ECONOMIC THEORY AND AGGREGATE LABOUR MARKET MODELS

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INTRODUCTION

High unemployment is the main problem Western countries are facing. Statistics show that a vast percentage of labour force is 'economically active' but Out of employment'. Attempts to change this situation have become the main concern of governments and the 'politicians' rush to solve the problem provides economists with a fertile area for investigations and suggestions.

The labour market is the center of these investigations since an analysis of its working is necessary if remedical policies are to be recommended. However, the labour market can be viewed under alternative prospectives, so the theoretical debate is almost inevitable. Current macroeconomic analysis cannot provide a coherent analysis and the controversy concerns fundamental ideas (voluntary-involuntary unemployment) as well as elaborated concepts (the forces developed in the labour market e.t.c.) and it is based on the differential assumptions about the individual's behaviour.

This theoretical debate has, obviously, influenced the empirical work in this area. The models developed have the flavour of the underlying theory and, so far, there are few attempts to include alternative cases as options.

Usually the labour market is modelled using three equations, a labour demand, a labour supply and a wage adjustment equation. Unemployment can be expressed as an identity, namely

$$U = Ls — La$$

or a reduced form equation can be derived. The alternative approaches proposed mainly differ in the nature of the explanatory variables adopted and the derivation of the wage equation. The former concerns the choice between price and quantity variables, whereas the latter the origins of the wage determination. Where the wage is assumed to be generated by demand and supply forces, it is an equilibrium wage and no excess demand (unemployment) variable is included. Instead a variable for unemployment insurance (benefits) is employed since it is seen as preventing the wage from falling below a subsistence level. Such a framework is investigated by search theory and the key element is the reaction of labour supply to the wage rate proposed. For these reasons this wage equation can be considered as 'supply side equation'. The 'demand side equation' uses the pressure of excess demand as the main explanatory variable, neglecting the supply side effects of benefits. This wage-unemployment relationship is expressed by the Phillips curve and is employed in most models where disequilibrium situations are assumed to exist. Moreover, these models usually assume the labour supply exogenous, modelling the labour market as a set of two equations, the employment function and the wage equation.

However the supply exogeneity neglects two important factors, the demographic composition of population and the fact that labour supply, saving and consumption are jointly determined. This rows the necessity to include a labour supply equation in a general model where the behaviour of the whole economy is investigated.

In order to give a plausible explanation for all alternative approaches and to gain more insights on the aggregate econometric models developed, the aspects of controversy among theories have to be examined.

THE ASPECTS OF CONTROVERSY

It is well known that a model may not be valid if the relationships are not indicated by economic theory. But the economic theory is not unique and most of the theories contradict each other. Macroeconometric models are an application of the controversy in macro theory and alternative theories play a crucial guiding role in the specification and validation of these models.

Concentrating our on the labour market, there are, basically, four schools of thought, the 'technological', the 'classical', the 'Keynesian', and the 'Monetarist'. The 'technological' school claims that the high level of unemployment is the result of technical change which causes the substitution between labour and capital, to be mainly labour saving. Moreover, the, so-called, 'skills gap' is widened due to increases in the mismatch between, the skills the labour force has acquired and those the new technology requires.

However, there are several reasons not to consider technical progress as the enemy of employment. By no means all technical change is labour saving. It may be labour using because it creates new products and new demands. In order to stress this point, Thirlwall [1981 p. 17] states that «.. .the washing machine, the vacuum cleaner, the refrigerator, the automobile and the airplane have created many more jobs than they have destroyed...'. Further, there may be compensation effects if technical progress is of the kind that speeds up the growth in labour productivity because an increase in the demand for labour would compensate the initial 'technological unemployment'. The rise in labour productivity may lead to rise in real wages and to reduction in prices. All these secondary wage and price effects have further effects on production and therefore on employment. For instance, considering the office automation, the computer and the world processor have enormously reduced the labour needed to produce a given amount of typed information. But office employment has not fallen since typed information has become cheaper and people have decided they want more of it.

Nevertheless, technical change should not be considered as creating unemployment. Introduction of a new technology changes the pattern of employment rather than decreasing the number of jobs available.

Most of the macro models take into account technical progress using a time trend in the employment function but the debate among the other schools of thought is more influential in current macro-modelling practice.

The 'classical' theory is based upon the Say's Law and Walras' Law, the former recommending that supply creates its own demand and the latter that price adjustment restores general equilibrium. In other words, the level of employment and real wage is determined in a competitive labour market by the demand and supply of labour. In a disequilibrium situation, equilibrating forces are triggered; the real wage is reduced and employees accept employment at lower money wages. Unemployment may arise but it is due to unforseen distrurbances and will last only until adjustment to the new situation occurs. Any tendency for unemployment to persist is due to the refusal of employees to accept lower real wage and, in this

case, the unemployment would be attributable to employees and is characterised as 'voluntary*.

For the 'Keynesian' theory the behaviour of money wages is not important for the analysis since lower real wages are achieved by higher prices. So the money wages may be assumed stable and if prices are not at the level to bring about full employment, involuntary unemployment emerges. Later contributions to 'Keynesian' theory suggest that even in the absence of wage rigidities, full employment is not reached since we have to take into account constraints operating from the output market. A cut in the money wage will increase output and employment but only a fraction of the increased output will be consumed (since $dC/dY < 1$). Firms will accumulate stocks and as a result prices will be reduced with the fall in the price level being in proportion to the fall of money wages. So there is no change in the real wage and the system is not in full equilibrium condition. The disequilibrium will persist and the unemployment is characterised as 'involuntary'.

The 'Monetarist' school stresses the role of government spending and considers this the enemy of employment for two reasons. First, government borrowing is inflationary which destroys confidence in the private sector. Secondly, the government expenditure 'crowds out' private expenditure and thus it is impossible for government to create extra jobs. The 'crowding out' could be financial crowding out and crowding out of real resources. The former takes place because private sector is unable or unwilling to borrow as the direct result of government borrowing and the latter because government and private sector 'compete' for a fixed amount of resources. The whole debate centres on what happens to money supply whose expansion is considered inflationary rather than job creating.

As far as unemployment is concerned, the monetarist model defines a 'natural rate of unemployment' ground out by Walrasian general equilibrium. It is determined by real factors such as market imperfections, costs of gathering information, costs of labour mobility, growth of labour productivity e.t.c, and unemployment cannot be reduced below this rate without accelerating inflation.

ACCELERATING INFLATION

Comparing the three schools of thought, we can say that the difference between the classical and the monetarist is on the duration of unemployment. The classicists consider no barrier to employees accepting a lower wage, whereas monetarists accept some reluctance due to search behaviour. The major disagree-

ments between Keynesians and Monetarists centre around whether markets clear or not and the cause and notion of unemployment. Since these differences have influenced the macro-modelling practice, we shall discuss them in turn.

Keynesian theory accepts the possible coexistance of equilibrium with involuntary unemployment which means that markets fail to clear through price movements. This contradicts directly with Walras' Law and the cause of unemployment is thus considered to be price inflexibility due to lack of information. The Walrasian system require\s complete certainty, but transactors are uncertain about present as well as future prices and this uncertainty is the result of their capability to accumulate capital in the form of unsold goods and services. Moreover Walras' Law applies to notional but not to effective demands, the difference arising from the frustration of expenditure plans because households face constraints on current expenditure. On the other hand, firms having inelastic expectations, use the recent market experience to estimate a reservation price for their output until more information become available. This may lead to accumulation of unsold goods which forces them to reduce their output. So, in conditions of uncertainty, a respond to a fall in demand may be quantity adjustments rather than price adjustments.

This lack of information would be overcome if the transactors could communicate with each other, but employees cannot transmit their potential demand to the producers. They are unable to make their demand effective and so the employers are not willing to accept the offer for labour services since demand for labour is a derived demand.

Once the economy reaches this state, Keynes insisted that even price adjustment may not restore full employment and the excess supply of labour is not matched by any excess demand in the system.

So the equilibrium is due to inadequate amounts of information being transmitted through the market system. Transactors in the labour market are not in contact and employees cannot communicate their potential demand to employers.

In contrast, the monetary school develops a model in which the Walrasian system determines the long run trend (natural rate) around which the real word fluctuates. So the system always tends to equilibrium and unemployment reaches a natural rate and it is considered voluntary due to search for better opportunities.

However there is a primitive period in which agents are quantity constrained and in this case the amergence of involuntary unemployment is possible. This

state is characterised as Dreze equilibrium and it occurs in a shorter period than is needed for Walrasian equilibrium.

The criticism of Keynesian theory points to two elements. First, agents are not constrained by their current income since they make decisions on the basis of long term income prospects. Secondly, it is asked what is the use of the market if it fails to bring together transactors. This objection leads to an equilibrium model in which the market is in continuous trading activity and at any point there is a price in the market such that the preferred actions of agents are compatible. The transactors are in contact with the market in the sense that they know what the prevailing price is which assumes an active market of information.

From the brief discussion it is easy to figure out that the availability of information through the market is the main aspect of the debate which, in turn, leads to a differential concept of unemployment.

Keynesian theory, considering the unemployed unable to effectively demand the goods they desire, identifies the cause of unemployment as the deficiency of effective demand and proposes expansion of aggregate demand in order to eliminate it. This will bid up prices, the real wage will be reduced and as a result the demand for labour will be increased.

On the other hand, Monetarist argue that non-demand factors are the cause unemployment. They consider that short run distortions, due to search behaviour, may cause unemployment, but that in the long run wage adjustments bring unemployment back to the natural rate without the need for government intervention. In the short run the government has to influence future price expectations by increasing the amount of information available. Thus the two alternative policies proposed, mainly indicate the need for demand stimulation or an increase in labour market information.

Further, the debate is concerned with the notion of unemployment. Keynesians consider it involuntary, simply because there is a number of men desiring to work but there are no jobs available. They also accept that voluntary and involuntary unemployment can coexist, the former including frictional and seasonal components whereas the latter is viewed as structural and cyclical. The Monetarist school by-passes this traditional classification and asserts that all unemployment is frictional and it identifies[1] seven elements indicative of voluntary unemployment. Six of them are behavioural characteristics and the seventh a mε-

1. see [14]

chanism by which voluntary unemployment is encourage. The seven elements are :

a) inactive unemployment
b) inelastic job aspirations
c) excessive wage aspirations
d) casual or short time work preferences
e) turnover induced unemployment
f) marginal workers
g) unemployment insurance

It may be true that search behaviour is the cause of voluntary unemployment but we have to take into account that unemployment status may change during the search period and while some people did voluntarily give up their jobs, many of them before long became involuntarily unemployed. Further, it is not verified whether search is undertaken on the job or off the job. All these objections urge Thirlwall [1981 p. 15, footnote] to calculate that in the UK there are more than a million unemployed willing to work at the going rate given the opportunity.

So the voluntary-involuntary distinction is a value judgement[2] about the amount of effort individuals should make in order to overcome their unemployment situation. But how has this value judgement influenced the macro models; According to Kahn[3] «.. .it has not proved to have any practical significance either in terms of statistical measurement or in terms of targets and objectives».

However, the term "voluntary unemployment' is used by the classical school and the Monetarist do not use it explicitly. Instead, they assert a 'natural rate' whose implication motivated Hines[4] to characterise it «bad old wine in elegant new bottles».

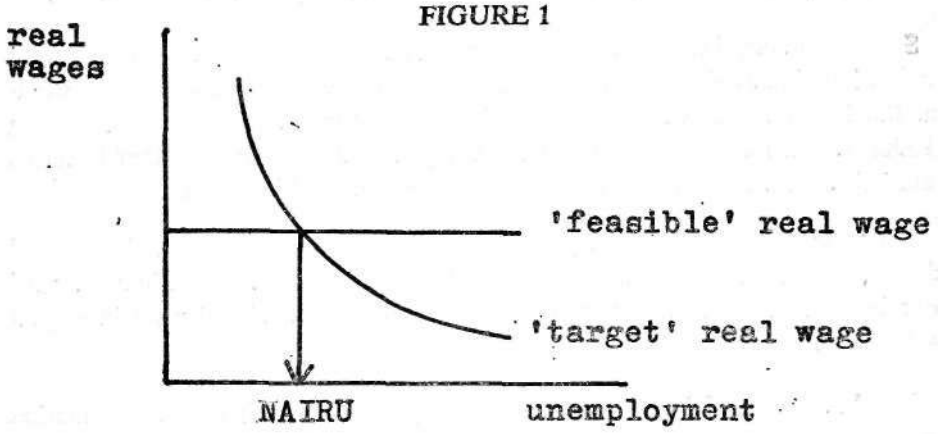
The 'natural rate' is the rate of unemployment in which the labour market is in Walrasian equilibrium and the expected rate of inflation is equal to the actual. An important implication is that it has no welfare costs. The emergence of unemployment is due to (acceptable) search behaviour, so if the government tries to reduce unemployment below the natural rate, it will impose welfare costs on individuals since it will affect amount of search.

2 see [4] d.183
3. see [7] p.27
4. see [5]

The 'natural rate' is criticised on many grounds. Thirlwall[5] claims that there is nothing natural about the 'natural rate' and that it is a theoretical construction with no operational significance because it is not a fixed number, and the policy makers could not know it. Moreover, it is very difficult concept to be measured, a view accepted by Monetarists.

Another definition of full employment, along line with the 'natural rate' is the concept of NAIRU (Non-accelerating inflation rate of unemployment). It is the level of unemployment which can be maintained without inflation. If unemployment is pushed below the NAIRU, inflation increases, and if unemployment is pushed above this point, inflation can be reduced. So, the important point is how the NAIRU is determined. It is considered that there is a 'feasible' real wage in the economy according to living standards. On the other hand, workers, have al feasible' and the 'target' real wages are equal (see Figure 1). If there is not enough unemployment, wages will be pushed too high and wage inflation will increase. Alternatively, if there is an 'excess' unemployment, wage and price inflation will fall.

FIGURE 1



Changes in the NAIRU are attributable either to downward shift of the 'feasible' real wage, or upward shift of the 'target' real wage.

The NAIRU may not define a position of general equilibrium but there is no empirical difference with the 'natural rate'. In the United Nations' Economic Survey of Europe[6], the 'natural rate is characterised as a behavioural explanation

5. see [14]
6. see [15] p.57

of the NAIRU, considering the difference as : the natural rate is the level of demand that does not add to inflation while the NAIRU is the rate required to avoid inflation in the presence of exogenous shocks.

Recently, another classification of unemployment is used for modelling purposes the classification by duration. Unemployment can be either short or long term and this depends on the flows into and out of the stock of unemployment. The relative measure of the two flows determine the average time that each spends in unemployment. Using these concepts, the equilibrium rate can be defined as the rate at which the rate at which the flows into and out of unemployment are equal. This dynamic view underlies the role of turnover and unemployment is expressed as the result of people entering and leaving the pool of unemployment. In consequence, a 'natural rate of turnover' can be identified, and it is accepted as socially productive since it matches efficiently people and jobs, but the problem for the empirical work is to calculate its contribution to the overall level of unemployment. It the 'natural rate' accounts for a considerable percentage of the unmployment rate them the significance of unemployment iè reduced since the burden ie widely shared and few individuals suffer greatly. As a result the policy focuses on measures facilitating job search and increasing job hplding rather than increasing the number of available jobs.

After the concise discussion about different schools of thought and different approaches *to* the labour market, we are now in position to see how the marco-modelling practice has been influenced by these.

The alternative views of the economy developed, can define two major types of macro models, the market-clearing and non-market-clearing models. The main difference between them is how the short run dynamic adjustment process is modelled and analysed. The time dimension, the sensitivity of endogenous variables to change in exogenous variables and the priority for price or quantity adjustments, are the features which characterise a model as being in equilibrium or disequilibrium. The important aspect in question is whether a model returns to a 'steady state' after a particular exogenous shock. In equilibrium models, assuming instantaneous price adjustments, the markets are cleared and as a result price variables are used in specifying the equations.

On the other hand, disequilibrium models can also be characterised as quantity adjustment models since relative prices have a minor role and demand variables are used as exogenous. Furthermore the dynamic aspects of these variables are stressed and the use of lag mechanism is widespread.

Applying this framework of analysis to the labour market, the treatment of wage equation seems to be the major difference between the two types of model. Usual practice is to model labour demand and the wage equation. In equilibrium models the wage rate is treated exogeneously and the estimation of the two equations is made by single equation methods. In a more general framework the wage equation is not allocated to the labour market but yo the 'wage-price' sector.

Relaxing for a moment the assumption about supply exogeneity, we can show how alternative expressions of the wage equation may be obtained.

A simple model for the aggregate labour market is :

$$St = a_1 Wt + a_2 Z_t$$

$$D_t = — b_1 Wt + b_2 Yt$$

where Zt and Yt are vectors of exogenous variables. It the market clearing condition is

$$L = St = D_t$$

then the market clearing real wage is the solution of the supply and demand equation

$$\hat{W}t = (a_1 + b_1)^{-1}(b_2 Yt — a_2 Zt)$$

But if Wt is not attained and excess supply of labour exists, the wage equation is of the form

$$Wt — \hat{W}t = (a_1 + b_1)^{-1} (S_t — D_t)$$

So the real wage depends on the excess supply of labour and equilibrium wage. If the latter is seen as a target rate which the bargaining process tries to reach and a

price variable is introduced, we end up with the Phillips curve. In addition to the above variables, in practice a lagged real wage is introduced in order to catch the lag adjustments.

Another major difference between Keynesian and Monetarist models is the treatment of expectations. Keynesians indicated that the market fails to clear due to imperfect expectations and as a result the assumption of adaptive expectations is used in the modelling practice, which means that the expectations alter slowly in response to previous errors. This backward-looking expectations extrapolate the past trends to predict the future. On the other hand, rational expectations have become synonymous with the market clearing hypothesis. They are considered as forward-looking expectations and they are incorporated into the models assuming either perfect foresight where all sort of information are available, or, alternatively, predictions based on a more limited information set.

CONCLUSION

We have briefly explained how different schools of thought treat the label market how this has influenced the practice of macro-modelling. Despite the ongoing theoretical debate, Ando[7] has made a practical proposal that reconciles the different approaches. He suggests that «...a model should exhibit the neoclassical features in the steady state, but be Keynesian in its adjustment process».

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