"THE DIFFICULTIES OF MIXING THEORETICAL ASSUMPTIONS WITH PRACTICAL OBSERVATIONS ABOUT THE NATURE OF CAPITALIST ECONOMIES."

AN ADAM SMITH ESSAY

BY

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"It is as though an artist were to gather the hands, feet, head and other members for his images from diverse models, each part excellently drawn, but not related to a single body, and since they in no way match each other, the result would be monster rather than man."

(Copernicus)

The proponents of General Equilibrium economics have created a body of thought which is exceedingly difficult to criticize successfully. Students who come to study economics believing it to be about the business relationships between individuals, corporations and institutions find in pure theory an edifice surrounded by an almost impenetrable wall of mathematics. Initial bewilderment is further compounded by the theorists' methods of defending their treatment of economics as if it was a branch of physics. The professors assure their pupils that their theory is absolutely watertight within its assumptions and when asked whether some of those assumptions are possibly somewhat implausible they reply that their model makes no attempt to describe what the real world is like.

The current state of economic theory is the result of much distinguished work attempting to refine the answer to an old question. It is two hundred years since Adam Smith tried to explain why there did not appear to be chaos in a world where millions of economic agents were conducting their business with no agency to co-ordinate their activities. His solution was the "invisible hand" of the price mechanism working in the market place. Perhaps the main mistake he made was to hint that the invisible hand might lead to an allocation of resources that was in some sense optimal. To say that this was unfortunate is not to say that we should forget about the problem of scarcity of resources, but that economic research might yield a higher return if it devoted more effort to finding out exactly how economic agents do behave, and with what consequences, and spent less time discussing the conditions required for optimality. According to its leading exponents, General Equilibrium theory makes no explicit causal claims. All it does is to show the conditions required for the invisible hand to work efficiently and enable a myriad of self seeking individuals, left to themselves, to achieve a coherent and efficient disposition of economic resources. To simply glance at the necessary conditions reveals

the main contribution of General Equilibrium theory. It tells us that a laisser faire economic system will be unlikely to achieve an optimal allocation of resources, without necessarily suggesting that State intervention can make an economy more efficient.

Now that this has been proved we must hope that these eminent men turn their attentions to the study of a more realistic world and hence find out how the market could function more efficiently. As long as economic science continues to teach new generations of economists about what world would have to be like for certain things to happen, there will be economic problems which persist because practising economists have graduated with the impression that while the model assumptions do not hold in the real world, nevertheless the theories provide a fair approximation of how things really work.

The leading lights of General Equilibrium theory (e.g. Messrs. Arrow, Debreu and Hahn) are quite clear about what their theories can and cannot do, but many lesser economists unfortunately fail to point out difficulties which may arise if one neglects the differences between theory and reality. The main purpose of this essay is to show how we may be led seriously astray if we run into the trap of believing that the conditions required for the General Equilibrium working of the invisible hand approximate to the real world. I will deal especially with difficulties caused by the existence of frictions and uncertainty.

In order to ensure that an equilibrium position is reached which is also Pareto-efficient, the General Equilibrium theorists have to assume that there are perfect futures markets for all traded goods and factors, or, to put it less euphamistically, that there is perfect foresight. With the aid of this assumption, we may be sure that everyone will do as well as they possibly can throughout their own lifetimes, that natural resources are used up at the optimal rate and that trade takes place at

equilibrium prices. The operation of these futures markets will enable all agents to sell their services for maximum gain, while agents with identical endowments may receive identical returns.

We all know that the real world is full of uncertainty but to glance in the index of almost any economics book will tend to leave one with the impression that the writer has either forgotten to write about the subject or does not consider it important. These books seem to overlook the fact that the capitalist economies they are usually attempting to describe could never have anything remotely approximating to perfect futures markets. The result is that such futures markets as are to be found do not necessarily help to bring about an efficient allocation of resources or an equilibrium, because uncertainty in one sphere breeds further uncertainty elsewhere.

Perfect futures markets are ruled out because a capitalist economy is not a feudal economy where people can make irrevocable long dated futures contracts to provide their labour, since this would effectively amount to selling themselves into slavery. Capitalist economies do not allow slavery and hence a worker cannot know what his lifetime pattern of income will be and he will be reluctant to make futures contracts to help maximise his lifetime satisfaction. A worker also has the problem that without perfect knowledge of the future he does not know how long his lifetime will be, so he becomes even less willing to make futures deals as he does not know what his circumstances will be on the day of delivery. There is a similar problem even if the worker were willing to sell himself into slavery, since he might die before fulfilling his contract and he cannot be sure that he will continue to enjoy the job and working conditions, especially when he runs the risk of missing out on an even better contract elsewhere which he had not foreseen.

Uncertainty causes difficulties for capitalist employers, with the

result that they too would be unwilling to make long term commitments to employ individuals. The employer may be able to work out on an acturial basis the probability of the worker ruining production plans by dying before fulfilling his contractual obligations, but there is still the risk that the worker may turn out to be lazy or unsuited to the job. The employer would also have to have perfect knowledge of future technical change so that he knows how many workers will be required in future, even if he is certain of demand levels. This condition is obviously ridiculous, since if the firm knows exactly what technical change there will be, one wonders why it has not already occurred.

Technical change also causes problems for the worker deciding what futures contracts for goods and services he should make to yield maximum utility at a given space in time. He requires perfect knowledge to know all the goods that could be produced and when he will want them, especially since leisure patterns will vary according to one's guess of personal lifespan, a guess which will gradually be revised. Without this, there could be no consumers sovereignty via futures orders and workers would have to buy or not buy goods put on the market by firms who do not know what goods are really required and at what prices they might sell. While in reality consumers obviously are not born with preferences for particular goods, they may be born with certain urges they wish to satisfy (as in Lancaster's New Demand Theories) but, in the absence of perfect knowledge, only trial and error will enable them to discover which goods are the most suitable.

Therefore it is unlikely that workers or employers would wish to make long term employment contracts even if they were permitted. Without these contracts the market cannot support a large number of other possible futures deals. If workers do not know what their incomes will be or how best to satisfy themselves, there will be a deficiency on the demand side

for future delivery of consumers goods. Without a certainty of demand for particular products, firms will be unwilling to make futures contracts with workers or with suppliers of raw materials, components and machines unless such contracts are restricted to the fairly near future.

Thus we see that in a capitalist economy uncertainty begets further uncertainty and many of the futures markets required for equilibrium cannot exist. Arrow and Hahn point out a difficulty which would arise even if all the required markets for future deliveries of commodities were available. With diverse tastes some of these markets could only have a limited number of transactions and in such cases it would be difficult to assume that agents in the markets could take prices as given. Narrowness in futures markets is likely to increase the more distant the delivery date is, making less tenable, even for pure theory, the assumption of perfect competition.

The world of uncertainty and limited futures markets is very different from the idealised world of General Equilibrium, since in the latter world there would be no need for a class of entrepreneurs. There can be no enterprise in a world where risk is eliminated completely by the presence of perfect knowledge and futures markets, and where potential returns are predetermined according to one's endowments. In a capitalist economy success depends not only upon endowments but also on having the ability to guess better than one's competitors in business (or fellow workers in the labour market) where the highest returns are to be found. We shall consider this aspect of capitalist economies further after considering why such economies are characterised by another feature rarely found in the General Equilibrium world - money.

It is often said that one of the main features of the Keynesian revolution is the recognition that the wage bargain is made in terms of money, rather than a basket of commodities. Once we have money which

can be hoarded, full employment is not guaranteed as it would be in a barter economy where Say's Law could operate. We do not use the barter system in modern capitalist economies because of the complexity of business and the difficulties traders would have trying to meet others with a double coincidence of wants when a large number of commodities are being traded. This is really just an alternative way of saying that money is used because it reduces the risk to an economic agent of doing badly as a result of having to barter a commodity which has a lower relative price than he had expected. If there were perfect futures markets people would incur no risks when they accepted certain goods in exchange for their labour or other goods, since the rate at which they could be re-exchanged would be known with certainty. Workers in, say, a steel mill would accept payment in a specified quantity of steel because they would know what goods it could be exchanged for, and all workers are indifferent about what they are paid in and will be willing to swop for any other more preferable goods at the going rates of trade until they have maximised their utilities. An employer would know at what price he could trade his output and the prices of inputs in terms of other goods and would be quite willing to make contracts to pay workers in terms of the firms output or a fixed basket of goods. In an economy with perfect knowledge and no inconvenience in trading, money would have no function since all relative prices would be known, now and in the future.

Thus the uncertainty of the real world helps to explain the existence of two important characteristics of capitalist economies. Uncertainty is also the reason why money plays such an important part in the Keynesian treatment of economics, since its property as a store of value enables it to provide a link between the present and the future. When the future rate of interest is not known with certainty, there is the chance

to make money by speculation in the bond market, getting into cash if the rate of interest is expected to rise and buying bonds if it is expected to fall. As not all the futures markets necessary for proper evaluation of the rate of interest (or the country's exchange rate) are present, there is no reason to expect speculators to guess correctly and thus ensure that the economy reaches and maintains a full employment equilibrium. If the adjustment of the rate of interest in response to a change in demand for money (as a result of a change in aggregate demand) is too slow, cumulative reactions may cause the economy to veer away from full employment equilibrium as firms expectations alter with the business climate. When no one can be sure what the "correct" rate of interest is, we have no reason to expect that it will emerge via the workings of the bond market. We may apply similar reasoning to conclude that freely floating exchange rates need not help bring about an equilibrium.

A Keynesian view of money and interest rates is absolutely destructive to the sort of economics practised by the lesser exponents of General Equilibrium theory. Firstly, when full employment is not guaranteed economists are entitled to assign a lower priority to the pursuit of optimality, yet many economists continue to write as if the economy always functioned at "full" employment. For example, Tibor Scitovsky may be guilty of this approach since recent editions of his book Welfare and Competition seem to have mislaid the subtitle The Economics of a Fully Employed Economy.

Secondly, when it can make unemployment and the disappointment of expectations possible, money can no longer be regarded as a neutral feature of an economy which does not affect relative prices. The level of the supply of money will affect views of what the interest rate should be and will affect business plans, and hence, without perfect foresight, relative prices in the future cannot be known for certain. This fact

seriously limits the usefulness of marginal productivity theories of distribution even in their disaggregated versions. While it is clear that whatever view we have of economics a firm will always be maximising its profits if it follows the marginal rules for resource allocation set out by the General Equilibrium theorists, it is difficult to see how this could be an operational concept when relative prices and demand patterns are not foreseen perfectly, even if the required technical information is available. The problem occurs because production takes time and when a firm hires a marginal worker it cannot be sure what his marginal revenue product will be when production has taken place. Uncertainty about future relative prices also makes it impossible for workers to bargain for a given real wage even when they try to account for the fact that changes in money wages will affect the general price level.

Thirdly, a Keynesian view of interest rates destroys the notion that the interest rate measures the rate at which consumption can be carried through time. The notion of the rate of interest as a measure of social time preference still fills economics books, especially those concerned with cost benefit analysis. This may have the result that public sector economists apply text-book practises, ignoring footnotes which mention that interest rates are really only a monetary phenomenon representing preference rates between money now and money in the future. While economic agents may have preferences concerning the utility of consuming now instead of in the future, in the absence of perfect futures markets there is no guarantee that the rates at which firms produce and invest for the future will match social time preference. Firms have only limited information about future demands and can invest only on the basis of guesses which may prove highly inaccurate.

A Keynesian view of the monetary system finally suggests that there

is no predetermined distribution of income between wage earners and profit recipients. Thus, with demand controlled by the size of the budget deficit, a lower profit rate would be associated with a lower interest rate, on the assumption that firms continue to invest until the expected marginal efficiency of capital is equal to the interest rate.

So far we have seen that real-world uncertainty makes it unlikely that an unfettered price system would automatically achieve an optimal allocation of resources. The next question to be considered is whether, in the absence of perfect futures markets, economic agents working purely on the basis of information about prices and returns to factors could avoid chaos in a decentralised market economy, even when all of the remaining General Equilibrium assumptions are allowed. To ask this question of the market economy may be compared with asking the head of a nuclear power station whether he could guarantee safety if all the moderating graphite rods were stolen from the reactor.

In our economy we have individuals who do not know what their lives will be like in anything but the immediate future, and are not sure what goods are, or could be, produced to satisfy their desires in the best possible way. Firms do not know for certain what people want to buy or what goods could be invented, nor do they know relative prices of final or intermediate goods in the future. It would seem that we have consumers' desires to be satisfied at the book of blueprints existing at any moment who plans can be used to produce commodities, yet the actual degree of well being achieved is decided only when agents have acted. "In the real world", as H. Townshend wrote in the 1937 Economic Journal, "the future is not merely unknown, it is undetermined." When agents have decided what to do the economy moves on and there can be no going back for a second try if things do not turn out as expected. The

forward movement will have given economic agents new information about consumer preferences and revealed new technologies for future use. As long ago as 1928, Allyn Young pointed out that when markets expand new opportunities for cost reduction and specialisation are available as new external economies are made possible. Where these possibilities emerge depends on decisions taken in previous periods.

In a dynamic production economy in each instant supply and demand schedules change and market forces require that a new system of prices emerges. If we allow our economy to have perfect competition without perfect knowledge a paradoxical situation results. It is difficult to see how a new pattern of prices can emerge if all firms believe that they face horizontal demand curves and consumers take existing prices as given. The concept of perfect competition does not allow a consumer who cannot obtain a good to bargain individually with a firm, offering to pay more. Arrow and Hahn candidly admit that this is a problem : "Having decided on one idealisation (Perfect Competition) we run into logical difficulties unless we import a further idealisation (The auctioneer)." This is really just another way of ruling out uncertainty by not allowing any trade to take place until bids have been matched and equilibrium prices have emerged. In the real world there is neither auctioneer nor perfect knowledge so we must infer that there is disequilibrium pricing, imperfect competition and the use of stock adjustments to bring some stability in a changing world. (N.b. in the perfect economy there would be no need for stockholdings).

Most textbooks suggest that the price mechanism would allocate resources far more efficiently if certain frictions could be removed, but it will be shown below that a frictionless economy would have great problems if it had all of the features of an idealised General Equilibrium world except for perfect foresight. There are difficulties at both macro

and micro levels.

Remembering that when there is uncertainty "full" employment is not guaranteed, suppose that an economy previously enjoying full employment equilibrium suddenly faces a fall in aggregate demand (for whatever reason) with an insufficient fall in the rate of interest to restore demand to its former level. Firms find it difficult to sell their usual output and either fire workers or accept workers' instant offers to accept lower wages and thus enable the firm to lower prices without eliminating profits. In the aggregate, firms cannot maintain sales and stay in business unless investment increases or the marginal propensity to consume rises to restore demand to its former level. Unless this happens firms will continue firing people and then finding workers offering to work for lower wages. In aggregate, firms who re-employ their full labour complement will be unable to continue to do so without loss, and the price and money wage level will fall very rapidly since there is no resistance to wage cuts.

As prices fall firms with a large burden of fixed interest debt may go bankrupt, leading to a further reduction in demand via reduced investment, while workers fired from these jobs will help bid down wages still further, thus accelerating the fall in the price level. I do not think we can save the situation by resorting to Pigou's "real balance effect". The price level is falling very rapidly because there is no resistance to wage cuts, and holders of outside money will feel an increase in wealth as prices fall. However, if prices are falling fast it would be futile to spend now money which might have an even higher purchasing power in future. Also, if people desire to hold money stocks equal to a certain fraction of the monetary wealth, the risk of prices rising again in future would deter expenditure since the depleted money-holdings would have to be built up again by postponing consumption as

prices rose. If prices are expected to fall the rational thing would be to postpone as much expenditure as possible until the price level had reached a "floor" and only then would it pay to start spending again.

Keynes was well aware of what would happen in an economy where prices and wages were perfectly flexible and people behaved in the manner described above. He wrote that "if competition between unemployed workers always led to a very great reduction in the money wage there would be violent instability in the price level. Moreover there might be no position of stable equilibrium except in conditions consistent with full employment" (General Theory p.253). Elsewhere he wrote that prices could fluctuate between zero and infinity, thus rendering the price mechanism unworkable. Such a conclusion is not surprising if people withhold expenditure as prices fall - the decline in the price level will accelerate until a zero price level floor is reached, whereupon prices could only rise and a rush to spend would make the system explode via a reverse process.

Keynes noted that the real world was not as unstable as it could be in theory and concluded that in a business world of uncertainty some sort of rigidity, especially in expectations and the money wage level was necessary for macroeconomic stability at full employment or any other level. Keynes only applied this idea to price and wage levels in the macro economy, but below it will be shown that some frictions are necessary for micro economic stability in a production economy, and the convergence of such an economy to the sort of equilibrium state envisaged by Marshall in his concept of the "long period". The examples chosen may help to highlight the sort of mistakes many writers make when they tacitly assume that a production economy is hardly different to an exchange economy.

In an uncertain world where there are no frictions, capitalists can decide to produce any of a multitude of products to maximise their profits. They face no problems of consumer brand loyalties, patent rights, difficulties of changing plant or statutory obligations such as redundancy payments to discourage them from changing to another line of production with new machines or works. In this world, workers may consider offering to work wherever remuneration is highest as they are not tied by social factors, employer loyalty, waiting lists for housing or non-transferable pension schemes. The worker faces zero transport costs (e.g. a government allowance may be paid) if he wishes to move to a job in any other area. In this world we allow capitalists and workers information about current profitability and wages in various industries, realising that they are concerned only with the remuneration a project will provide compared with the disutility of work. In spite of all these advantages our agents lack one vital source of information - perfect foresight. The outcome of every decision any one agent takes depends on decisions made by all other agents as well as himself, but he does not know what they are going to do.

Now, suppose that previously the economy has been in equilibrium but suddenly it appears that a certain industry is able to offer higher profits on the basis of its current performance. Here is a chance for a newcomer to make money by getting into the industry. However, if all capitalists making only "normal" profits aspire to the higher profits seemingly available elsewhere, each small capitalist may decide to move into that industry. Obviously if everyone does this, and all can in our frictionless world of perfect mobility the profit will be eliminated and losses will probably be incurred. Furthermore, the industries evacuated may now have a shortage of output and appear more than normally profitable, assuming that the remaining firms (if any) have put up their

prices without the help of the auctioneer. After overshooting this attempt at finding equilibrium, we have no reason to expect that it will be found at the second attempt if people rush back to their former industries, particularly since they will never be the same as technical progress will have occurred.

This tale may appear unrealistic because it implies that our economy lacks a mechanism to co-ordinate it into some kind of stability. This was the intention behind the example, since it raises a lot of questions which must be answered by those who behave as if ideal General Equilibrium conditions approximate to the real world, and we can easily make it more realistic by thinking about the development of any rapid growth industry and the reasons why it has not behaved as wildly as the theoretical tale suggested it could. The tale casts more doubt on the validity of talking about supply and demand schedules which can only exist for an instant and when nobody can know what they are as they decide what to do. We see that in an economy where everything depends on everything else decision taking is practically impossible unless we introduce a means of making the system stable. We cannot have perfect knowledge so we must settle for such things as imperfect competition and frictions as our stabilizing agents. Without some inbuilt stability, a firm could never know what to expect as a final outcome when it started to make a product by means of labour and produced commodities whose future prices are unknown. If the theorists offer the defense that by perfect mobility they never meant that everyone should have equal ability to enter all markets, they must then explain how they can keep their assumption of perfect competition since to give some agents superior opportunities is logically at odds with all agents having identical (zero) bargaining power.

The same problems occur when we consider what would happen if there

was perfectly international mobility of labour with zero transport costs as the theorists always like to assume. If all workers head for where wages appear to be highest there will be total chaos. Just imagine almost the entire population of India leaving their homeland and arriving simultaneously in Kuwait, offering their services as workers. Even allowing for a lack of skills (which in practise has not stopped international labour mobility) it hardly seems necessary to stress the difficulties this causes for the practical application of pure theory to the real world.

The uncertainty about how others plan to behave places each economic agent in a situation similar to the old problem of the 'prisoners' dilemma. If all try for the extra profit or wage, none will get it, yet if none take the risk, realising what could happen, the reward remains unclaimed. What actually happens must therefore depend on how agents' behaviour patterns are determined by factors other than price signals.

As well as friction factors and imperfect competition, the balance of individuals' willingness to take risks will help determine the final outcome. There is no guarantee that the balance of risk lovers and risk averters can bring the economy to a position of equilibrium, since if it misses first time round as agents compete for apparent profits, next time a different world is faced and they may miss by an even wider margin. When supply and demand are unequal and transitory there is no stable adjustment equation to bring equilibrium to an economy where the future is unknown and undetermined.

The arguments set out above may help to explain why economic theory appears to be in a state of turmoil at present. We have shown that it is impossible to conceive of a capitalist economy in which there is perfect foresight. Uncertainty is the very essence of capitalism and

is behind many of the difficulties that capitalist economies often encounter. We have also suggested that, to remove the assumption of perfect foresight from a frictionless economy where agents react only according to price signals, has the effect of depriving the economy of its co-ordinating mechanism. To bring stability to the system it is necessary to add frictions and immobilities, thus making it impossible for the price mechanism to bring about an optimal allocation of resources. As Joan Robinson pointed out in her review of Sraffa's Production of Commodities by Means of Commodities, there are two extreme ways of imagining how a capitalist economy behaves. There can be supply and demand with unequal profits and wages or a given real wage and profit rate and prices determined without reference to demand according to technical co-efficients. The real world economy is one which does not appear to be wildly unstable and there is much evidence that in the long run people do gradually respond to price signals. Thus it is convenient for economists who have made a considerable intellectual investment in conventional economic theory to tacitly assume that their model, in spite of unrealistic assumptions, is a good approximation of how the real world works. It is then a short step for such economists to proclaim that the hidden hand does work, albeit imperfectly. If this is a correct assessment of the behaviour of orthodox economists, then it is hardly surprising that criticism comes mainly from those who do not believe that capitalist economies have any tendency to equilibrium and dislike the pursuit of economic efficiency with scant regard for the problem of equity. All the foregoing arguments have been trying to show how economists can construct models on the basis of certain assumptions which may give the right answer (i.e. that in a broad sense the hidden hand does work) for the wrong reasons (i.e. the assumptions of perfect futures markets and mobility). It seems that both sides in the current debate are prone to

such unfortunate practices because of a desire to express economics in a way which works easily in a mathematical context, since this is the only way points may be won on a logical rather than a political basis. When economists come to see how easy it is to get what appears a correct prediction from an incorrect theoretical background they may then begin to consider that the reasons for and consequences of the behaviour patterns of economic agents are much more complicated than they had previously imagined. In Anti-Equilibrium, J. Kornai has suggested which factors economists will eventually need to build into their models. We must hope that academic economists take up this challenge, even at the risk of a loss of apparent precision resulting from the difficulty of translating the real world into formal terms.

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Dear Mr Earl

Adam Smith Prize

I am writing to let you know that, although you were not awarded the Adam Smith Prize, the Adjudicators have recommended that you be given honourable mention for your entry. Notice of this will appear in the Reporter and on the Senate House Board.

Your essay is being returned with this letter.

Yours sincerely

H. Mahoney

(Mrs) H Mahoney

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