*, all of which emphasise the importance of dynamic as an economic process developing 'in time'.

Much as in the case of his earlier analysis, economists seemed reluctant to follow Hicks' new start and instead concentrated their attention on the Q model, which was the source of Hicks' famous definition of a 'fix-price' market, linking it to Clower's dual-decision hypothesis to produce the so-called 'neo-Walrasian' fixed price quantity-constrained equilibrium models. These models provided a

¹ In "Methods of Dynamic Analysis". Hicks had already introduced the importance of balance sheet analysis in his early work on money, now it was integrated into an analysis of the economy as a whole.

resolution of the "Crisis in Keynesian Economics", which Hicks himself had announced in his 1974 book of the same name, but side-stepped the problem of the disequilibrium price adjustment process by interpreting "fix-price" as meaning that prices are rigid over time.

Sir John's, last book, *A Market Theory of Money*, returns to the basic theme of economic dynamics and may be read as an expression of his dissatisfaction with the attention which has been given to fix-price Q models to the exclusion of the other approaches to dynamics which emerged from his "New Start". One of the main themes of the book is to reiterate the original meaning of fix price, which was not given, rigid prices, as well as to provide a more satisfactory analysis of the process of market price adjustment in order to produce an analytical explanation of market price dynamics.

As was his habit, Hicks worked and reworked the idea of the 'fix-price' market from a number of angles and within a range of analytical approaches. Already in his *Crisis in Keynesian Economics* (1974) he made it the centre of his interpretation of Keynes. There it was defined as meaning "not that prices do not vary, but that the causes of their variation are outside the model". In the present book, fix prices are defined to mean "not that prices do not change, but that there is a force which makes for stabilization, operated not by independent speculators, but by the producer himself" (p. 25). Indeed, the table of contents of *Crisis in Keynesian Economics* suggests in parentheses that fix-price markets might better be called 'announced price' markets, and in *Economic Perspectives* (1977) they become 'administered' prices, but these warnings seem not to have been heeded and most models presume that fix prices mean rigid prices. But, whatever 'fix-prices' are called, it is clear what in Hicks' view they were not: equilibrium prices determined by an automatic Walrasian general equilibrium supply and demand adjustment mechanism.

The fact that the book returns to this subject from another angle suggests that Sir John was not fully satisfied that the explanations that he had previously given had been fully understood² and the book discusses extensively the causes which had earlier been left 'outside the model'. Thus, although the immediate purpose of the book is to

² In addition to the sources already cited *A Theory of Economic History* is almost wholly devoted to the distinction between fix and flex prices.

give an adequate explanation of the process of dynamic price adjustment and, as a result, an acceptable definition and distinction of fix from flex-price markets, it may also be read as a critique of the present state of economics which has failed to deal with these problems.

The discussion of the 'causes left outside the model' is not much different from that which is already to be found in *Crisis in Keynesian Economics*, *A Theory of Economic History* (1969) or *Economic Perspectives* (1977), for example. So despite the fact that most of the discussion is about fix-price markets, which Hicks identifies as primarily manufactured goods markets, the key to interpreting the book must be considered to lie in its title: the relation between price dynamics and monetary theory.

Now, Hicks always considered money and financial markets as falling in the category of 'flex-price' markets, so the title raises a problem of trying to discover how Hicks proposed to link the discussion of fix-price markets with the analysis of money. This is a relation which occupied Hicks at the beginning of his work on monetary theory and economic dynamics in the 1930s. It also represents the basic point of difference between his approach to monetary theory (and all that has been developed from it or in reaction to it, from Patinkin to Tobin to Lucas) and the approach taken by Keynes.

Hicks was fond of noting that Keynes had given a sort of tacit approval to his IS-LM (Hicks called it SI-LL) model, but he was equally likely to mention that Keynes had judged his early work on money as part of the 'liquidity preference' approach to monetary theory. Sir John has, on a number of occasions, taken his distance from the SI-LL model and what has been made of it in mainstream economics. He has never done this with respect to his own approach to money, or discussed why, given the initial similarity with Keynes' approach to liquidity, he went on to develop a diverse approach. It is this difference which will be the centre of our discussion.

Markets, intermediaries and costs of investment

Before Hicks started work on *Value and Capital*, which was to provide a dynamic Paretian system in conditions of less than perfect foresight, he had been working extensively in monetary theory. It was

this work, sent to Keynes for comment, which was adjudged to be similar to 'liquidity theory'.³ Hicks' early monetary work is represented by an article originally published in German in 1933 as "Gleichgewicht und Konjunktur"⁴ where Hicks, under the influence of Knight, reaches the conclusion that since general equilibrium could only be established in conditions of perfect foresight, money could have no role in such analysis. Since Hicks explained the demand for money as arising from the uncertainty over the dates and amounts of future payments, he could conclude that the existence of money "arises directly out of ignorance of the future" (1933, p. 35). Changes in the degree of 'confidence' over future exchange events are then identified as the major determinant of the relative demands for financial and real assets in an individual's portfolio; ranging all these assets along a spectrum from 'left' to 'right', from cash to call loans to short and long term loans to material property and shares, Hicks argued that a decrease in confidence over the dates and amounts of future payments should produce a 'leftward shift' of demand along the asset spectrum, resulting in an increase in the demand for money and other more liquid assets on the left of the spectrum, relative to other, less liquid, assets lying to the right. This not only provided an explanation for changes in the demand for money, it also explained shifts in the velocity of circulation and in the level of investment: changes in the demand for money produced changes in the composition of individuals' portfolios which produced changes in investment and thus cyclical fluctuation.

As Hicks might have written, here is a theory coming up which looks very much like the liquidity preference theory. He notes that Barrett Whale had indicated to him that an early draft of the article seemed close to the analysis of Keynes' *Treatise on Money* and that as a result he not only consulted that book, but also sent the final, English, version to Keynes. Keynes' reply was that "our minds are no longer moving in opposite directions" (*Economic Perspectives*, p. 141).

It is this paper which formed the groundwork for the paper that was to make Hicks' career as a monetary theorist and shape the development of monetary theory for at least three generations, the

³ It was presumably on this basis that Hicks was given the honour of reviewing the *General Theory* in the *Economic Journal* of which Keynes was the editor.

⁴ The original English manuscript was lost and it was only published in English as a translation from the German in *Economic Inquiry* and then in *Money, Interest and Wages* as "Equilibrium and the Cycle".

"Suggestion for Simplifying the Theory of Money" of 1935. Although the 1933 paper can be clearly seen as the basis for the new paper, there is a fundamental difference between the two articles. The 1933 article relied on an earlier 1931 article, "Uncertainty and Profit", to explain an individual's expectations over future exchange dates and events in terms of what Hicks called the "risk factor". Since money was held, it was clear that individuals could not have perfect foresight, which was substituted by the "risk factor" represented by the distribution of possible results concerning dates and amounts of payments for the individual.

The 1935 article follows the same general lines of analysis, but goes further in suggesting that monetary theory could be simplified if the velocity of circulation and other components of the 'equation of exchange' were replaced by application of the marginal theory of value, that Hicks had been working on with Roy Allen, directly to the analysis of money. Instead of explaining changes in the demand for money and thus the velocity of circulation and investment via changes in confidence, the whole approach via the velocity of circulation is considered to represent a 'great traditional evasion' of the problem of explaining the factors determining the demand for money and is to be replaced with marginal demand analysis.

Instead of ignorance over future exchange events being the basis for the existence of money, Hicks now attempts to resolve "the explanation of the fact that people hold money when rates of interest are positive", which he defines as "the central issue in the pure theory of money", (1935, p. 51), by means of marginal analysis of risk adjusted prices, *i.e.* corrected for the dispersion around equilibrium prices, rather than around future dates and events.

This difference between applying the "risk factor" to equilibrium prices rather than to future dates and events is important because if only equilibrium price commitments are allowed (as they would only be allowed on Monday mornings within the Hicksian week) then even if there is a distribution of expected prices there is perfect certainty that every trader will be able to meet his commitments by the end of the week, although there is only a 'risk' that he will not be able to do so during the week. On the other hand, if there is a distribution around dates and exchange events, then some individuals may find that they cannot meet their commitments unless they have held sufficient money balances for this eventuality.

Thus, in the 1935 paper, the demand for money is explained in terms of the expected rate of interest, the expected holding period of alternatives to money (*i.e.* a proxy for the dates at which the individual expects to make payments in the future) and a new element, the "cost of investment".

Hicks defines the cost of investment as the "cost of transferring assets from one form to another" (*ibid.*), or as "frictions". These are what would now be defined as "transactions costs". The "risk factor" has not disappeared; it is still applied to the expected yield and the expected holding period, which are the "prices", adjusted for risk, which now appear as arguments of the demand functions, but now in terms of subjective probability distributions.

Having started down this road, as was his habit, Hicks followed it right to its logical conclusion, noting that if risk is defined by a distribution around the prices of assets, an investor, "by dividing up his capital into small portions, and spreading his risks... would be able to insure himself against any large total risk on the whole amount" of his wealth (1935, p. 54) and thus would no longer have to be concerned to take account of the "risk factor" in his calculations.

It is interesting to note that this is a solution that Hicks had raised, but rejected, when he was discussing the possibility for firms to reduce the risk factor in "Uncertainty and Profit". It has radical implications, for if there is no longer any risk factor, then Hicks no longer has any explanation for the positive demand for money!

It is for this reason that an additional factor had to be added in order to explain a positive demand for money. In Hicks' 1935 approach this is the introduction of transactions costs that have to bear the entire weight of explaining a positive demand for money by eliminating asset diversification as a means of eliminating risk: "But in actuality, the cost of investment, making it definitely unprofitable to invest less than a certain minimum amount in any particular direction closes the possibility of risk reduction along these lines to those who do not possess the command over considerable quantities of capital" (*ibid.*).

Why was this a substantial shift in approach? Remember that Hicks had already argued that money was incompatible with general equilibrium, that general equilibrium implied perfect foresight and therefore the introduction of money required the introduction of ignorance and the possibility of disequilibrium commitments, or at very least, risk over future exchange dates and amounts. But with risk now defined as a distribution around the prices produced in a general

equilibrium, it is impossible to 'introduce' uncertainty into the model by means of risk, for it can always be eliminated by portfolio diversification; another explanation is needed: transactions costs, which make full risk reduction via diversification impossible.

According to the Coase theorem, in the absence of transactions costs there is nothing to prevent the economy from Pareto-superior contracts; any deviation from Pareto-optimality may thus be attributed to transactions costs (*cf.* Niehans, 1987, p. 678). Thus, Hicks' 1933 conclusion that general equilibrium could not accommodate money is now replaced by the argument that general equilibrium cannot accommodate the existence of transactions costs. It would thus appear that money and transactions costs have identical impact on the operation of the economy and that this effect is due to the same causes: the absence of perfect knowledge. But, this is not the case; transactions costs are not incompatible with perfect foresight. The introduction of money into the general equilibrium model via transactions costs is not the same thing as doing so by giving up the perfect knowledge assumption Hicks attributed to general equilibrium. By the former route the basic general equilibrium construction can be maintained, and money becomes something which simply offsets an imperfection in the system and is placed on the same footing as, say, the absence of perfect competition.

Now transactions costs are precisely what the Walrasian theory evades with the institution of the costless auctioneer, while the auctioneer is precisely what the fix-price market is meant to replace.⁵ Thus the extensive discussion in Sir John's last book concerning the factors which explain fix price markets may also be seen as a discussion of those real-world factors of market organisation which produce transactions costs; given his 1935 analysis this discussion also provides an explanation of a positive demand for money. The book is indeed a 'market' theory of money, not because it analyses money markets in particular,⁶ but rather because it identifies factors, such as the existence of dealers, which are necessary to the organisation and functioning of markets, which produce transactions costs, and which thus provide an explanation of the demand for money.

⁵ As was Clower's dual decision hypothesis in the eyes of the French Walrasian dissidents. For Hicks, fix prices simply meant that something internal to the model, rather than the auctioneer, had to act to decide what prices would be set and why.

⁶ It is surprising, but appropriate, that the book does not even bother to extend the analysis of the institutional interstices of the corn market to either money or financial assets markets.

It is for this reason that Sir John criticises his predecessors on the path of economic dynamics such as Walras, Edgeworth and Marshall for having neglected the direct analysis of the determination of prices in markets for durables, for having neglected what he calls the "inside" market, by which he means the operation of professionals, such as dealers and market makers, in determining prices. If these individuals are necessary to the operation of markets, then markets cannot produce the same prices that would result from the operation of the costless auctioneer in discovering the perfectly competitive general equilibrium.

This conclusion can be reached in a number of ways. The most obvious is by noting that the existence of intermediaries implies the existence of bid-ask prices, which violates the law of one price; in the presence of increasing returns this may lead to inefficient allocation of resources. Or, dealers who carry open positions by holding stocks, or selling stocks which they do not possess, may distort the general equilibrium expression of agents' actions as being constrained by existing endowments.

Once it is recognised that the role played by dealers in the 'inside market' may, for whatever reason, be internalised within the firm itself, Hicks can explain the existence of fix-price markets because firms will be holding stocks and setting ask prices for sales to external buyers or wholesalers/retailers.⁷ From this follows all of the traditional IS-LM Keynesian results which presume that prices are 'fixed'. But, this way of making the argument against general equilibrium does not necessarily produce an explanation of the positive demand for money, for the system could be said to be operating under conditions of perfect certainty – indeed, the very action of dealers in setting bid-ask prices creates price certainty.⁸ It is thus plausible to argue that transactions costs would still exist under conditions of perfect certainty, although this would not explain a positive demand for money.

Following this line of argument, financial innovations, introduced to reduce transactions costs, would reach a limit represented by a perfect foresight Walrasian system in which money is neutral

⁷ They will also set bid prices, but these will be internal to the firm.

⁸ The major impact of the current wave of financial innovation would seem to have been to decrease the types of transactions costs which have been used to explain the demand for money. They have been so successful in this that most Central Banks have given up targeting particular definitions of the money supply!

because innovations have reduced transactions costs to zero so that no money need be held. This is similar to an argument Sir John had already made in his "Suggestions for Simplifying the Theory of Money": "The appearance of such safe instruments [*i.e.* assets with high diversification and thus low risk] will act as a substitute for money in one of its uses, and therefore diminish the demand for money" (1935, p. 55). Money market funds which eliminate the 'transactions costs' to individuals of buying bank acceptances and commercial paper by lowering their risk toward zero would tend to eliminate the demand for money and render it neutral.

It is for this reason that when Hicks comes to define, or better, redefine, liquidity within his own framework, it is in terms of flexibility in *Crisis in Keynesian Economics*. By flexibility Hicks means the ability to reduce transactions costs. Flexibility becomes "fluidity" in "The Foundations of Monetary Theory" in *Money, Interest and Wages*, but it has the same property of acting to reduce transactions costs.

It is also interesting to note that the arguments that Hicks adopts as explanation for the existence of "fix-price" markets also depend on transactions costs associated with the operation of markets. It is in this sense that Hicks can argue that the existence of money and the existence of prices in real-world markets are part of one and the same assumption, as imperfections within the general equilibrium framework. If markets are perfect and operate costlessly then there will be neither money nor fix-price markets and there will be no market theory of money. But, for Hicks, this provides no explanation of the role of prices, or markets, or money, in the dynamic process.

Indeed, when we come to the chapter in the book on the nature of money, there is no discussion of the organisation of the money market, nor the relation of the money market to other markets. Instead, Hicks criticises the concept of liquidity on the grounds that it can only be defined via circular reasoning in that it must be based on the intrinsic properties of money as a unit of account and a means of payment. While Hicks recognises that money is normally created via the process of market exchange, there is no discussion of the actual process by which money is created, nor of the fact that money is a liability of the issuer that has a variable value when held as an asset and that it is traded in a market just as any other asset in order to determine its price. It would have seemed logical, given Hicks' insistence on the necessity of intermediaries for the operation of fix price markets, to extend the analysis of intermediaries and

'inside' markets to flex price markets for financial assets for the same conditions seem to apply. Indeed, most financial markets, aside from the special case of the Walrasian rendition of the Paris Bourse, are operated by dealers who "announce" buying and selling prices.

If the investigation of market organisation had been applied to the analysis of money, it would become clear that although all financial liabilities have variable prices, some liabilities have prices which are more stable than others; this stability depends on the market organisation and the way market-making activities are paid for by users. In general, in the money market, the market-making activities which make the price of money stable are costless or not borne directly by the participants (at least since the time government took over Central Banks and imposed on them the responsibility for the stability of commercial banks' debts in terms of the 'lender of last resort' function). It is not that market-making activity is unnecessary in flex-price markets, of which the 'money' market must be the major example, but rather that such activity is provided by the government as a public good. For example, the price of central bank money is not quoted with a bid-ask spread because the money market functions without any private individual bearing the cost of making the market. It is for this reason that money has the lowest transactions cost of any financial asset, and it is held by individuals despite the fact that its rate of return is lower than that on other assets.

The existence of 'market makers' is ubiquitous to all markets, flex-price as well as fix price, but their nature and costs will change depending on the particular institutional organisation. These market-making costs can also be considered as 'transactions' costs, but they may also be considered as 'liquidity costs' in the sense that they determine the liquidity premia attached to financial assets.⁹ The lower the transactions costs of a market, the higher the liquidity premium attached to the assets traded in them. If one classifies the costs of the market-making structure of market makers as transactions costs then one takes a 'flexibility' approach to the demand for money, while if one classifies them in term of their impact on the liquidity premium, then one takes the 'liquidity preference' approach to the demand for money.

Now, the money market, strictly defined as the inter-bank market for bank reserves or central bank money is a financial market

⁹ This may be measured, as it is on most financial markets, in terms of the deviation from the existing equilibrium price produced by a buy or sell order of given size.

in which there is a single buying and selling price, and a central auctioneer, the central bank, who stands ready to buy and sell at that price and who has a capital base which does not have to be remunerated privately. Here we can see the relation between price stability and transactions costs. The main reason that the price of money is unique and fixed is because the costs incurred by market makers in ensuring its stability are not charged (as might be the case with stamped money or was the case in terms of bank notes or commercial bills which sold at a discount from their face value).

This means that the price of money will always be more stable than the prices of other assets. This gives us Keynes' explanation of holding money in order to avoid the risk of changes in prices of financial assets other than money. Individuals hold money because of uncertainty over the movement in the price of other assets, which will in general be related, as in Hick's first approach, to uncertainty over future payment dates and amounts. Money provides no gain in terms of interest earnings, but it offers the certainty of the avoidance of loss which might be incurred by holding any other asset denominated in money. Money is held, not because transactions costs exist as an imperfection within the Walrasian system, but rather because the organisation of all markets requires market makers whose services may be represented as transactions costs, but different markets will be organised in different ways and charge for those costs in different ways. Money is the debt whose market is institutionally arranged so as to involve the lowest transactions costs, or to charge for them publicly rather than privately. In most monetary systems this is assured by government accepting responsibility, not only for the monetary issue, but also for the one to one parity of the liabilities of the private banks with public money issued by the central bank. There may be institutional organisations of private markets which also produce this result. Interestingly they are also market organisations with rather formal regulations over trading procedures; these regulations are also usually represented as transactions costs.

The interconnection between the transactions approach and the uncertainty approach to money can only be resolved if we can distinguish the elements which produce transactions costs such as market organisation from those elements which produce variability in assets and liability prices. From a Keynes point of view, asset prices would be variable even if markets were costlessly organised and thus there would still be a preference for liquidity which could not be

explained by the transactions costs view. It was the former view that Hicks seemed to be following in 1933, and which first attracted Keynes' attention. The fact that he did not have this in mind is clear from what emerged in the 1935 essay, as well as from his last book. However, his reticence in accepting the full implications of this approach in the work of Patinkin and Tobin suggests that he had not completely forgot his early steps in the tradition of Keynes' liquidity theory. Given his avowed goal of returning to his monetary analysis of the 1930s, these are questions which the reader might have expected Hicks to reconsider in *A Market Theory of Money*. Instead Hicks remained within the transactions costs approach, reiterating the aspect of his work that sets it off from Keynes' theory. At the same time, the book issues a challenge to those who interpret 'fix prices' as rigid prices theorists to provide an analytical explanation of their crucial assumption. I think he was certain that if he could convince economists that answering this question was necessary, he could set them back on the road to economic dynamics that he had first indicated in his "New Start". It would also help to show more clearly how Keynes' approach to money differs from the modern interpretation which is based on Hicks' own, rather different, approach.

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