

CLASSIFICATION OF UNEMPLOYMENT:
ANALYTICAL AND POLICY RELEVANCE**

BY

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1 INTRODUCTION

The purpose of this paper is to evaluate the way unemployment can be decomposed in several components, and to discuss the analytical and political relevance of such a decomposition. As a matter of fact, there already exist many publications that deal with the economic analysis of unemployment. Outstanding examples are Hughes and Perlman (1984), who give a comparative analysis of the discussion in Britain and the United States, Knight (1987), who gives a comprehensive account of the British discussion and Sinclair (1987), who focusses on the microeconomic theories of unemployment. Moreover, De Neubourg (1988, Ch. I) gives an interesting survey of the international discussion. It therefore is obvious that several topics which are discussed below are not new and original. However, as the international discussion remains very lively, I concentrate in this paper on the most recent contributions which provide some new insights. Moreover, I concentrate systematically on the classifications of unemployment that can be found in these discussions and I try to fit them into a coherent framework. As a consequence, this paper gives a systematic account of the classifications of unemployment which can be found in the current international literature and deals briefly with their theoretical backgrounds.

A geographical clustering has been chosen for stylistic purposes in the organization of this account. Highlighting the post-war discussion, the paper starts in Section 2 with the American debate in which almost all classifications already appear. This debate involves the distinction between frictional, structural and demand-deficient unemployment. Also Friedman's natural unemployment is introduced, together with its analytical underpinnings by the New

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Microeconomics and its further elaboration in the Rational Expectations school. Moreover, the distinction between voluntary and involuntary unemployment is discussed. In Section 3 the British discussion is reviewed, which highlights the NAIRU and UV analysis. The Continental discussion in Section 4 focusses on the distinction between Keynesian and Classical unemployment, employing disequilibrium analysis. I argue in Section 5 that the Dutch discussion, employing vintage models and UV analysis, is in line with the Continental discussion.

Of course, the geographical clustering should not be taken too strictly: many authors from many countries participate in many discussions. But one cannot help but notice that in some discussions most participants are located in one country or continent. One should also realize that for obvious reasons I did not cover these discussions extensively. I tried to select recent contributions with an empirical interest that dealt with the relevant issues in a more or less representative way.

My conclusion in Section 6 is that an analytical decomposition of unemployment is relevant to policy, as policy measures should be based on analytical insights. Moreover, the choice of a decomposition of unemployment may reveal preference for certain policies. However, there is no direct relation between the decomposition of unemployment and the policy measures which can be used to combat unemployment.

2 THE AMERICAN DEBATE

Although the analysis of unemployment always has been on the research agenda of each country and probably always will be, unemployment in the fifties was relatively high in the USA compared to Europe. As a consequence the debate on unemployment was lively in the USA, in particular on the question of whether unemployment was structural or demand-deficient. Concepts were (re)formulated which influenced the post-war discussion of unemployment tremendously, both in Europe and in the USA. One might think in that connection of the Phillips curve, the natural rate of unemployment, new microeconomics and rational expectations.

2.1 *Structural and Demand-deficient vs. Natural Unemployment*

In the sixties the Phillips curve dominated the discussion on the causes and cures of unemployment. Whereas Samuelson and Solow (1960) presented the Phillips curve as a 'menu of choice between different degrees of unemployment and price stability,'¹ Phelps (1967) and Friedman (1968) denied the existence of a dilemma in the long run. In that context they introduced the concept of the natural rate of unemployment.

Lipsey (1965) accepts the interpretation of the Phillips curve as a trade-off

1 Cited from Frisch (1983, p. 41).

between unemployment and inflation. Assuming an acceptable rate of inflation, he defines demand-deficient unemployment as the amount of unemployment that 'could be removed by raising aggregate demand without creating unacceptable conflicts with other goals of economic policy' (p. 249). A further reduction of unemployment requires a shift of the Phillips curve to the left, since otherwise the corresponding inflation rate would no longer be acceptable. This requires structural measures, and the resulting reduction in unemployment 'can be called structural unemployment in the sense that it can be removed by structural cures... The [remaining] amount ... can be referred to as frictional unemployment in the sense that we do not wish to remove it on grounds of either the monetary or the social benefits of doing so' (p. 249).

As mentioned above, Friedman and Phelps denied the existence of a trade-off between unemployment and inflation in the long run. They asserted that there exists a natural rate of unemployment, U^* , which has the property of remaining constant at each rate of inflation as long as that rate is fully anticipated – hence in the long run the Phillips curve is vertical. Moreover, they questioned the stability of the curve in the short run, because of the role of inflationary expectations.

Many empirical studies have appeared, for many countries and different periods of time, measuring U^* from the Phillips curve. As a consequence these studies stress the distinction between natural and non-natural unemployment as an important classification.

The policy implications of the natural-rate hypothesis are well-known: inflationary monetary policy cannot reduce the level of unemployment in the long run below U^* , and in the short run it can only do this at the cost of increasing inflation – *cf.* Friedman's (1968) accelerationist hypothesis. A permanent reduction of unemployment requires a reduction of U^* . The question of how to achieve this warrants a further discussion of the concept of natural unemployment.²

2.2 *The New Microeconomics: Search and Wait Unemployment*

The concept of the natural rate of unemployment has been elaborated in what sometimes is called the 'new microeconomics', of which Phelps (1970) is a pioneering work. In this tradition market-clearing occurs since in individual markets competition prevails, but instantaneous clearing is hampered by market imperfections, in particular imperfect information. The existence of a natural rate of unemployment then can be explained from search theory.

2 A frequently cited description of natural unemployment can be found in Friedman (1968, p. 8) where he states that it is the level of unemployment 'that would be ground out by the Walrasian system of general equilibrium equations, provided there is embedded in them the actual characteristics of the labour and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of information about job vacancies and labor availabilities, the costs of mobility, and so on.'

Essentially search theory assumes that a worker remains unemployed in order to search for a good job.³

Frisch (1983, pp. 58 ff) discusses some further extensions of the 'new microeconomics' in the Phelps (1970) tradition in order to provide a breakdown of the components of unemployment. Frictional unemployment consists of search unemployment and adjustment unemployment – unemployment which is caused by a shift in the composition of aggregate demand causing 'a worker's lack of qualifications, which he cannot overcome in the short run by either adjusting his wage demand or gaining a better knowledge of the labour market' (p. 68).⁴ Non-frictional unemployment consists of wait unemployment – when the worker temporarily prefers leisure to employment at the prevailing wage rate – and queue unemployment. This latter type occurs 'when (a) ... there is an excess supply of labour and (b) the individual worker is convinced that he cannot improve his position in the queue by reducing his wage demand' (p. 63). It comes close to the Keynesian concept of involuntary unemployment (discussed below), and obviously varies with aggregate demand. Finally, natural unemployment consists of search unemployment and wait unemployment.

It is important to note that the 'new microeconomics' intend to provide a classification of employment according to its causes: the occurrence of several types of employment, in particular search and wait unemployment, is theoretically explained. That this does not necessarily coincide with a classification according to its cures becomes immediately apparent, once one realizes that both search unemployment and wait unemployment will vary inversely with aggregate demand, at least in the short run.⁵

2.3 *The Rational Expectations View: Natural Unemployment*

A further elaboration of the concept of natural unemployment is found in the rational expectations view, which can be seen as a further refinement of the new microeconomics. Two important assumptions are that (1) expectations are formed by intelligent people who take advantage of all information available when they form their plans: in fact their expectations are consistent with the results of a complete model of the economy. Moreover, (2) markets are cleared instantaneously by prices. As a consequence natural levels of output and (un)employment exist around which actual output and (un)employment vary in a stochastic way.⁶

3 The assumptions underlying this approach can be considered to be almost counterfactual, in particular in a situation of high employment. Cf. Hughes and Perlman, (1984, pp. 64–65).

4 It is rather unusual to include this type of unemployment under frictional unemployment, since the latter usually is assumed to be a short-run phenomenon. Also it is not clear to what extent adjustment unemployment varies with aggregate demand. This is elaborated upon below.

5 Phelps (1970, p. 16).

6 This can be explained both by the errors-in-expectations hypothesis [e.g. Lucas and Rapping (1969) – although this still is based on adaptive expectations] and the intertemporal substitution hypothesis [e.g. Hall (1980)].

Since non-natural unemployment is considered to be transitory, in the rational expectations view observed unemployment largely consists of natural unemployment. This has important implications for economic policy, which can be summarized in two propositions. The first is that of weak neutrality, which states that there is no use for demand management to combat unemployment in excess of its natural rate. The second proposition is that of strong neutrality, according to which demand management can neither force actual unemployment permanently below its natural level, nor can it influence this natural level itself. Essentially, the reason for this is that systematic policy changes are anticipated by the private sector. Hence these changes are built into the price forecast. And, provided that the real interest rate is not affected, only prices will change. As a consequence the natural levels of output and (un)employment are unaffected by macroeconomic policy measures. Economic policy therefore should concentrate on the removal of institutional rigidities on the labour market.

It hardly needs to be said that this view is widely disputed, both on empirical grounds⁷ and on theoretical grounds. The latter grounds include the presence of real balance effects, the influence of the real interest rate, the possibility of multi-unemployment equilibria, the influence of staggered wage-contracts and so on. It lies outside the scope of this analysis, however, to elaborate on these points here.⁸ One might hope that the statement of Hughes and Perlman (1984, p. 67) holds that 'even its proponents imply that the microeconomic theory applies to relatively good times when workers can search for better jobs, secure in the knowledge that they can always have slightly worse ones.' This is consistent with the observation that adjustment unemployment and queue unemployment have hardly been investigated in the earlier work of the new microeconomists, nor has the occurrence of non-natural unemployment seriously been investigated by proponents of the rational expectations view. However, the huge unemployment levels in the seventies and the eighties have directed more recent work in the microeconomic tradition to seek for an explanation of large and persistent unemployment levels. I discuss this in the next section.

2.4 The Keynesian View: Involuntary Unemployment

However, before turning to the next section, the reader should not be left with the impression that no alternatives are presented to the new microeconomics and the rational expectations view. The Keynesian oriented 'neo-classical synthesis' was the mainstream tradition against which originally the new microeconomics revolted. Although the influence of the Keynesian macro-

7 See for instance Greenlagh, Layard and Oswald (1983), Knieser and Goldsmith (1987), Knight (1987, p. 209 ff) and Kuipers (1989).

8 See amongst others Begg (1982), Knight (1987, pp. 131-133) and Sinclair (1987, pp. 215 ff).

economic tradition has diminished in the USA in the last decade, it is nonetheless a rich tradition which should not be neglected.

The Keynesian explanation of unemployment due to deficient aggregate demand is so well-known that it requires no further elaboration here. However, in the context of this discussion it is worthwhile to pay brief attention to the distinction between Keynesian voluntary and involuntary unemployment. One should be aware of the danger to consider the distinction as a matter of absolutely free choice. In that respect one should at least agree with Lucas' statement that 'there is an involuntary element in all unemployment in the sense that no one chooses bad luck over good; there is also a voluntary element in all unemployment in the sense that however miserable one's current work options, one can always choose to accept them.'⁹ But one should also distinguish between voluntary quits and voluntary unemployment. Essentially, the second part of the Lucas statement – and that is representative for most adherents of the natural unemployment hypothesis – refers to voluntary quits.

However, one might seriously doubt whether this approach or related approaches¹⁰ deal with the issue of unemployment in a relevant way. I prefer Hahn's (1987) view that 'Involuntary unemployment has nothing to do with free will' (p. 7). In the tradition of Keynes it should be considered an analytical category, which is compatible with equilibrium and rational behaviour. Unemployment then is involuntary in the sense that it is not within the workers power to reduce it: 'even if workers tried to lower their real wages by taking money-wage cuts when aggregate demand is below its full-employment level, they would be unable to do so since price would fall in proportion to wage cuts,' and unemployment would persist.¹¹ Hence aggregate demand should be raised to solve involuntary unemployment. And it is from this point of view that Hahn (1987) stresses 'the distinction between voluntary and involuntary unemployment matters a good deal. For instance in the latter case it is not true that real wages must be lower if employment is to be higher. Moreover, it may be true that involuntary unemployment arises from avoidable coordination failures and externalities' (p. 9).

While adherents of the natural unemployment hypothesis are inclined to consider most unemployment as natural, adherents of the Keynesian tradition approach unemployment as resulting largely from coordination failures, manifesting themselves in a shortage of aggregate demand.

9 Lucas (1981, p. 242) cited in Hughes and Perlman (1984, pp.34–35).

10 See, for instance, the view on voluntary unemployment mentioned in Sinclair (1987, p. 105): 'That those who do not work are unemployed because they are better off that way: their utility out of work is higher than the best that they could achieve in work.' He continues, however: 'This does not mean that those out of work are happier than those who are employed.' Cf. also Coddington (1983), pp. 26 ff.

11 Hughes and Perlman (1984, p. 59).

2.5 *A First Classification of Unemployment*

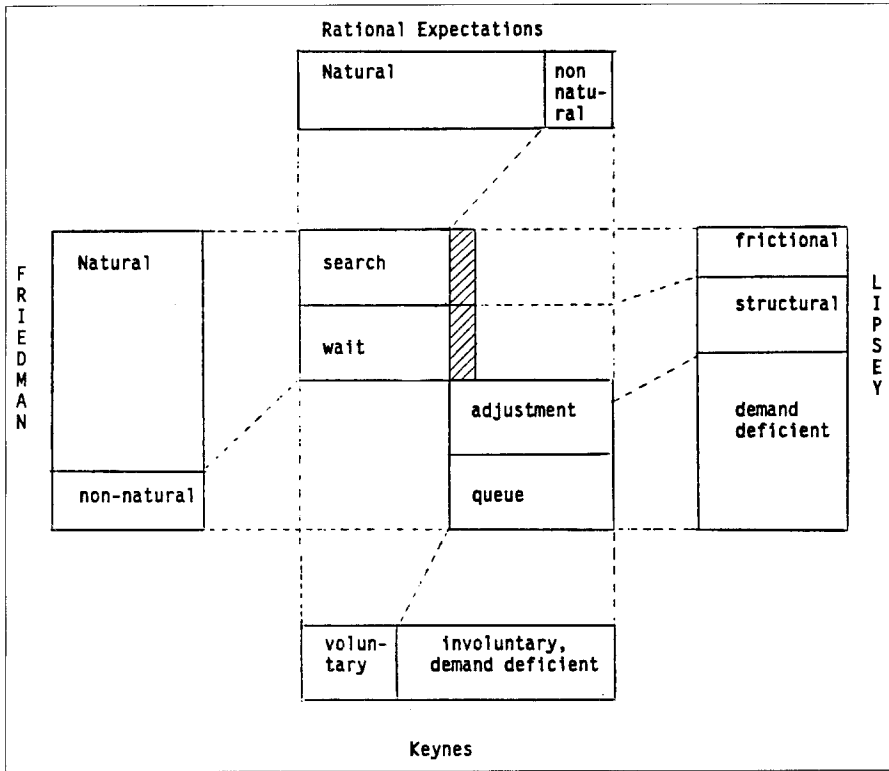
The classifications of unemployment discussed in this section are summarized in Table 1.¹² At the heart of Table 1 is Frisch's classification of unemployment according to the view of the new microeconomists discussed above. The shaded areas represent the parts of search and wait unemployment that vary with aggregate demand. I present two distinctions between natural and non-natural unemployment, at the top of the table and at its left-hand side, corresponding respectively to the rational expectations view and the monetarist view of Friedman. The difference, if any, is that in the monetarist view natural unemployment can somewhat be influenced through demand management, to the extent that search and wait unemployment vary with aggregate demand. The Keynesian distinctions of unemployment are presented at the bottom and the right-hand side of Table 1, corresponding to the distinction between voluntary and involuntary unemployment on the one hand and Lipsey's classification on the other.¹³

Apart from summarizing this section, Table 1 provides two useful insights. First, it shows in which way the several kinds of unemployment can be related to each other. But, in order to avoid misunderstanding, I show the different emphasis in the different classifications by displaying the subdivisions of unemployment disproportionately. As a consequence, one sees that the rational expectations school stresses the importance of natural unemployment and the Keynesian tradition the importance of involuntary, demand-deficient unemployment. But the table also suggests that natural unemployment and Keynesian voluntary unemployment are explained by the same factors. One might even think that both kinds of unemployment are analytically identical. Ideally, this might be true. But the flaw is that the heart of Table 1 is not explained in one analytically consistent framework. Traditionally, new microeconomists have concentrated on explaining search and wait unemployment, whereas adjustment and queue unemployment have been added rather on an *ad hoc* basis. Actually, Keynesian theory can be considered to explain queue unemployment, and partially adjustment unemployment – although Keynesians will call the latter demand-deficient unemployment too and will explain it from a totally different view. This observation suggests the possibility of a synthesis between the two traditions, the first one explaining the occurrence of moderate unemployment, the second the occurrence of high unemployment. This view is endorsed by Hughes and Perlman (1984, pp. 67 *ff*).

12 This is inspired by the table presented by Frisch (1983, p. 67).

13 Adjustment unemployment poses a problem in this table. As mentioned above, it results from a shift in aggregate demand causing a worker's lack of qualifications. However, there is then no guarantee that boosting aggregate demand, in this different composition, will remove this lack of qualifications. At most it can speed up adjustment, which is why I include part of adjustment unemployment in Lipsey's demand deficient unemployment.

TABLE 1 - CLASSIFICATIONS OF UNEMPLOYMENT IN THE AMERICAN DEBATE



However, in my opinion such a synthesis can only be an eclectic one as long as the views on the ways in which markets clear differ.¹⁴

A second insight which can be derived from Table 1 is that the distinction of unemployment with respect to its cures can only be understood when one looks at its causes. For, if one cannot explain at all why part of unemployment will disappear when aggregate demand increases, it is useless to speak of demand-deficient unemployment.

3 THE BRITISH DISCUSSION

In the late seventies an interesting discussion took place in the United Kingdom with respect to the determinants of unemployment, and it still continues. In this

¹⁴ This last point can be illustrated by the different interpretations of the mechanism that underlies the Phillips curve. This is elaborated in Hughes and Perlman (1984, pp. 89 *ff*) and one of their conclusions is: 'In the (Keynesian j.m.) Phillips-type model, changes in unemployment are the cause of price changes within the system. To Friedman and Phelps unemployment is the temporary outcome of price changes' (p. 90).

section I will focus on two elements of that discussion, continuing the line of analysis set out in the previous section. The reason that I shift the attention from the American discussion to the British scene is simply that most authors who participated in that discussion are British.

3.1 *The UV Approach to Natural Unemployment*

The intuitive idea behind the natural rate of unemployment is that it represents equilibrium unemployment – that is, demand for labour equals supply. But then, as a consequence, at its natural level the amount of unemployment should be equal to the amount of vacancies. This insight, amongst others, has stimulated the analysis of the relation between unemployment (U) and vacancies (V) expressed by the UV curve. The UV curve has been explained based on two different frameworks: search theory, which is in the tradition of the new microeconomics, and disequilibrium theory. Disequilibrium theory is discussed in the next section.

Search theory, of which Holt (1970) is a classical example, defines the UV curve as the locus of flow equilibria on the labour market. That is, on the UV curve the rate of inflow in unemployment is supposed to be equal to the rate of outflow. Natural unemployment, then, is interpreted as unemployment which is consistent with stock equilibrium on the labour market, *i.e.* demand for labour equals supply or, alternatively, $U = V$. It varies with the probability of inflow in unemployment, the acceptance probability and the offer probability of new jobs and is determined by the factors influencing these probabilities. The push factors mentioned below are important in this context.

Much empirical research on UV analysis for the United Kingdom has been done since the early seventies. The earliest discussion concentrated on the observed shift in the UV curve around 1966–67. The causes of that shift have been analysed extensively.¹⁵ Gujariti (1972) stresses the influence of changes in the social security system, Taylor (1972) mentions labour hoarding as an important cause and both Foster (1973), and Chesire and Webb (1970) draw attention to structural changes in demand for labour between regions and occupational groups.

More recent research has identified a persistent outward shift in the UV curve during the seventies and eighties. Jackman, Layard and Pissarides (1984, p. 13) find, for instance, an increase in the long-run level of unemployment in the period 1970–1980 by a factor 1.64. Although they ‘must remain agnostic as to the causes of the change’ (p. 17) the authors tend to conclude that search intensity has fallen by 40 percent, which caused the outward shift in the UV curve.

Budd, Levine and Smith (1987) find an outward shift in the UV curve of 100% during the period 1975–1984 for the UK.¹⁶ They estimate that for the

15 For a summary, see Bewley (1979).

16 Surprisingly enough, they find no shift for The Netherlands. In Section 5 it will be shown that all Dutch studies did find an outward shift for The Netherlands too.

UK some 60% of this shift is explained by the rise in long-term unemployment.¹⁷

3.2 *The NAIRU Approach to Natural Unemployment*

A different approach in the British discussion concentrates on the distinction between natural unemployment, interpreted as the NAIRU, and non-natural unemployment. However, one should realize that the 'natural rate' defined in this way is given a much broader interpretation than in the previous section – I will elaborate on this below. The discussion then concentrates on the determinants of natural unemployment on the one hand and, on the other, the causes of fluctuations of unemployment around this natural level.

With respect to this last point two main approaches can be distinguished. One is the rational expectations approach, employing the 'intertemporal substitution hypothesis' under the assumption that wages clear the labour market continuously over the cycle. As this approach has been discussed in the previous section, I will not discuss it further here. The second approach does not assume market clearing at all points in the business cycle. 'Instead there is a wage-determining process (Phillips curve) and it is this rather than a supply function which interacts with demand in order to determine employment.'¹⁸ As a consequence this second approach leaves much more room for the occurrence of non-natural unemployment. I elaborate on it further here.

In the analysis usually a small model – say at most five equations – of the economy is adopted in which wage and price equations play an important role. In the wage equation two crucial variables are x^e and U^* . x^e 'is the target rate of growth embodied in settlements where there is zero slack [on the labour market].'¹⁹ U^* 'is the level of unemployment which would prevail if wage-setting behaviour had fully adjusted to the feasible growth of real wages. Some people might like to call U^* equilibrium unemployment (or the natural rate) but this may not be very helpful since U^* may itself reflect union wage-setting and other disequilibrium phenomena not arising from incorrect expectations or slow adjustment.'²⁰

Layard and Nickell (1986) also use in their model an employment function, in which aggregate demand plays a role. Moreover, aggregate demand is assumed to influence pricing behaviour through the mark-up. As a consequence, they explicitly introduce mark-up behaviour both in wage setting and in price setting and see unemployment as a result of 'the battle between mark-ups.'

17 Budd, Levine and Smith (1987, p. 303). This finding is consistent with that of Layard and Nickell (1986, p. 154) who refer to evidence 'that long-term unemployed spend less time and money searching for work than the short-term unemployed.'

18 Greenhalgh, Layard and Oswald (1983, p. iii).

19 Grubb, Jackman and Layard (1982, p. 30). Andrews and Nickell (1983, p. 61) speak of 'the target rate of growth of real wages at a fixed level of unemployment and union power.'

20 Grubb, Jackman and Layard (1983, n. 3).

The NAIRU is defined as the non-accelerating inflation rate of unemployment. Grubb, Jackman and Layard (1983, p. 31) state that 'The NAIRU is useful as an explanatory construct because governments have tended to hold inflation down...' (p. 31). And if changes in the NAIRU are not compensated by changes in the target level of real wage growth, x^e , 'either the rate of inflation must rise or the level of unemployment must rise.'²¹ This underlines the importance of the target level of real wage growth in the wage equation. With respect to the factors determining the NAIRU – the 'push' factors – Layard (1986) says, for instance: 'for the moment my conclusion is that if we want to explain the increase in the NAIRU we should [...] focus on forces which] could include the social security system, employment protection, mismatch and trade union power ...' (p. 40).

With respect to the question of to what extent aggregate demand influences the NAIRU, Bean, Layard and Nickell (1986) stress that 'the fact that demand may have played a role in the rise of unemployment does not necessarily imply that this can be entirely reversed by expansionary fiscal or monetary policy, other than in the short run' (p. 15). The reason is that the model 'possesses a "natural" level of real demand as well as a "natural" level of unemployment, or NAIRU' (p. 15). And attempts to raise aggregate demand above this level will raise employment only so long as the wage and price expectations of firms and workers differ from the levels actually realized.

The determinants of both actual unemployment and the NAIRU can be calculated from the model. In this way Bean, Layard and Nickell (1986) calculated the determinants of unemployment for 19 OECD countries. They find that in general 'the decline in demand, relative to potential, seems to have been an important proximate cause of the rise in unemployment, especially in the European Community. However, it is clear that supply-side factors also have played a significant role' (p. 19).

Recent research has turned attention to an additional determinant of the natural rate of unemployment, apart from the push-factors, under the name of hysteresis. This refers to the idea that 'the equilibrium unemployment rate depends on the history of the actual unemployment rate.'²² As a consequence lagged unemployment (or long-term unemployment) can be a determinant of the NAIRU. Obviously the introduction of hysteresis has important policy consequences: 'left to themselves, European economies may remain at high unemployment for the foreseeable future. Regardless of the source of shocks which have led to increased unemployment, they imply that policies to decrease the actual rate, if successful, would probably also lead to decreases

21 Andrews and Nickell (1983, p. 62).

22 Blanchard and Summers (1987, p. 288). In this article a theoretical underpinning based on insider-outsider theory is provided for hysteresis. The empirical relevance of their theory is criticized by Jackman and Layard (1987). They prefer the argument that the exit rate from unemployment is duration dependent.

in the equilibrium rate.’²³ Moreover, it focusses interest on the long-term unemployed.

In the above I looked in more detail at a model of the NAIRU which assumes imperfect market-clearing. The implications of a more market-clearing oriented approach to the NAIRU are rather obvious and in the tradition of the rational expectations view discussed above: the NAIRU will be very close to the actual unemployment rate – hence actual unemployment will be largely explained by push factors. However, both approaches hardly differ with respect to the question of which factors determine the NAIRU.

From the above discussion one can infer that the NAIRU differs from natural unemployment to the extent that actual productivity growth, x , compensated for changes in terms of trade, differs from productivity growth, x^e , which is expected by workers when they set their target rate of wage growth. In the competitive new microeconomics world x^e will be assumed to adjust quickly to x , whereas this is not necessarily the case in the imperfect competitive NAIRU world. Hence, in order to fit the NAIRU in the classification of unemployment according to Table 1, I have to introduce next to search and wait unemployment a third category, which overlaps with these two categories. I call this discipline unemployment, since it refers to the unemployment necessary to discipline workers to set a feasible target rate of real wages. This is elaborated in Table 2 in the concluding Section 6.

4 THE CONTINENTAL DISCUSSION

Although its origins lie in the work of authors in the USA – for instance Patinkin, Clower, Barro and Grossman – disequilibrium analysis got its momentum in Europe where Malinvaud, Drèze, and Kooiman and Kloek stimulated theoretical and empirical research. An important notion underlying disequilibrium analysis is that prices do not clear markets and that transactions do take place at ‘disequilibrium prices.’²⁴ As a consequence one of the market parties may be rationed. Although it assumes price rigidities, one should realize, however, that disequilibrium analysis uses a general equilibrium framework, stressing the interactions between markets. But this analysis uses a concept of equilibrium which does not refer to market clearing, but to a state in which none of the market participants wishes to alter his position. These notions have far-reaching implications for the analysis of unemployment, as I will show below.

23 Blanchard and Summers (1987, p. 295).

24 There has been a lot of theoretical research both in the USA and in Europe to explain the phenomenon of price rigidity. However, due to space limitations and the mainly theoretical nature of the research at its present stage I have not elaborated on these theories here. For a concise overview see De Neubourg (1988) and Kniesner and Goldsmith (1987).

4.1 *Classical and Keynesian Unemployment*

The concepts of Classical and Keynesian unemployment have been developed in Malinvaud (1977).²⁵ In the tradition of disequilibrium analysis Malinvaud applied the notion that market parties may be rationed on the goods market and on the labour market. Assuming price-rigidity he proved that at least three possible situations could occur: excess supply on the labour market with excess demand on the goods market (Classical unemployment) or excess supply on the goods market (Keynesian unemployment) and excess demand on the labour market with excess demand on the goods market (Repressed Inflation).²⁶ The distinction between Classical unemployment and Keynesian unemployment lies in the situation on the goods market. Classical unemployment is characterized by high real wages which induce a large supply of labour. But since nominal wages are high compared to product prices, production is low. As a consequence demand for labour is low and Classical unemployment results. Keynesian unemployment, on the other hand, is characterized by low nominal wages compared to product prices. Although demand for labour in principle is sufficient to yield full employment, it is constrained by an insufficient demand for goods caused by the low real wage rate, or by low real balances. As a consequence Keynesian unemployment results.

From his analysis Malinvaud (1977) concludes that 'under normal circumstances an alternation of Keynesian unemployment and somewhat repressed inflation is to be expected, the first situation tending to prevail for longer periods than the second. ... the most favourable [event] to classical unemployment occurs when there is a sudden decrease in the quantity of final output per unit of labour, and when anticipations or social tensions lead to an abnormal increase in real wages' (p. 107).

An example of a model which applies these notions is that of Sneessens (1983). A central feature of his model is the employment function in the form of an aggregate min-condition. That is, employment, E , is the minimum of N^k – Keynesian demand for labour which depends on aggregate demand, N^p – classical or potential demand for labour which depends on the capital stock, and N^s – labour supply minus frictional unemployment. This equation then is combined with a production function and an aggregate demand function into a model which can be estimated and used to determine which type of unemployment prevails. Sneessens applied this to the Belgian economy for the period 1953–1978. He finds that the late sixties are characterised by Keynesian unemployment, the early seventies first by repressed inflation and later (1973/74) by Classical unemployment, whereas from 1975 on Keynesian unemployment is dominant.²⁷

25 They are already implicit in Barro and Grossman (1971).

26 Compare Malinvaud (1977, p. 31, Fig. 3). Since he ignores the possibility of inventories, Malinvaud also ignores a situation of excess demand for labour and excess supply of goods.

27 A similar conclusion for the French economy is found by Artus, Laroque and Michel (1984).

The notion of an aggregate min-condition, as used by Sneessens, is questionable. Underlying the min-condition is the notion that transactions are determined by the short-side of the market. However, the aggregate is the result of a multitude of market-transactions, both on markets with excess supply and on markets with excess demand. As a consequence the min-condition does not hold on an aggregate level and the aggregate level of transactions will generally be less than the minimum of aggregate demand and supply. Kooiman and Kloek (1979) elaborated on this idea by assuming that demand for labour and supply of labour are distributed over micro-markets according to a log-normal distribution. On each micro-market the min-condition holds. Then they show that a smooth aggregate transaction function can be derived which is the employment function, expressing employment as a linearly homogeneous function of aggregate demand for labour and labour supply. Lambert (1988) proved that when a log-normal distribution of demand and supply is assumed, the aggregate employment function is approximately characterized by a CES form. He estimates his model for the Belgium economy. One of his conclusions is that 'the decreasing rate of capital formation in the manufacturing sector inexorably leads towards a situation where this sector would be unable to (re)absorb its previously fired workers plus its quota of new arrivals on the labour market. According to the above estimates, the years 1977-1978 usher in a period characterized by a "deficit" of available jobs' (p. 110). But, apart from this phenomenon, the available jobs cannot be filled, in particular after 1975, due to severe effective demand deficiencies.²⁸

4.2 *The NIRU Approach to Natural Unemployment*

Kooiman (1986, p. 7) mentions as a drawback of the fix-price methodology that 'the model structures are uncomfortably rigid, and additional features cannot easily be incorporated.' And Lambert (1988, p. 117) concludes that 'endogenizing the short-run adjustment process of prices and wages ... should be given in our opinion high priority, in order to analyse more appropriately the effect of some "supply shocks."' These points are taken up by Sneessens and Drèze (1986) who relax the assumption of price rigidity by adding a wage and a price equation to the model. However, they distinctly remain in the tradition of disequilibrium analysis: adjustment to wage and price changes is slow. Consequently 'labour and capital appear as complementary inputs in the short run although they are substitutes in the longer run' (p. 98) and 'wage moderation in the short run is likely to have a larger impact on the demand for goods than on supply and potential employment' (p. 100).

An interesting feature of the analysis of Sneessens and Drèze is that their model generates a non-inflationary rate of unemployment (NIRU). In the same vein as the NAIRU models discussed in the previous section, this results from the wage and price equations in the model, which incorporate a Phillips curve.

28 Compare Lambert (1988), p. 110, Figure 3.4.

They show that the NIRU is a positive function of the 'capital gap' (*i.e.* the difference between labour supply and potential demand for labour, as a percentage of labour supply), the 'distributive gap' (*i.e.* the excess of income claims over value added), and the amount of frictions on the labour market. A conclusion which reminds one of the determinants of a closely related concept, the NAIRU.

When estimating their model for the Belgian economy, Sneessens and Drèze find that after 1975 potential demand is lower than labour supply, and that the 'capital gap' widens. This corresponds to Lambert's deficit of available jobs. Moreover, the deficient level of aggregate demand caused by the first oil crisis is reflected in the low level of Keynesian demand for labour. Sneessens and Drèze also present a decomposition of unemployment employing their concept of the NIRU. They 'estimate that the NIRU has not changed much between 1975 and 1982, remaining at the embarrassing level of 10–11 per cent.'²⁹ And the decrease in aggregate demand explains the rise in actual unemployment from 1975 to 1982. For, demand-deficient unemployment increases from –2.6 to 5.2 per cent.³⁰ However, 'one must be careful not to interpret the spread between labour supply (or potential employment) and Keynesian labour demand as being "due" to insufficient demand' (p. 117). In cases where this insufficient demand is caused by a low level of exports 'a part of what is commonly labelled "Keynesian unemployment" may well be the consequence of a real-wage problem' (p. 118). And when one recognizes the decisive influence of demand expectations on scrapping and investment decisions 'a part of what is commonly labelled "classical unemployment" may well be the consequence of an effective demand problem' (p. 118). As a consequence Sneessens and Drèze conclude that 'it is difficult to separate out the respective influences of factor prices (real wages) and effective demand in accounting for the inadequate performance of Belgium unemployment since 1974. The only safe conclusion is that both aspects matter' (p. 117).

Compared to the analysis in the previous section, employing the concept of NAIRU, the notion of price rigidity in the present analysis distinctly influences the analysis of unemployment. The emphasis is shifted from the medium and the long run to the short and the medium run. As a consequence while in the NAIRU analysis the capital-labour ratio is not an important determinant of unemployment (in the long run), in disequilibrium analysis it plays a predominant role. Therefore a shortage of available jobs turns out to be an im-

29 Sneessens and Drèze (1986, p. 114). However, the composition of the NIRU has changed drastically.

30 This last conclusion can also be found in Malinvaud (1986) for the French economy. Malinvaud does not present a formal analysis, but expresses his preference for the model of Sneessens and Drèze.

portant cause of unemployment.³¹ As is shown in the next section this also holds for the Dutch discussion.

4.3 *Structural Unemployment*

A final point which deserves separate attention is the estimation of unemployment corresponding to imbalances on the labour market – I will call this structural unemployment. Due to its property of linear homogeneity, the employment function can also be expressed in the form of a relation between the unemployment rate u and the vacancy rate v . In this way the UV curve is derived in the context of disequilibrium analysis.³² In the same way as in the UV analysis discussed in the previous section, the structural rate of unemployment then can be derived from the employment function. This was first done by Kooiman and Kloek (1979) for The Netherlands. They found a consistently upward trend in the structural rate of unemployment from 1964 on, which they tried to explain by making it depend on the average rate of increase in labour productivity. Their argument was that ‘new capital will be increasingly labour extensive, and demanding increasingly more highly qualified labour’ (p. 92). For the same reason Lambert (1988) decided to introduce the (lagged) actual rate of unemployment as an explanatory factor. His arguments – the ‘selectivity mechanism of unemployment’ (p. 130) – are closely related to the explanation of hysteresis discussed above. Finally Sneessens and Drèze (1986, p. 112) simply assume a linear trend when they estimate the rate of structural unemployment, which explains the increase of the structural mismatch. Obviously, the observation of increased structural unemployment is consistent with the results of UV analysis, reported in Section 3. But it is explained rather *ad hoc*.

When I fit the classification of unemployment of this section in that of Table 1, structural unemployment due to imbalances on the labour market obviously corresponds to Lipsey’s frictional and structural unemployment, and can be incorporated in Table 1 accordingly. The same holds for Keynesian unemployment, which corresponds to Lipsey’s demand-deficient unemployment. However, this exhausts the classification of Table 1, while Classical unemployment still has to be incorporated. Hence, another extension of Table 1 is required to account for unemployment due to a shortage of productive capacity. I shall call this capital gap unemployment. This will be elaborated in Table 2 in the concluding Section 6.

31 However, Bean, Layard and Nickell (1986, p. 15) argue that when one explicitly incorporates wage and price equations in the analysis and looks for a rate of unemployment consistent with no inflation, ‘the differences between the disequilibrium approach and the ... [NAIRU] model ... are less pronounced than they appear ... the differences are primarily in emphasis.’

32 Hansen (1970) already derived a UV curve along these lines in an informal way.

5 THE DUTCH DISCUSSION

The use of vintage models of production in the analysis of unemployment is the main feature of the Dutch debate, for which it deserves special attention. It was initiated by the Central Planning Bureau in the early seventies. The policy conclusions – unemployment is due to real wage costs growing too fast and not to stagnating aggregate demand – ‘provoked a lively, not to say a heated discussion. Contributions to this discussion came from some 30 authors and included total rejection of the approach, refinements, ..., the integration of the approach in a more comprehensive model of the economy and an extensive discussion of its policy implications.’³³ The use of the vintage model also enabled the Central Planning Bureau to distinguish between several categories of unemployment. I will elaborate this distinction below.

5.1. *Structural and Cyclical Unemployment*

In the mid-seventies, when analysing unemployment, the Central Planning Bureau distinguished between cyclical and structural unemployment. Cyclical unemployment results from underutilization or overutilization of productive capacity due to deficient or too large an effective demand (MEV, 1974, p. 58). The remaining unemployment is called structural unemployment in a broad sense. Subtraction of seasonal and frictional unemployment then yields structural unemployment in a narrow sense. In the first instance this type of unemployment is explained as a consequence of a deficient capacity demand for labour compared to labour supply (MEV, 1974, p. 58).³⁴

Later on causes of a more qualitative nature were added. Apart from seasonal and frictional unemployment, unemployment amongst the disabled is introduced as a separate category. In the remaining structural unemployment in a narrow sense, a distinction is made between unemployment which results from qualitative discrepancies between supply of and demand for labour and unemployment which results from a deficient capacity demand for labour, *i.e.* qualitative and quantitative structural unemployment, respectively (CEP, 1975, p. 95). Qualitative structural unemployment has many different causes which are discussed later on. Quantitative structural unemployment results from scrapping of obsolete machinery, to the extent that the resulting fall in employment is not fully compensated by employment resulting from new investments. It can be explained by means of a vintage model.

The use of vintage models in the analysis of unemployment was started by Den Hartog and Tjan (1974) who estimated a clay-clay vintage model for The Netherlands. They ‘stressed the role of labour costs in determining the life span of equipment and consequently in determining the number of available jobs.’³⁵

33 Den Hartog (1984, p. 326).

34 Compare the ‘shortage of available jobs’ and the ‘capital gap’ discussed in Section 4.

35 Den Hartog (1984, p. 326).

However, in their model this number is also determined by investment and the rate of technical progress, as was stressed by several other authors.³⁶ Actually, the number of available jobs can be identified with the capacity or potential demand for labour, N^p , used in disequilibrium analysis. The simultaneous determination of capacity demand for labour and capacity output, combined with the intuitive appealing notion of scrapping economically obsolete equipment, made the use of vintage models in the analysis of unemployment popular in The Netherlands. Den Hartog (1984) provides an excellent overview of the use of vintage models. For that reason I will only mention two recent applications which explicitly classify unemployment according to its causes.

A recent example of the use of a clay-clay vintage model can be found in Driehuis (1986). He estimates a small model for The Netherlands, 1960–1983, in which he distinguishes an exposed sector from a sheltered sector. In the exposed sector capacity output and demand for labour are determined by a vintage model, in the sheltered sector capacity demand for labour is determined by real wages and labour-saving technical progress. As a consequence ‘a shortage of jobs may arise because of an acceleration in labour supply in combination with:

- a deceleration of capital formation ..., particularly in [the exposed] sector 1;
- an acceleration of wages in [the sheltered] sector 2;
- changes in production technology [*i.e.* embodied technical change];
- changes in the organization of production (mergers, *etc.*) [*i.e.* disembodied technical change]’ (p. 302).

Driehuis concludes that ‘since 1973 an increasing shortage of jobs has arisen in The Netherlands. This shortage is mainly due to a decline in capital formation in sector 1 and a fall in output growth in sector 2 arising from reduced (consumer) demand. ... After 1980 cyclical unemployment is also of significance’ (p. 310).

Muysken and Van Zon (1987) estimated a putty-clay vintage model for The Netherlands, 1960–1984.³⁷ They use an aggregate employment function in the estimation of their model, which enables them to distinguish between capacity demand for labour, N^p , and capacity employment, E^p . An interesting feature of the model is that, apart from economic obsolescence, scrapping of equipment can occur due to underutilization of productive capacity. This is important as the rate of capacity utilization declined steadily from around 98 per cent in 1972 to around 92 per cent in 1982. It increased to a level of 95 per cent afterwards. With regard to the nature of unemployment Muysken and Van Zon conclude ‘that the rise in unemployment from 325

36 See for instance Kuipers, Muysken and Van Sinderen (1979).

37 The model of Muysken and Van Zon is comparable to that of Kuipers and Van Zon (1982) and Gelauf *et al.* (1985). Differences are amongst others the allowance for heterogeneous vintages, the endogeneity of investment and the use of an employment function.

thousand man-years in 1980 to 800 thousand man-years in 1983 and 1984 is explained both by a deterioration of the cyclical situation and an insufficient level of capacity demand for labour relative to labour supply. The latter is caused by the low level of capacity utilization which led to scrapping of equipment due to idleness to about 10 percent of productive capacity' (p. 131). As a consequence, quantitative structural unemployment 'is no longer caused by a high wage rate, as was the case in the early and mid-seventies' (p. 132).

The decomposition of unemployment of Muysken and Van Zon corresponds to that of Driehuis, at least in the eighties. This can be concluded as Driehuis' statement that 'a rough estimate suggests that, out of an unemployment total of 800,000 in 1983, 20 percent is due to labour market imperfections, 55 per cent is due to a shortage of jobs, and 25 per cent is the consequence of cyclical movements in production' corresponds to the subdivision of Muysken and Van Zon for that year.

Finally, one should note that the increasing shortage of jobs, which is found in all vintage models, is consistent with the findings of disequilibrium analysis reported in Section 4. Compare, for instance, Lambert's deficit of available jobs and the 'capital gap' of Sneessens and Drèze. This also stresses the similarity between both kinds of analyses. Actually, both analyses are similar with respect to their treatment of the labour market. The main difference is that in the latter type of analysis, actual and capacity demand for labour are derived in the context of a vintage model and the regimes on the goods market are ignored.

5.2 Unemployment due to Labour Market Imperfections

Vintage models mainly concentrate on the identification of quantitative structural unemployment and cyclical unemployment. Qualitative structural unemployment usually is exogenous in this type of analysis and pertinent data are found using a different kind of analysis.³⁸ Actually quite a lot of research has been done on unemployment due to labour market imperfections in The Netherlands, independent of the research using vintage models. This has been done both in the search-theoretical tradition – employing *UV* analysis and stock-flow analysis – and in the disequilibrium tradition – using the aggregate employment function.

Representatives of disequilibrium analysis are Kooiman and Kloek (1979) and Heijke (1982). The results of Heijke are similar to those of Kooiman and Kloek (*cf.* Section 4): both find a slowly rising percentage of unemployment due to market imperfections. And both find it hard to give a satisfactory explanation for this phenomenon.

Earlier research in *UV* analysis also concentrated on measuring unemployment due to market imperfections and hardly revealed its causes. Examples are Kuipers and Buddenberg (1978), Muysken and De Neubourg (1981) and

38 Muysken (1987) presents a consistent framework, unifying both approaches.

SOZA (1982).³⁹ In these studies a log-linear form of the *UV* curve is estimated with a trend term added to the intercept; some studies also include lagged unemployment, and sometimes shift parameters are added too. As a consequence unemployment due to market imperfections essentially is explained from a time-trend and from lagged employment.

More recent *UV* research has paid more attention to the causes of unemployment. Examples are Van den Berg (1982) and De Neubourg (1985). In these studies the *UV* curve is also estimated in a log-linear form, but then the intercept is specified in such a way that causes of the rising structural unemployment can be identified (De Neubourg) or the estimated structural unemployment is further analysed along regional, age and gender dimensions (Van den Berg).

All studies conclude that the *UV* curve in The Netherlands shifted around 1967, indicating an increase in structural imperfections on the labour market.⁴⁰ After that year all studies find a steadily rising rate of unemployment due to market imperfections. Moreover, all estimates of structural unemployment due to market imperfections fall in the same range, *i.e.* around 2 per cent of the labour force in the early eighties. Since these results turn out to be rather robust with respect to the model specification, one might be inclined to accept them as good estimates of the relevant values of unemployment due to labour market imperfections. But apart from the obvious data problems, there are some problems which cannot be ignored.

Muysken and Meijers (1988) did a comparative study for Austria, Germany, The Netherlands and the UK. They show that, contrary to what is usually assumed in *UV* analysis, shifts in the log-linear *UV* curve not only occur in the intercept but also in the other parameters of the function. Hence the log-linear *UV* curve is misspecified. Moreover, they show that when unemployment is large, *UV* analysis tends to overestimate unemployment due to labour market imperfections.

It is obvious that the decomposition of unemployment in cyclical and structural components, both quantitative and qualitative, bears a close resemblance to the distinction between Keynesian and Classical unemployment. For that reason the Dutch discussion can be assumed under the Continental discussion which was described in Section 4, and it can be dealt with accordingly in the classification of Table 1.

6 CONCLUSIONS

Looking back at the decomposition of unemployment which results from the various discussions, two broad ways of categorising unemployment can be distinguished. I distinguished these two broad ways already in the American

39 However, Muysken and De Neubourg give a verbal discussion of its underlying causes.

40 It is remarkable that a similar increase around 1967 was observed in the UK; see Section 3.

discussion – but their roots are much older.⁴¹ One distinction is that between natural and non-natural unemployment. This distinction is made in several ways: natural unemployment is interpreted according to the vertical Phillips curve, as the NAIRU and as unemployment due to labour market imperfections as found in *UV* analysis. The other distinction is that between demand-deficient unemployment and structural unemployment. Again several interpretations can be found: Keynesian vs. Classical unemployment or cyclical vs. structural unemployment – both quantitative and qualitative.

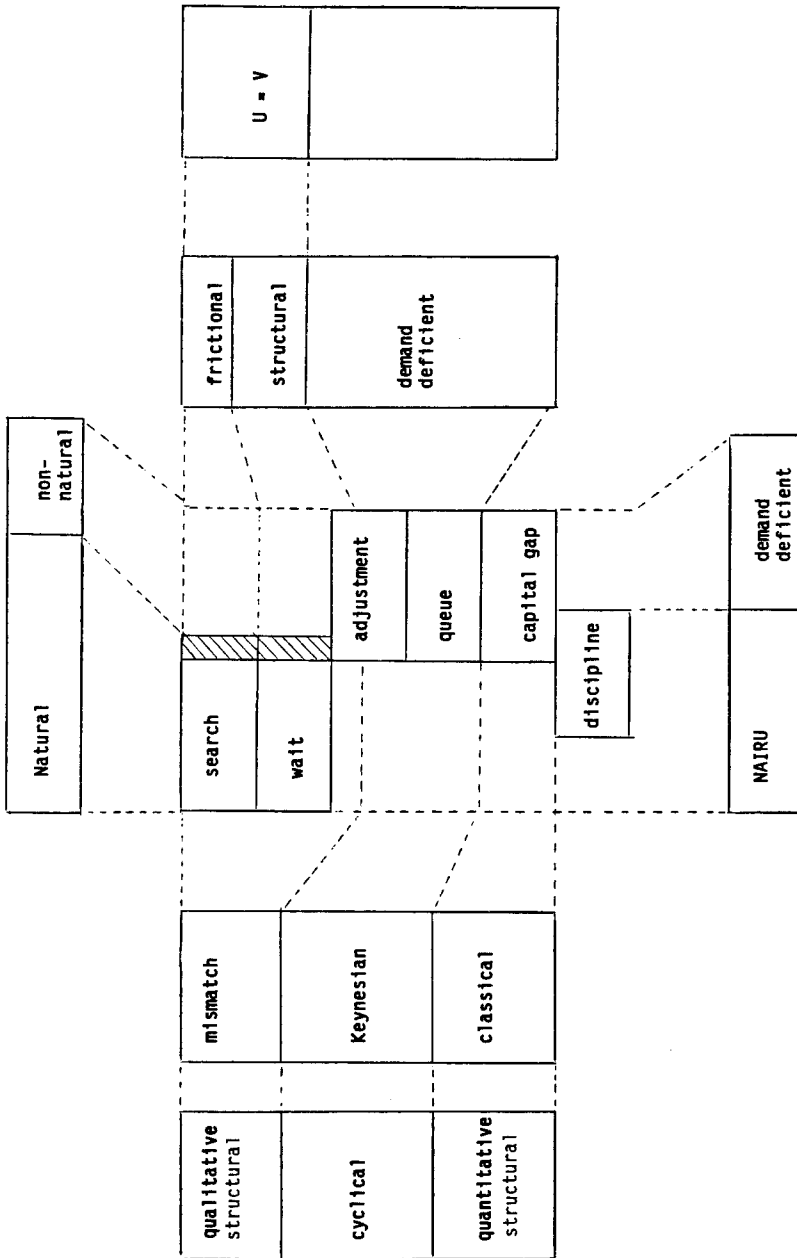
Although these distinctions are often used in discussing economic policy, it is obvious that they are primarily analytical distinctions. That is, they are used in the analysis of the causes of unemployment. One should realize that these distinctions essentially identify constraints to full employment. According to the NAIRU analysis the constraint lies in the process of wage and price setting: too high a level of employment will be self-destructive since it triggers inflation. In the *UV* analysis the constraint lies in the selectivity of employers and workers which prevents them from matching jobs and thereby increases unemployment – or simply in the inability to match jobs due to lack of information or lack of compatibility. Classical unemployment identifies the constraint with a shortage of production capacity – and hence of capacity demand for labour – due to high real wages, whereas Keynesian unemployment identifies the constraint as resulting from deficient aggregate demand. Finally, quantitative structural unemployment seeks the constraint in a shortage of available jobs due to scrapping of equipment without sufficient compensating investment. Thus the analytical relevance of a classification of unemployment lies in its identification of the constraints to full employment.

But these constraints are not independent of each other and attempts to remove one constraint will also affect other constraints. For that reason the different distinctions of unemployment are also not independent of each other. That, nonetheless, several ways of decomposing unemployment exist, results from the fact that one wishes to emphasize a certain constraint. If one discusses unemployment in terms of the NAIRU, one stresses the danger of inflation, whereas if one discusses unemployment in terms of Keynesian unemployment, one stresses the danger of deficient aggregate demand. Moreover, since the constraints are not complementary to each other, the constraint which is emphasized in the theoretical analysis has a relatively bigger chance to prove to be empirically relevant.

That the various decompositions of unemployment discussed above are not independent of each other and yield overlapping constraints to full employment can also be seen if one tries to relate these decompositions to each other. In my discussion above, I tried to incorporate these decompositions in the framework of Table 1. The result is presented in Table 2.

41 Compare, for instance, De Neubourg (1988, Ch. I), who refers to the discussion in the United Kingdom before the Second World War.

TABLE 2 - CLASSIFICATIONS OF UNEMPLOYMENT: A SUMMARY



The heart of Table 2 is formed by search and wait unemployment on the one hand, and adjustment and queue unemployment on the other. This is identical to Table 1, and has been elaborated in Section 2. There it has also been shown how the monetarist and rational expectations distinction between natural and non-natural unemployment can be incorporated. This distinction is reproduced at the top of Table 2. In the same vein Lipsey's classification of unemployment as frictional, structural and demand-deficient is reproduced at the right hand of that table.

In Section 3 it was argued that, in order to fit the NAIRU in the classification, a third category should be added to search and wait unemployment, which overlaps with both. This was called discipline unemployment, since it refers to the amount of unemployment necessary to discipline workers to set a target rate of real wages, which is feasible with non-accelerating inflation. Adding discipline unemployment enables me to include the distinction between the NAIRU and non-natural (mostly demand-deficient) unemployment at the bottom of Table 2.

The distinction between Keynesian and Classical unemployment, apart from structural unemployment due to imbalances on the labour market (mismatch unemployment), requires another extension of the table, as was argued in Section 4. Mismatch unemployment corresponds to Lipsey's frictional and structural unemployment, whereas Keynesian unemployment corresponds to Lipsey's demand-deficient unemployment. Hence both categories can be included in Table 2 in a straightforward way. However, it is obvious that the notion of a capital gap (shortage of available jobs) still has to be added to queue unemployment in order to be able to include also Classical unemployment. Once this is done, the resulting decomposition can be included in the table, as is shown at the left hand of Table 2. Finally, it was shown in Section 5 that the distinction between cyclical unemployment and structural unemployment, both of a qualitative and of a quantitative nature, is similar to that between Keynesian, mismatch and Classical unemployment. Hence, it can also be included at its left-hand side.

In the same way as was discussed in Section 2 for Table 1, Table 2 shows how the several decompositions of unemployment can be related to each other. However, I have already warned that it is misleading to think that all decompositions can thus be fitted in one consistent analytical framework: search and wait unemployment, and discipline unemployment to a large extent, are explained by new microeconomics. However, queue and capital gap unemployment are explained by disequilibrium economics. And I already commented in Section 2 on the ambiguous nature of adjustment unemployment. Therefore one should not be surprised by the conclusion that Table 2 is rather eclectic. But, I cannot help but resort to some eclecticism in order to be able to show the relationship between the several decompositions of unemployment.

From the above discussion one should also not be surprised by the conclusion that the preference for a certain decomposition of unemployment, and

hence for pointing at a certain constraint, will follow from one's view of the way in which an economy works. An important demarcation then is whether one thinks that markets usually clear or that they do not. Roughly speaking this corresponds to the classification of unemployment into natural and non-natural on the one hand, and into structural and demand-deficient on the other. But the demarcation between both classifications is not necessarily as strong as sometimes is suggested. One might think, for example, of a NAIRU model in which imperfect competition prevails, and aggregate demand is important in the analysis of unemployment.⁴² Another example is a disequilibrium model where a NAIRU (or NIRU) is derived that plays a prominent role in the analysis of unemployment.⁴³ These kinds of models try to bridge the gap between the market-clearing and non-market-clearing view. But it is still too early to say whether a synthesis will emerge in which the several classifications of unemployment will be incorporated in one consistent framework.

Most economists recognize the interdependence between the various constraints to full employment and expect policy measures to affect several constraints simultaneously. However, they will disagree with respect to the lags involved in the impact of a certain policy measure and with respect to the size of that impact on various constraints. If anything, only macroeconomic models can address these problems properly. In principle the use of these models is the only way to analyse the interdependencies between several constraints to full employment and to assess the impacts of policy measures on various constraints. This holds in particular for the impacts after several periods, which are influenced by the feedback loops in the economic system. If government tries, for instance, to remove the shortage of productive capacity by inducing lower real wages, this might lead to a shortage of aggregate demand in later periods due to the feedback of real wages to domestic consumption. Or, it might increase aggregate demand in later periods due to the feedback of real wages to lower export prices. Macroeconomic models take these feedback loops into account and are thus able to assess both the ultimate effects of certain policy measures and the lags involved – although such an assessment is restricted by the crude and imperfect description of the economy which is inherent to the macroeconomic character of these models.

One now might be tempted to conclude that the use of macroeconomic models – although they may generate a certain decomposition of unemployment – reduces the policy relevance of such a decomposition of unemployment to nil. However, then one ignores the fact that these models often are rather complex, and it may be difficult to understand their dynamic structures. It may be very enlightening to recognize the mechanism of the model against the

42 Cf. Layard and Nickell (1986) who explain the NAIRU as the result of 'a battle between mark-ups,' discussed in Section 3.

43 Cf. Sneessens and Drèze (1986), discussed in Section 4.

background of views on how the economy works. For one should realize that the variety of these views is also reflected in the variety of macroeconomic models of an economy. That is, different models result from the different views of the way in which markets work. And since these views are often reflected in the decomposition of unemployment, the policy relevance of such a decomposition lies to some extent in the identification of its implicit view on the way an economy works and the implicit preference for a certain set of policy measures.

However, I mentioned above that the demarcation between several views of how the economy works is not always as strong as it sometimes appears from the discussion among economists. And macroeconomic models may be of an eclectic nature, mixing several views. In that case the preference for a specific set of policies will be more a matter of analytical and empirical discussion than a discussion on the principles underlying the analysis. But nonetheless these underlying principles will be involved in discussions on policy issues. And it is in this sense that I interpret De Neubourg's (1988, pp. 66-67) position: 'various instruments, combined in various policy mixes, may and can be used to combat unemployment. Judgements on the actual mix that is expected to be most successful, cannot be provided by analysis alone.' And he refers to Malinvaud (1982, p. 1) who states: 'Neither economic theory nor macroeconomic models can give today the kind of clearcut answers that would be directly useful for policy makers.'

Nonetheless, I think that a good analysis is a prerequisite for a successful policy. From that point of view the policy relevance of a classification of unemployment lies already in its analytical relevance. Moreover, I hope that some of the developments sketched above will succeed in developing a consistent framework in which the various kinds of unemployment can be incorporated. Such a framework would allow one to identify in a concrete situation the relevant types of unemployment and the proportions to which they occur. And although this would not yield an unambiguous answer to the relevant policy measures, it would certainly make a discussion on these measures more comprehensible and probably more successful. For, it is obvious that a decomposition of unemployment can be useful in these discussions in order to reveal the implicit views on the way an economy works and to explain the preferences for certain policy measures.

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Summary

CLASSIFICATION OF UNEMPLOYMENT: ANALYTICAL AND POLICY RELEVANCE

The purpose of this paper is to evaluate the way unemployment can be decomposed in several components, and to discuss the analytical and political relevance of such a decomposition. The paper deals systematically with the classifications of unemployment that can be found in the current international literature and fits them into a coherent framework. Finally, the relevance for economic policy of decomposing unemployment into components is discussed.