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THE UNEMPLOYMENT PROBLEM - A NORWEGIAN PERSPECTIVE

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ABSTRACT/RÉSUMÉ

This paper lays out a simple open economy macromodel based on the recent literature on imperfect competition and equilibrium unemployment. It is shown that the NAIRU is not a clearcut concept in the open economy framework. Furthermore, it is argued that the self-correcting mechanisms in the economy are weak, so that the actual rate of unemployment may deviate considerably from the NAIRU over long periods. The theoretical discussion is illustrated by recent Norwegian experience. The paper also investigates the costs and benefits of incomes policies in unionised economies. Finally, there is a discussion of various aspects of the Norwegian labour market and Norwegian labour market policies.

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Cet article présente un modèle macro-économique simple, dérivé de la littérature récente sur la concurrence imparfaite et le chômage d'équilibre, représentatif d'une économie ouverte sur l'extérieur. Dans ce cadre d'économie ouverte, on montre que le NAIRU n'est pas un concept dépourvu d'ambiguïté. De plus il est indiqué que, compte tenu de la faiblesse des mécanismes auto-équilibrants dans l'économie, le taux de chômage effectif peut s'écarter sensiblement du NAIRU durant de longues périodes. La discussion théorique est illustrée par l'expérience récente de la Norvège. L'article fait également l'analyse des coûts et des avantages des politiques de revenus dans les économies où les syndicats jouent un rôle important. Enfin, ce papier discute divers aspects du marché du travail et des politiques qui affectent le marché du travail en Norvège.

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1.   Introduction

1.   Unemployment in Norway rose from 2.1 per cent in 1987 to 5.9 per cent in 1992, far above the previous post-war maximum of 3.4 per cent in 1983. The present paper discusses some reasons for the rise in unemployment, and what policies that might be used to bring unemployment down. The emphasis is on the three main parts of the Norwegian Government's policy on unemployment: stabilisation policy, incomes policy and labour market policy.

2.   As a background for the discussion of policy issues, I present a simple macroeconomic model based on the recent literature on imperfect competition and equilibrium unemployment, where the wage and price setting are required to be consistent. One of the purposes of this exercise is to show that the NAIRU is not a clearcut concept. The complexities that are involved must be taken into consideration when interpreting estimates of the NAIRU.

3.   Within this theoretical framework, deviations of actual unemployment from equilibrium unemployment are usually associated with nominal demand shocks, expectational errors and nominal rigidities. I shall argue that in the Norwegian context an emphasis on expectational errors and nominal rigidities as explanations of the variation in unemployment is misplaced.   The recent Norwegian experience is that large cycles have been driven by variation in private consumption and investment. The effect on unemployment could not have been offset by flexibility of wages and prices. Thus, the self-correcting mechanisms in the economy are weak, which indeed is the case in the empirical macromodels of the Norwegian economy.

4.   Weak self-correcting mechanisms imply that deviations from equilibrium unemployment may be large and long-lasting. This provides scope for successful macroeconomic stabilisation policy. The considerable Norwegian oil revenues have made it possible to meet the rise in unemployment with a highly expansionary fiscal policy. The expansionary fiscal policy prevented unemployment from rising even further, and contributed to the subsequent reduction in unemployment.

5.		Stabilisation policy is however made more difficult by the fact that it (for several reasons) may be hard to judge how far unemployment can be pushed down by macroeconomic policy. Empirical estimates of the equilibrium rate of unemployment are uncertain, and may be severely biased under long-lasting downturns. Policy formulation should be based on a broader evaluation of the economic situation.

6.		Incomes policy has played an important role in Norway throughout the post-war period, and is crucial in the present Norwegian government's "Solidarity alternative". The potential gains are considerable, while it in practice is hard to evaluate the gains and costs.

7.		I have given labour market policy less attention than the self-correcting mechanisms and incomes policy, not because I consider labour market policy to be less important, but because labour market policy has much been more thoroughly discussed in recent literature, inter alia OECD (1994).

8.		The paper is organised as follows. The theoretical framework is set out in section 2, and the Norwegian macroeconomic experience is discussed in section 3. Section 4 points at some implications for economic policy, while section 5 deals with wage setting and incomes policy. Various issues concerning the Norwegian labour market are considered in section 6, and section 7 concludes.

## 2.		A theoretical framework

### 2.1.		NAIRU and the balanced trade equilibrium rate of unemployment

9.		In this section, I outline the theoretical framework that is to be used in the subsequent discussion of the evolution of the Norwegian economy. The model is similar to (but somewhat simpler than) the one presented in chapter 8 of Layard et al. (1991). The relations of the model are not derived directly from a framework with optimising agents; however, the model may be seen as a log-linear approximation to a standard imperfect competition macromodel of the Blanchard and Kiyotaki (1987) or Dixon (1994) type. Kolsrud and Nymoen (1996) analyse the dynamic properties of a similar model.

10.		As a background for the formal model, one can think of an economy consisting of a given number of firms, each producing a differentiated product. There is monopolistic competition in the product markets, where each firm is facing a downward sloping demand function. Domestic firms also face a downward sloping demand function for exports to other countries; correspondingly they face competition from imports from foreign firms also producing differentiated products. Firms set prices so as to maximise profits, and produce the quantity that is demanded at the prevailing price. Capital is assumed to be fixed (in the relevant short run), and employment is given by the quantity of labour that is necessary to produce the output that is demanded. Wages are set in negotiations between employers and employees (possibly organised in trade unions), at firm level or at a more aggregate level. The exchange rate is assumed to be fixed.

11.		In this economy the level of output and employment is demand-determined in the short run. The factors that determine the short run variation in aggregate output are consumer and investment demand, public purchases, competition from imports and demand for exports. This is in accordance with the empirical macroeconomic models of Statistics Norway (MODAG and KVARTS) and Bank of Norway (RIMINI). This does not imply that the underlying source of variation always is from the demand side; an example of the opposite is when a rise in the price of raw materials reduces profits, which may have a negative impact on investment demand and thus on aggregate demand.

12.		In the wage determination, the parties set a nominal wage based upon expectations about the future state of the economy, including the price and unemployment levels, so as to realise the real wage

that is consistent with the bargaining position of the parties. The target real wage is a decreasing function of the rate of unemployment; if the unemployment rate is low, workers are more certain to keep their job, firms compete to attract new workers, and profits are usually high. All these factors tend to raise real wages.

13.   The open economy involves an additional feature, namely a possible difference between prices of products from domestic and foreign firms. The workers are concerned with their purchasing power, i.e. the consumer real wage w - p, where lowercase indicates natural logarithm, w is the nominal wage and p is the consumer price index. Firms, however, are concerned with the producer real wage w - q, where q is the price of domestic value added.

14.   The target producer real wage from the wage setting is now given by:

$$w-q = \gamma_0 - \gamma_1 U + \gamma_2 (p-q), \qquad \gamma_0, \gamma_1 > 0, 0 < \gamma_2 < 1,$$
[1]

where U is the rate of unemployment. The positive effect of the consumer price relative to the price of domestic products reflects that the workers will demand compensation to keep up the purchasing power if the consumer price index increases. γ_2 is less than unity, based on the assumption that workers obtain less than full compensation for a consumer price increase. The constant term captures other factors that affect the wage setting, like taxes, labour productivity, the institutional framework of the wage setting, labour market regulations, the benefit system and the perceived productivity of the unemployed workers.

15.   Firms set prices so as to maximise profits, which requires that marginal costs are equal to marginal revenue. This can also be viewed as the price being set as a markup on marginal costs, where the markup depends on the price elasticity of demand. For simplicity, I assume constant returns to scale in labour; with an appropriate choice of units marginal costs are equal to the wage. Furthermore, I assume that the price elasticity of demand is independent of the level of aggregate demand, but decreasing in the price of competing imports. Intuitively, the latter relationship reflects that if the competitors rise their prices, this leaves room for higher markups. The result of these assumptions is that the price of domestic products is a weighted average of unit costs (i.e. the wage) and the price of imports measured in domestic currency, b:

$$q = \omega w + (1-\omega)b, \qquad \text{where } 0 < \omega < 1.$$
[2]

The costs relative to foreign competitors (which is the inverse of the cost competitiveness of the country), c, is measured by the nominal wage relative to the price of imports:

$$c \equiv w - b.$$
[3]

Using the price setting [2] in the definition of the producer real wage shows that the producer real wage is an increasing function of costs relative to foreign competitors; a weak competitive position is associated with a high producer real wage:

$$w - q = w - (\omega w + (1-\omega)b) = (1-\omega)(w - b). \quad\quad\quad [4]$$

Real aggregate demand in the economy is given by:

$$y = \sigma_0 + \sigma_1 x - \sigma_2 c + \sigma_3 d \quad\quad\quad \sigma_1, \sigma_2, \sigma_3 > 0, \quad\quad\quad [5]$$

where x is an indicator of the expansionary effect of economic policy and d is an indicator for shocks to other demand components (private consumption and investment, exports). A rise in the relative cost level, c, implies a reduction of demand as exports are reduced and the import share increases.

16.   The relationship between aggregate output and the rate of unemployment is given by:

$$y = \overline{y} - \alpha U, \quad\quad\quad [6]$$

where $\overline{y}$ can be interpreted as the full employment output level and $\alpha > 0$ is the semielasticity of aggregate output with respect to unemployment.

17.   To complete the model, we must define the consumer price index

$$p = \theta q + (1-\theta)b \quad\quad\quad 0 < \theta < 1. \quad\quad\quad [7]$$

The model now has six endogenous variables, w, q, U, c, y and p, while b, x and d are exogenous. (The associated six equations are [1]-[3] and [5]-[7].) One way to interpret the equilibrium is that wages and domestic prices are set on the basis of expectations of the realised state of the economy. The wage and price setting determines the relative cost level c. Aggregate output is given by real aggregate demand, which from [5] depends on the relative cost level c, economic policy x and other demand components d. Unemployment is then given as a function of aggregate output by [6]. The rate of unemployment that makes the wage and price setting consistent, [1] = [4], cf figure 1, will be referred to as U^N or NAIRU. Thus, the level of NAIRU depends on factors that determine the position of the wage and price curves, which are usually thought to be the conditions in the labour and product markets. However, as will be clear below, the matter is somewhat more involved.

Figure 1. **NAIRU, U^N, is the rate of unemployment which makes wage and price setting consistent**
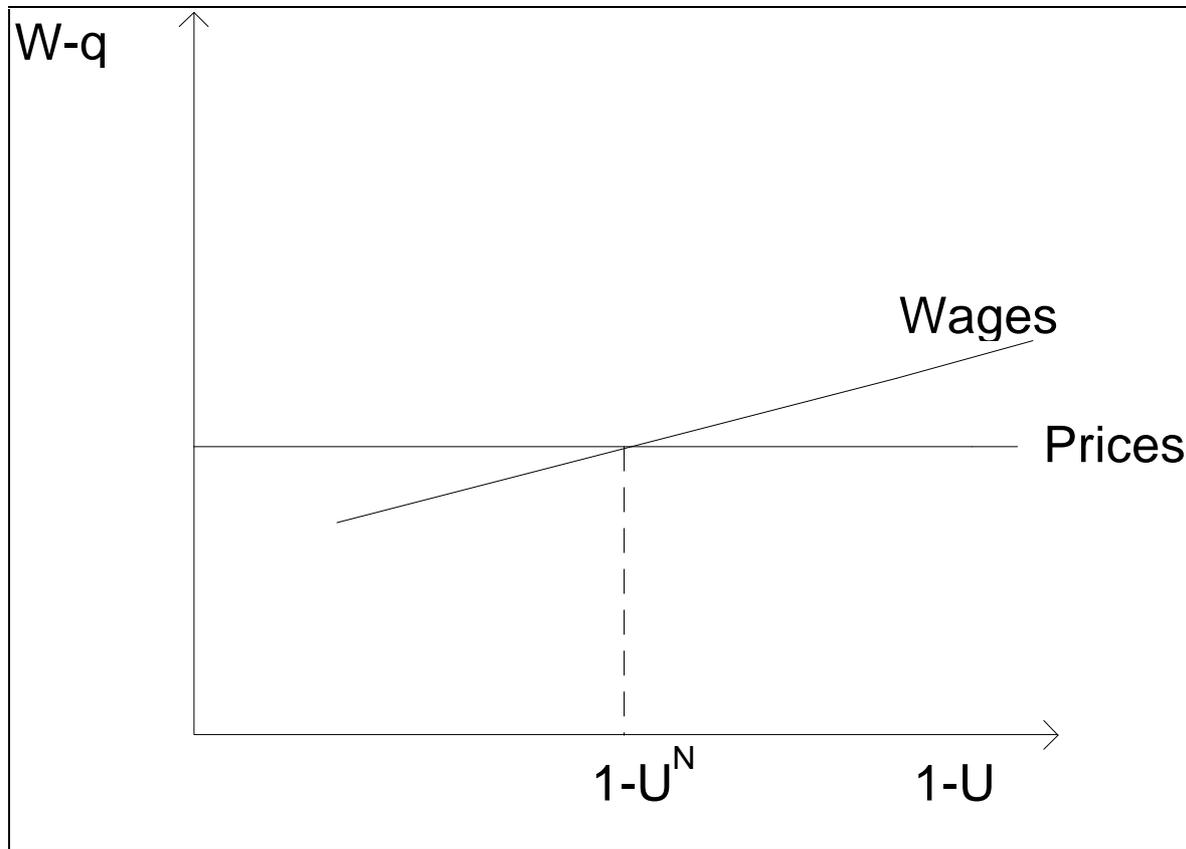
18.　　The model is a static equilibrium model with no dynamics or problems of adjustment. Thus, if agents have correct expectations, the model will be in equilibrium, and actual unemployment must be equal to NAIRU. Unexpected demand shocks [x or d] may however cause actual unemployment to deviate from the NAIRU. The model does not describe the consequences of unexpected shocks. Yet it seems clear that if the actual rate of unemployment is lower than NAIRU, and the actual real wage is between the wage and price setting curves in figure 1, there will be a pressure for higher real wages in the wage setting, and a pressure for higher markups (and thus lower real wages) in the price setting.

19.　　Note that inflation is not included in the model. To determine inflation, it is often assumed that agents expect inflation to be a random walk, so that inflation from last period is the basis for inflation expectations. In a dynamic extension of the model a pressure for higher real wages would then imply a higher growth rate of money wages. Correspondingly, a pressure for higher markups would involve a higher growth rate of prices. A stable situation, where the wage and price setting are consistent, involves constant growth rates of prices and money wages. This is of course the basis for the name NAIRU (non-accelerating inflation rate of unemployment).

20.　　However, NAIRU is not unique in the open economy framework, but depends on the relative cost level c. By requiring the wage and price setting to be consistent by setting [1] = [4], and using [7],

[2] and [3] to replace the p-q term in the wage setting, we obtain:

$$(1-\omega)c = \gamma_0 - \gamma_1 U - \gamma_2(1-\theta)\omega c, \qquad\qquad [8]$$

which can be solved for the unemployment rate:

$$U^N = U^N(c) = [\gamma_0 - (\gamma_2(1-\theta)\omega+(1-\omega))c]/\gamma_1, \qquad U^{N'}(c) < 0. \qquad [9]$$

Inspection of [9] shows that the NAIRU is a decreasing function of the relative cost level c. There are two effects behind this relationship. First, as the relative costs increase, domestic firms face fiercer competition from abroad. This will lead to lower markups, implying an increase in the producer real wage. The increase in the producer real wage allows a lower rate of unemployment to be consistent with the wage setting. Secondly, the higher relative costs reduces the ratio of consumer prices relative to prices on domestic goods (p-q), which reduces wage pressure.

21.   An implication of the NAIRU being decreasing in the relative cost level is that there is scope for aggregate demand effects on the NAIRU. Setting [5] = [6], we obtain:

$$\bar\gamma - \alpha U = \sigma_0 + \sigma_1 x - \sigma_2 c + \sigma_3 d \qquad\qquad [10]$$

[9] and [10] are two equations in the endogenous variables U and c. Solving for U and c shows that a positive demand shock, (a rise in d, say) lowers the NAIRU and raises c. The intuition is that the rise in demand increases output and lowers unemployment, so that workers demand higher real wages. Nominal wages increase, causing an increase in the price of domestic products and in relative costs. As the price of domestic products increase less than the wages do, and the consumer prices increase even less, real wages increase (which makes the reduction in unemployment consistent with the wage setting).

22.   There are however limitations to which combinations of relative costs and the NAIRU that are sustainable. First, observe that although capital is not included in the model, in a more complete model with constant returns in capital and labour, the rate of return to capital would be a decreasing function of the producer real wage and thus also of the relative cost level. If capital is perfectly mobile between countries, the return to capital would be given from abroad in a long run equilibrium. This would uniquely determine the relative cost level and thus also the NAIRU. In the sequel, I shall neglect this aspect.

23.   Secondly, in the longer run it is necessary to impose a restriction concerning the balance of trade. The balance of trade is increasing in the rate of unemployment (an increase in aggregate demand involves increased imports and lower unemployment) and decreasing in relative costs:

$$H = \delta_0 + \delta_1 U - \delta_2 c, \qquad \delta_0,\delta_1,\delta_2 > 0. \qquad\qquad [11]$$

The **balanced trade equilibrium rate of unemployment** is the level of unemployment that both makes wage and price setting consistent and involves balanced trade. Imposing H = 0 in [11], combined with [9], gives us a unique solution for the rate of unemployment and the relative cost level cf. figure 2. The balanced trade equilibrium rate of unemployment is independent of the various demand components; there is no scope for an effect of expansionary demand policy in equilibrium.

Figure 2. U* is the unique rate of unemployment which combines long run balance of trade with consistency of wage and price setting
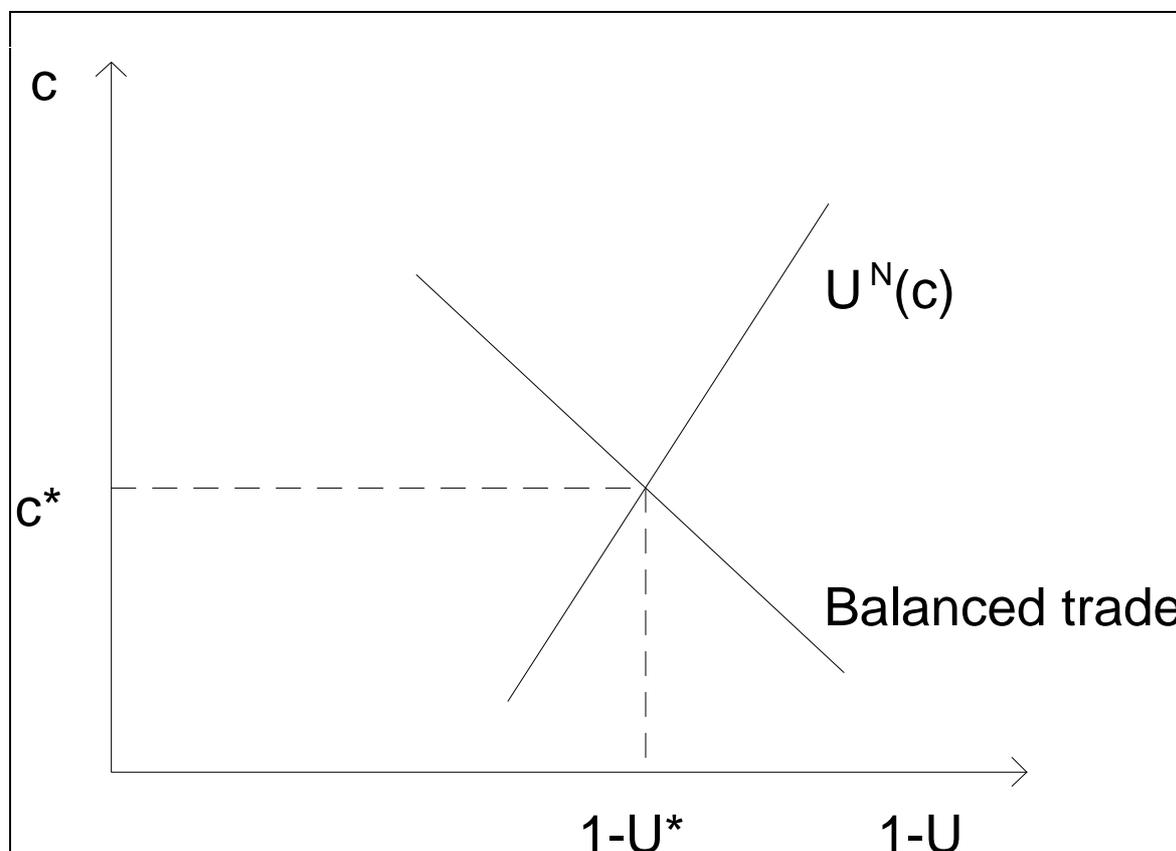
Note however that the uniqueness of the equilibrium rate of unemployment is bought at the cost of several simplifications. Imposing balanced trade is one; in a growing economy indefinite surplus or deficits may exist as long as the debt - output ratio is constant. To postulate [11] is another simplification. This neglects that there is no stable relationship between unemployment and the balance of trade; instability may arise e.g. due to different import propensities of the various demand components. Empirical estimates of the NAIRU thus hinge on the the additional assumptions and simplificiations that are made.

24.   The distinction between the NAIRU and the balanced trade equilibrium rate of unemployment involves several theoretical subtleties that may be of practical importance. Based on simple closed economy considerations, the desire to stabilise the economy close to the NAIRU might lead to the following policy rule: Stimulate the economy when inflation is increasing and restrain the economy when inflation is decreasing. Within the present model one can only be certain that this is a sensible strategy if the following two assumptions are fulfilled. First, the relative cost level must be at its equilibrium level; in this case the NAIRU and the balanced trade equilibrium rate of unemployment coincide. Secondly, domestic inflation must be equal to inflation abroad, so that constant inflation is a reasonable basis for inflation expectations.

25.   Consider now a situation where only the first assumption is fulfilled. Relative costs are at the equilibrium level (so that NAIRU = balanced trade equilibrium unemployment), but domestic inflation is higher than inflation abroad (inflation abroad may have fallen sharply for some reason). Now it is not clear what the reasonable basis for inflation expectations is. An extreme case is that the traded sector is "wage-leading", according to the Scandinavian theory of inflation, so that the inflation rate abroad is the relevant basis. In this case consistency between wage and price setting implies that domestic inflation is reduced down to the level abroad. Thus, one should not interpret falling inflation as a sign that there is a need to stimulate the economy. Another extreme case is that inflation expectations are based solely on domestic inflation; consistency between wage and price setting would then involve constant inflation, and increasing relative costs (this situation is obviously not sustainable, but this does not imply that it cannot take place). Policy rules clearly must take into consideration to what extent inflation abroad affects wage- and price setting.

26.   If the first assumption is not fulfilled either, so that relative costs are not at the equilibrium level, further issues arise. It follows from [9] that if relative costs are higher than the long run equilibrium level (a widespread presumption in Norway in the late 1980s and early 1990s), the NAIRU is lower than the balanced trade equilibrium rate of unemployment. In this case policy rules must also be seen in light of the effect of relative costs on wage- and price setting.

27.   In the present situation, the Norwegian traded sector appears not to have serious problems with relative costs, so relative costs are probably not far from an equilibrium level. In this case the distinction between the NAIRU and the balanced trade equilibrium rate of unemployment is less relevant, and will not be pursued further.

28.   Having defined the equilibrium rate of unemployment, one is lead to ask what the relevance of this concept is? Furthermore, what are the implications of the property (of this model) that aggregate demand has no independent effect on the balanced trade equilibrium rate of unemployment? The answer to these questions depend on how large and long-lasting deviations of the actual rate of unemployment from the equilibrium rate are, and whether demand management may affect the deviations. These are the topics of the following two subsections.

2.2 Persistence and hysteresis; short run and long run NAIRU

29.   The unique equilibrium rate of unemployment may seem at odds with European experience the last two decades, an inconsistency which has induced a large literature on unemployment persistence. I shall distinguish between persistence, which I use for long-lasting but not permanent changes, and hysteresis, which I use for permanent changes (Røed, 1996, provides a recent survey of hysteresis).

30.   Many empirical studies of wage formation indicate that wage growth depends on changes in the rate of unemployment, and not only the level of unemployment. (The wage equation for the manufacturing sector in KVARTS has this feature, cf. Langørgen, 1993.) This may be incorporated in our model by modifying the wage relation [1]. I also introduce a similar effect in the price setting [4]:

$$w-q = \gamma_0 - \gamma_1 U - \gamma_{11} \Delta U + \gamma_2 (p-q), \qquad \gamma_0, \gamma_1, \gamma_{11}, \gamma_2 > 0, \qquad\qquad [1']$$

$$w-q = (1-\omega)(w - b) + \beta \Delta U, \qquad 0 < \omega < 1, \beta > 0, \qquad\qquad [4']$$

where $\Delta U \equiv U - U_{-1}$ is the change in the rate of unemployment from the preceding period. The ΔU term in the wage relation may be justified by the argument that workers are more afraid of losing their job when the rate of unemployment increases (as it is then many other workers lose their job). A reduction in the rate of unemployment also involves a higher number of hirings, and thus also increased competition for the more attractive workers. The ΔU term in the price relation may be justified by the existence of bottle-necks in the short run, so that increased demand and lower unemployment involves a temporary surge in price growth.

31.   This modification of the model will not influence the long run equilibrium, when unemployment is constant, because in this case the ΔU terms drop out. According to the distinction above, there is persistence, but not hysteresis. The long run NAIRU is still given by [9], the long run equilibrium rate of unemployment is still given by the combination of [9] and $H = 0$ in [11]. However, the ΔU terms do affect the behaviour of the model outside the long run NAIRU. Let the short run NAIRU be defined as the level of unemployment which, for a given initial rate of unemployment U_{-1}, makes wage and price setting consistent. The short run NAIRU, $U^S(U_{-1},c)$, is defined as an implicit function of the initial rate of unemployment and the relative cost level by setting [1'] = [4']:

$$U^S = \frac{1}{\beta + \gamma_{11} + \gamma_1}\left((\gamma_{11} + \beta)U_{-1} + \gamma_0 - [\gamma_2(1-\theta)\omega + (1-\omega)]c\right). \qquad [12]$$

If we insert the expression for the long run NAIRU from [9], we find the short run NAIRU as a weighted average of the long run NAIRU and the rate of unemployment from the preceding period:

$$U^S = \frac{1}{\beta + \gamma_{11} + \gamma_1}\left((\gamma_{11} + \beta)U_{-1} + \gamma_1 U^N(c)\right). \qquad [13]$$

Inspection of [13] shows that the stronger the impact of changes in unemployment on wage and price setting (i.e. the greater the values of γ_{11} og β), the closer the short run NAIRU will be to the rate of unemployment in the preceding period.

32.   Unemployment persistence effects on wage and price setting have important policy implications in a situation with unemployment above the long run NAIRU. On the assumption that inflation increases if actual unemployment is below the short run NAIRU, the effect on inflation of bringing unemployment down depends on the speed of the reduction. A rapid expansion down to the long run NAIRU by bringing actual unemployment below the short run NAIRU will raise inflation permanently. However, a moderate expansion where actual unemployment in each period is reduced down to the short run NAIRU may in fact bring unemployment down to the long run NAIRU without an increase in inflation.

Figure 3. **Given the initial rate of unemployment, U_{-1}, the short run NAIRU, U^s, is the level of unemployment which makes wage and price setting consistent in the short run**
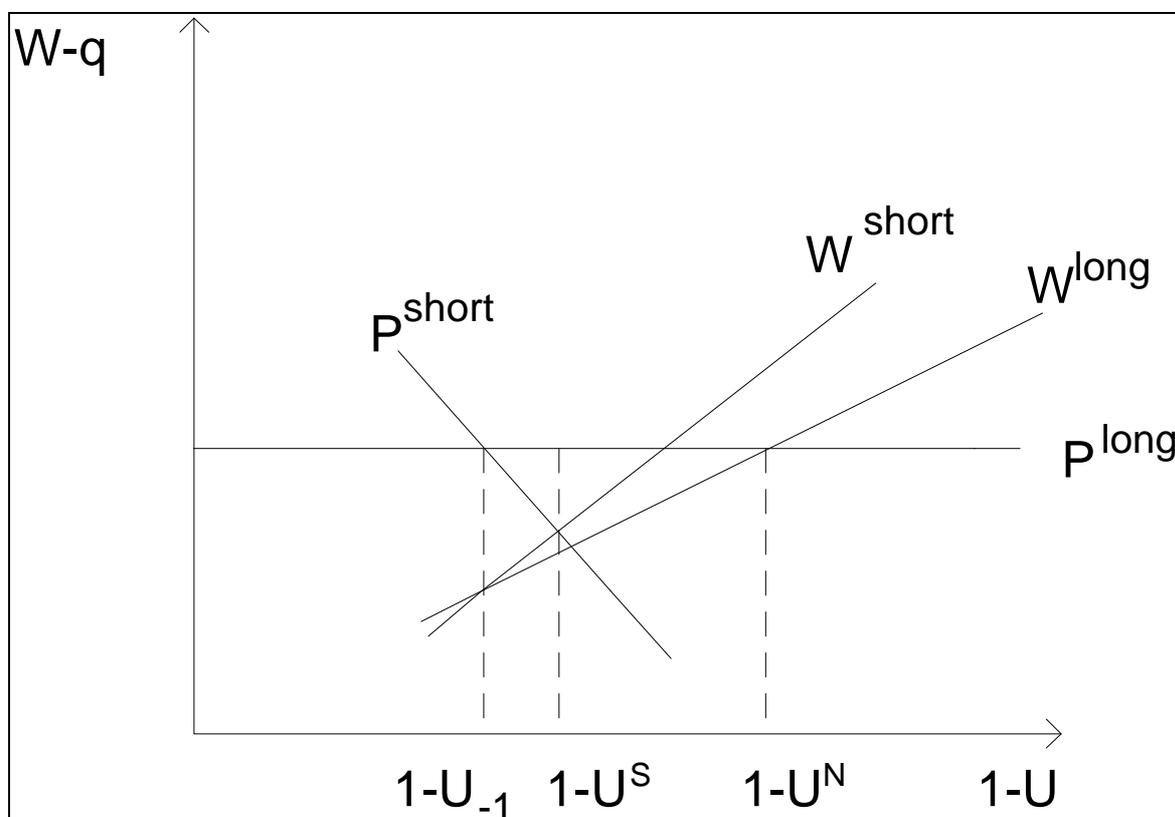
33.   High unemployment may however also have more long-lasting effects on the labour market than what can be captured by the formulation above. For example, many unemployed seem to become less efficient job seekers the longer the duration of their unemployment. This may lead to a permanent increase in NAIRU (where permanent may be understood as up till 40-50 years, when a now unemployed youth in any case will not work, due to age).

34.   The specification of persistence in [1'] and [4'] above, though commonly used, has the unfortunate property that permanent effects require the extreme assumption that $\gamma_1 = 0$, that is, the level of unemployment does not affect wage (and price) setting. A perhaps less elegant, but much more plausible formalisation of hysteresis would be to capture it by postulating that the constant term in the wage setting relation [1], γ_0, increases if actual unemployment is above the NAIRU. In other words, the NAIRU adjusts towards the actual rate of unemployment.

35.   My reading of the existing literature, mostly from other European countries, is that one can be fairly certain that hysteresis and/or persistence effects do exist (a view apparently shared by Alogoskoufis et al., 1995). For Norway, Johansen (1995) shows that wage pressure in the manufacturing sector is increasing in the proportion of the unemployed that are long-term unemployed, which is an indication of persistence/hysteresis. How strong the effects are, and how long-lasting, is less clear.

2.3 Stabilising mechanisms

36.   In the model, the equilibriating mechanism goes via the wage setting. If, say, a negative demand shock has taken place so that actual unemployment is above the NAIRU, the wage setting will respond by reducing nominal wage growth. The relative cost level is reduced, which has a positive impact on real aggregate demand, pushing unemployment towards the NAIRU.

37.   New-keynesian literature (see overview in Blanchard and Fischer, 1989) emphasise features in the wage- and price setting that may delay the adjustment process towards the equilibrium. One type of feature is nominal rigidities in the wage and price setting, like long-lasting nominal contracts or costs of changing prices (menu costs). The adjustment may also be delayed by real rigidities, which imply that deviations between actual unemployment and the NAIRU have only a weak impact on the target real wage. The real rigidities are reflected in empirical studies of Norwegian wage formation, where the relationship between real wages and unemployment is often found to be highly non-linear; thus, an increase in unemployment from an already high level has only a small effect on wages[3] (Langørgen, 1993, and Johansen, 1995). (In spite of real rigidities, the experience from the Nordic countries suggests that the relative cost level may be improved considerably in the short-run via an exchange rate depreciation.)

38.   Nominal and real rigidities are clearly important elements in the workings of the economy. But the effect of the rigidities depend on the type of shock the economy is subject to. In new-keynesian literature the main focus has been on shocks to the money stock. In this case the existence of nominal rigidities is crucial; if all nominal variables, including debt, are instantaneously adjusted, then changes in the nominal money stock cannot affect any real variables. Deviations between the actual unemployment and the NAIRU are associated with nominal rigidities and expectational errors with regard to wage- and price setting. However, if a negative real demand shock takes place (as I shall argue was the case in Norway in the late 1980s), it is not at all clear that the effect on actual unemployment can be offset by flexibility in the wage and price setting.

39.   Let us consider the equilibriating mechanisms of the economy that work through the wage and price setting, without limiting the discussion to the formal model in section 2.1 above (Keynes, 1936, chapter 19, and Sheffrin, 1989, provide more extensive treatments).   The effects of a considerable improvement of the relative cost level are illustrated by the recent experiences of Finland and Sweden. Large exchange rate depreciations have been followed by buyoant exports, indicating that this effect does work. But it does not seem to be sufficient to move the economy back to equilibrium, the effect simply appears too small. Krugman (1989) discusses reasons for why even a strong improvement in relative costs has limited expansionary effect; one such reason is that the improvement may be considered as temporary, leaving long-term decisions like plant location unaffected. The improvement in relative costs via lower real wages may also involve a reduction in domestic consumption demand, if the marginal propensity to consume is higher for wage income than capital income.

40.   Reduced wage- and price growth also have other effects on aggregate demand (if a depreciation of the exchange rate involves increased domestic inflation, the effects are clearly different). A lower price level may have a positive wealth effect, via an increase in the real money stock (Pigou-effect; this effect is probably not of much empirical importance). The rise in the real money stock may lead to a lower rate of interest (Keynes-effect). There are however also opposing effects. If nominal interest rates are sticky,

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3.   The non-linearity is illustrated in Økonomiske Analyser 5/96; in Statistics Norway's MODAG, the long-term impact on the wage level in the manufacturing sector of a partial reduction in the rate of unemployment of one percentage point is 0.3 if unemployment initially is 6 per cent, 1.4 per cent if unemployment initially is 4 per cent and 28.0 per cent if unemployment initially is 2 per cent.

lower inflation may in the short run involve higher real interest rates, which may exacerbate debt problems in the private sector. Morever, lower real wages may reduce private consumption, if (as suggested above) the propensity to consume is higher for wage income than for capital income.

41.   To summarise; even if wages and prices were flexible, it is unlikely that this would neutralise the effects of real demand shocks. Thus, in the analysis of the effects on unemployment of real demand shocks, the focus on nominal rigidities and expectational errors with respect to wages and prices is more confusing than helpful.

42.   Empirical evidence on the matter is mixed. In MODAG, lower wages have an almost negligible effect on unemployment. Stølen (1993) present simulations where the long run impact of an exogenous reduction in hourly of 2 per cent is a reduction in unemployment of 0.1 percentage points. International evidence often suggests a long run elasticity of employment with respect to real wages of minus unity; see however Bean (1994) for a critisism of the estimation methods that are used.

43.   Now consider other equilibriating mechanisms than those working via the wage and price setting. One such mechanism is that in a situation with high unemployment, the available resources may provide room for the creation of new jobs. A large number of unemployed workers implies, cet par, that it is less costly to fill a vacancy. This may induce firms to announce more vacancies (Pissarides, 1990). But if this is to raise aggregate employment, a rise in aggregate demand is also required. An important possible mechanism that may provide the necessary rise in aggregate demand is based on an increase in the demand for investments to supply the new jobs with real capital. This mechanism is highly uncertain, however, allowing for multiple equilibria (Kiyotaki, 1988). If all agents in the economy expect aggregate demand to be high, increased investments and hirings will be profitable. The increased investments and hirings will then generate the required aggregate demand; expectations are self-fulfilling. But if pessimism prevails (which is not unlikely in a recession), another outcome may occur. Agents expect aggregate demand to be low and do not increase their investment and hirings, with the consequence that aggregate demand turns out to be low.

44.   Another possibility for increased demand lies in increased market shares for the traded sector, if the shortfall of domestic demand causes domestic firms to shift to a more export-oriented strategy. In Nasjonalbudsjettet (1990, page 149), the Norwegian Ministry of Finance argues that some Norwegian firms to a certain extent were able to replace the reduction in domestic sales with increased exports. This may constitute an important stabilising mechanism if the recession is limited to a single country, but not in more global recessions.

45.   Many recessions are probably reverted because the underlying source of the deviation between the actual rate of unemployment and the NAIRU disappears. This may be the case if the shock is temporary. However, this mechanism is of a different character than the others, as it does not follow automatically from an increase in unemployment. A temporary shortfall of demand may be large and long-lasting, if it is the result of a severe imbalance in the economy (cf. the discussion of the Norwegian experience in section 3 below). The effects of the initial shocks may be reinforced if reduced income and higher real interest rates involve falls in the prices of houses and other assets. Imperfect information and incomplete credit markets of the types discussed by eg Greenwald and Stiglitz (1987) may contribute to making the recession more persistent.

46.   My conclusion on the equilibriating mechanisms so far is that they are not strong. If a large and long-lasting negative real demand shock takes place, it is likely to have a strong and long-lasting effect on

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output and unemployment. Given that the relative cost level is reduced sufficiently (which may require a depreciation of the exchange rate), the expansionary effect of lower relative costs will however push the economy in the right direction.

47.   Empirical evidence on the self-correcting mechanisms is to my knowledge scarce. Based on simulations of a large econometric macromodel of the UK economy, Joyce and Wren-Lewis (1991) show that "in the short term demand shocks can lead to persistent deviations away from the NAIRU", ... but the economy will "tend to converge to the level of unemployment close to that implied by the NAIRU in the medium term, i.e. after 5 or more years." The empirical macroeconomic models of the Norwegian economy indicates even more persistence. Eika and Eika (1996) present simulations of KVARTS and RIMINI where an increase in public purchases corresponding to one percent of GDP leads to a reduction in unemployment of 0.35-0.40 percentage points after three years, and after seven years the effect is stable at approximately 0.1 percentage points. In MODAG, the short run effects of the same increase in public purchases are similar; 0.3 percentage points lower unemployment after three years. However, the long run effect is greater; 0.2 percentage points lower unemployment even after 30 years (Bowitz, 1995).[4]

3.   The Norwegian experience

3.1.   Ups and downs[5]

48.   The origin of the recent high unemployment in Norway can at least be traced back to the cyclical downturn in the early 1980s. This downturn provided the basis for a very strong boom in 1985-86, with large growth in investment and private consumption. There are several reasons for why the boom was so strong, the most important is probably the deregulation of the credit market. The expansionary fiscal policy in 1985 was also part of the explanation. The overheating of the economy led to a reduction in the rate of unemployment down to 1.9 in 1986 (according to the Labour Force Survey AKU) and an increase in hourly earnings of 11.6 per cent from 1986 to 1987.

49.   The investment and consumption levels were however based on an evolution of the Norwegian economy that was not sustainable, and investment and consumption went down sharply; private consumption was reduced by 6.5 per cent from 1986 to 1989, investment in fixed capital for Mainland-Norway fell strongly from 1987 to 1991 (cf. figures 4 and 5). The sharp reduction in aggregate demand was reinforced by a stricter fiscal policy from 1986 to the summer 1989. Furthermore, the real interest rate was at a historically very high level in the late 1980s and early 1990s; nominal interest rates were high due to persistent devaluation expectations after the devaluation from 1986 to 1989, and due to higher nominal interest rates abroad after 1989/90, while inflation decreased substantially in 1988-90.

50.   The reduction in aggregate demand lead to a strong increase in the rate of unemployment from 2.1 in 1987 to 5.9 in 1992. To counteract this increase, the government pursued a very expansionary fiscal policy from 1989/90 to 1993, cf. figure 6. The expansionary fiscal policy probably had a clear dampening effect on the rise in unemployment.

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4.   To some extent these simulations probably exaggerate the persistence of the effects; given the non-linear effect of unemployment, the effects would be less persistent if there were positive and negative shocks in the simulations.

5.   The main sources are Cappelen et al. (1992), NOU 1992: 26 and Rødseth (1994), where more detailed treatments can be found.

Figure 4. **Household net saving and net financial assets as percentage of disposable income**[1]
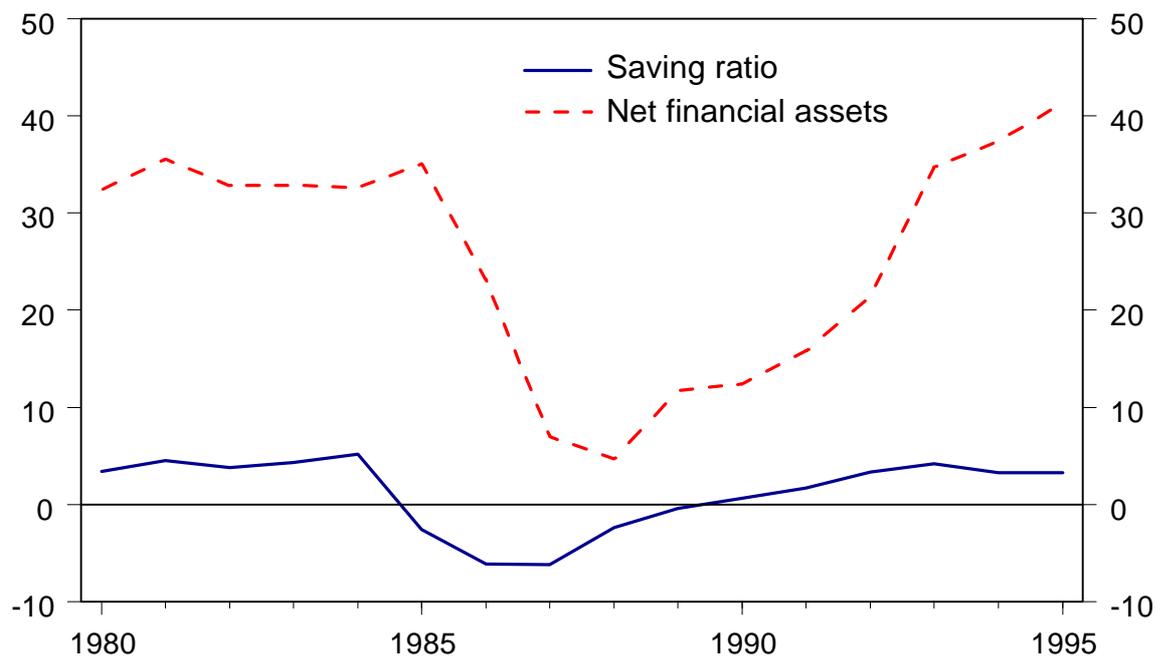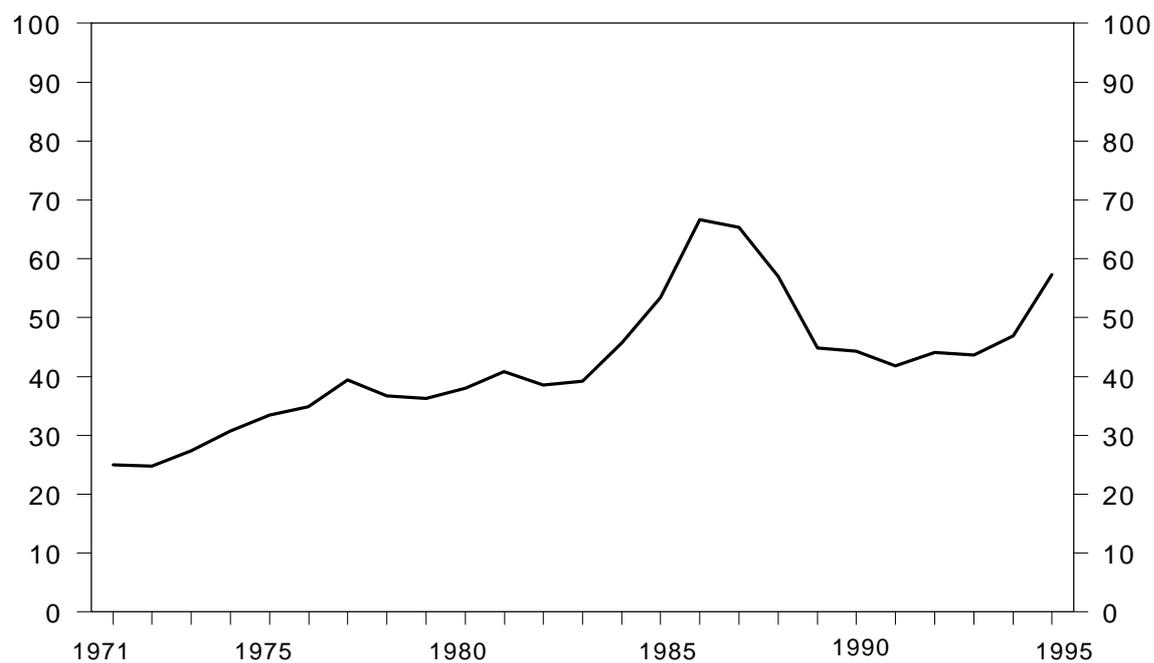

Figure 5. **Gross fixed capital formation in mainland enterprises**[1,2]
(in billions of 1993-NOK)

1. Based on old National Account figures.
2. Excluding agriculture, forestry, fishing and electricity supply.
Source: Statistics Norway and Ministry of Finance.

51.   The main point I want to make is the following. Strong real demand shocks (in part induced by the reduction in the national income due to the reduction in the oil price in 1986), exacerbated by the dynamics of the economy (among others via the effect of prices on houses and other assets), led to serious imbalances in the Norwegian economy which ended up in a historically high rate of unemployment. This is basically the conclusion of Rødseth (1994) and Cappelen et al. (1992), based on much more thourough empirical studies than the present. As argued above, the self-correcting mechanisms in the economy are not strong, so that left to itself, the recession could have caused a persistent higher level of unemployment. The strong wage growth in the mid 1980s involved a further imbalance; a high cost level compared to other countries. The high relative cost level was an additional hindrance to an expansion of exports.

52.   The story above suggests a digression on the state and focus on macroeconomic literature. In recent literature on economic fluctuations (see e.g. survey in Blanchard and Fischer, 1989), the main emphasis is usually on supply shocks (real business cycle theory) or nominal demand shocks (new keynesian theory). The effect of real demand shocks have received much less attention. In my view the Norwegian experience is an indication of the potential vast importance of real demand shocks for economic fluctuations. And Norway is not unique in this respect, the experiences of several other European countries (in particular the Scandinavian neighbours Finland and Sweden, cf. Svensson, 1994b) suggest a similar interpretation.

Figure 6. **Non-oil cyclically-adjusted surplus net of interest payments change from previous year**
(percentage of mainland GDP)
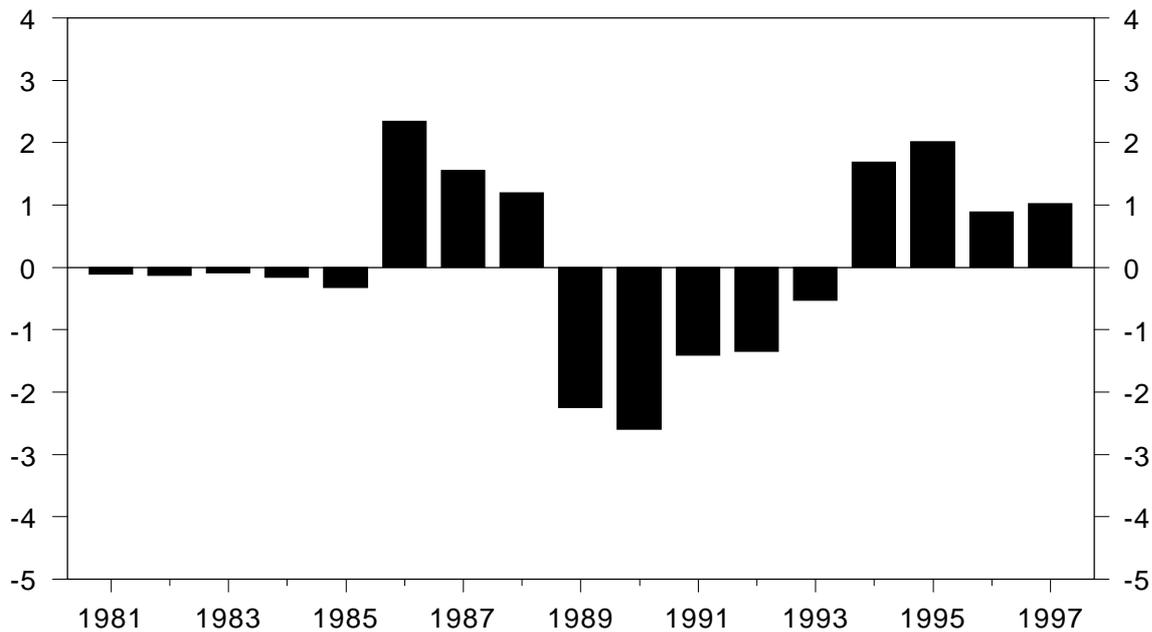
Source: Statistics Norway and Ministry of Finance.

53.   The expansionary fiscal policy in 1989/90 to 1993 was an appropriate policy to counteract the recession. If the Norwegian economy is similar to the descriptions of it in RIMINI, KVARTS and MODAG, the expansionary fiscal policy prevented unemployment from rising even further, and contributed to the subsequent reduction in unemployment. The strong financial position of the government allowed a temporary budget deficit without too much concern. Of course, for reasons of

fiscal prudence, one would always want an improvement of the budget balance. Yet the risk of adverse hysteresis effects in the labour market may imply that the expansionary policy that was chosen also has better long run consequences than a stricter policy.

54.   One should however remember that active stabilisation policy involves the risk of undertaking a destabilising policy due to an incorrect assessment of the economic situation. This was probably the case in 1985 and 1988, while fiscal policy probably had a stabilising effect in the other years.

55.   While it was appropriate to use expansionary fiscal policy, how much and for how long one should stimulate the economy is a more open question. As indicated by figure 6, fiscal policy was tightened moderately in 1994 (a line which has been continued since then), when the rate of unemployment still was 5.4 per cent, well above historical levels. The tightening may still have been the correct policy, considering the substantial rigidities in fiscal policy, and the possibility that the NAIRU was higher than historical levels of the unemployment rate. I now turn to a discussion of the level of the NAIRU in Norway.

3.2.   NAIRU in Norway

56.   The Employment Commission (NOU 1992:26) estimated the equilibrium rate of unemployment in Norway in 1990 and 1991 to 3-3.5 per cent. This estimate was based wage equations of the Phillips-curve type in relation to MODAG. Updated estimation in 1995 with the same wage equations result in essentially the same estimate (Stølen, 1995). With wage equations of the Phillips curve type it is straightforward to calculate the NAIRU, as this usually can be done solely on the basis of the wage equation.[6] Even then, the confidence intervals may often be quite large. Staiger et al. (1996) report that a typical 95 per cent confidence interval for the NAIRU in the US is 5.1 per cent - 7.7 per cent. I am not aware of similar studies for Norway, but it is clear from Stølen (1993, section 4.3.6) that there is considerable imprecision in the estimate of the NAIRU in Norway also.

57.   Recent studies in the Bank of Norway (Nymoen, 1989), Statistics Norway and Johansen (1995) indicate however that a factor share equation (which corresponds to equation [1] above) is a better description of the wage setting in Norway than a Phillips curve, as nominal wage growth also depends on the wage share. Using a wage equation of the factor share type makes it much more difficult to pin down the NAIRU.   The uniqueness of NAIRU in section 2.1 above was achieved by imposing strong simplifying assumptions. In MODAG, KVARTS and RIMINI, the NAIRU cannot be quantified unless one is willing to impose additional assumptions concerning the evolution of other variables. If one adopts the assumption that relative costs are at the long run equilibrium level (which is arbitrary, but not entirely unreasonable), it is reasonable to associate the NAIRU with the level of unemployment that makes wage costs increase at the same rate as among our competitors. Note however that this estimate depends crucially on the assumptions regarding other variables that affect wage growth, as well as on the wage growth abroad (and on productivity growth, if we compare unit labour costs). Thus, predictions of the evolution of relative costs based on empirical macromodels can be used to infer what the NAIRU is in the model, but any such NAIRU estimate is contingent on the auxilliary assumptions that are made, in addition to the assumptions implied by the model itself. The variation that is associated with these estimates is twofold;   First, the restrictions one imposes determines which NAIRU one estimates (e.g. whether relative costs are considered to be above or below the equilibrium level), with no easy ways of determining which restrictions are the more plausible. Second, given a certain set of restrictions, there

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6.   Defining the NAIRU as the unique level of unemployment where the growth of real wages equals productivity growth.

is uncertainty in the quantification of the NAIRU. The possible variation in the NAIRU estimate is bound to be considerable.

58.   The predictions for the wage growth from 1995 to 1996 made by Statistics Norway and Bank of Norway in June 1996 were 4 and 4 1/4 per cent, respectively (Økonomiske analyser 5/96 and Penger og Kreditt 2/1996), which is about the same level as what we can expect among our competitors. The strong non-linearity of the effect of unemployment on wages mentioned in section 2.3 above, in particular in the models of Statistics Norway, may suggest that there is some room for further reduction in the rate of unemployment, without too much concern for the relative cost level.

59.   However, there are several reasons why one should be cautious with this type of argument. First, an important factor behind the low money wage growth is the low rate of inflation, which leaves room for considerable real wage growth in spite of the moderate growth in money wages. A real wage growth of about 2.5 per cent which may occur this year is most likely not sustainable. This is an indication that current wage growth may be too high, with the possible implication that labour market is too tight.

60.   Secondly, the empirical wage equations have, of course, been estimated on historical data, and there is considerable uncertainty as to how well they explain the present wage setting behaviour. If the NAIRU has increased due to hysteresis effects or adverse supply side factors, increased wage growth may occur at a higher rate of unemployment than the empirical wage equations suggest. In the empirical wage equations, the "reason" that the wage growth in recent years has not been even lower is that the marginal impact on wages of increased unemployment from a high level is weak (due to the above-mentioned non-linearity); an alternative reason could be the combination 1) that unemployment has a stronger impact on wages (contributing to a lower wage growth), but 2) the NAIRU has increased (contributing to a higher wage growth). If this alternative reason is the correct one, a further reduction in the rate of unemployment may have a considerable effect on wages.

61.   An alternative method to measure the rate of structural unemployment is based more directly on the current wage growth; NAWRU (non-accelerating wage rate of unemployment) is the level of unemployment which is consistent with stable money wage growth. Roughly, if the growth in money wages increases, this is interpreted as a sign that the actual rate of unemployment is lower than the NAWRU (see Elmeskov, 1993, for a description of the method of computation). If one uses this method for Norway, one will find that actual unemployment now is below the NAWRU, as the growth in money wages seems to increase from 1995 to 1996.

62.   An important advantage with the NAWRU-method is that it exploits important contemporaneous information (the wage growth) about the situation at the labour market. Thus, with this method structural changes that may have taken place in the labour market in preceding years are implicitly taken into consideration via their effect on wage growth. However, a method which is as simple as the NAWRU-method, obviously also has important weaknesses.

63.   First, one must remember that the NAWRU-method corresponds to the short-run NAIRU, not the long run, cf. section 2.2 above. The NAWRU-estimate is thus in the interval between lagged actual unemployment and the long run NAIRU.

64.   Secondly, the NAWRU-method does not allow for an effect of relative costs; if relative costs are too high, the NAWRU is below the balanced trade equilibrium rate of unemployment. Given the considerable effect of the wage share (or related variables) in empirical wage equations for Norway, this point may warrant some attention.

65.   Thirdly, the NAWRU-method involves a highly simplistic treatment of wage setting, neglecting the effect of other factors than unemployment. Such factors may be of economic nature; consider for example a situation where actual unemployment is above the NAIRU, which has a dampening effect on wage growth. But if inflation or profits increase, this will have a positive effect on wages, so that the overall result is a rise in wage growth. In this case the NAWRU-method may lead one to draw the incorrect conclusion that the NAIRU is lower than the actual rate of unemployment.

66.   Wage setting is also influenced by institutional aspects which may disturb the interpretation of wage growth as a signal of labour market tightness. Calmfors (1993a) discusses whether there may exist lower bounds to money wage growth in unionised economies (see Holden, 1996, for a possible theoretical foundation). Incomes policy is also important in this respect; the termination of an efficient incomes policy may lead to higher wage growth, without this being a sign of actual unemployment being below the NAIRU.

67.   Several of the weaknesses of the NAWRU-method may be of relevance in Norway at present. The higher wage growth in 1996 relative to the preceding years must be viewed in light of the possibility that incomes policy have induced wage moderation so far. Higher profits in the manufacturing sector and increased tax revenues in the public sector may also have made the employers in these sectors more willing to accept wage rises. On the other hand, the low rate of increase in consumer prices implies that a considerable real wage increase might have been achieved with a lower growth in money wages.

68.   No strong conclusions can be drawn regarding the level of NAIRU in Norway at present. The increased wage growth is however a clear sign of warning that the unemployment rate is approaching the limit set by the wage and price setting. The recruitment problems in parts of the labour market discussed in section 6.1 are consistent with this interpretation.

4.   Some implications for economic policy

69.   The weakness of the self-correcting mechanisms and the existence of persistence/hysteresis effects provide clear scope for beneficial effects of stabilisation polices. With slow adjustment to equilibrium, stabilisation policies may have temporary effects. If hysteresis mechanisms are present, a succesful stabilisation policy may have a permanent impact on unemployment (cf. Hargreaves Heap, 1980, and Røed, 1994).

70.   There is however abundant experience telling us that stabilisation policy is not easy in practice. Should estimates of the NAIRU be used as indicators in the formulation of stabilisation policies? There can be no doubt that the evolution of wages must play an important role in the assessment of the economic situation, and thus also affect the policy that is chosen. However, as should be clear from the discussion above, any estimate of NAIRU is bound to be imprecisely determined. This must be taken into consideration in policy formulation.

71.   The problem is perhaps most acute if unemployment has risen considerably. Real rigidities and non-linear effects may imply that the dampening effect of high unemployment is limited. This, combined with the fact that wage growth is affected by many other variables than unemployment, has the

consequence that wage growth may easily increase even in a situation where actual unemployment is way above long run NAIRU.[7] In this situation a simple-minded interpretation of the NAWRU-estimates would suggest a strict economic policy, with the possible consequence of making the high level of unemployment much more long-lasting than necessary, and perhaps even permanent. To avoid major policy errors of this type, a much broader evaluation of the economic situation is required in the formulation of economic policy.

72.   In the present situation in Norway, the increase in wage growth is not sufficient to justify that one really "pull the brakes" in the fiscal policy, as this would prevent the possibility of further reductions in unemployment. Yet the risk in the other direction, that a too tight labour market will induce a permanent increase in wage growth above the rate of our competitors, does warrant a strict policy.

5.   Wage setting and incomes policy

5.1.   *Nominal and real incomes policy*

73.   In the literature, one often distinguishes between nominal and real incomes policies (Flanagan, Soskice and Ulman, 1983). Nominal incomes policy aims at influencing nominal variables like inflation and nominal prices and wages, without influencing real variables like the real wage and relative wages. Real incomes policy aims at influencing real variables; shifting the wage curve down in figure 1, and thus reducing the NAIRU. In practice, the distinction between nominal and real incomes policy is not sharp.

74.   In the theoretical framework of section 2 above, inflation is not pinned down sharply. In essence, inflation is determined by history and expectations. This provides scope for nominal incomes policy, reducing inflation by coordinating inflation expectations. In this sense nominal incomes policy is closely connected to the monetary policy, which also aims at providing the economy with a nominal anchor. But incomes policy and monetary policy should be seen as complements rather than alternatives. Experience has taught us that incomes policy without a credible monetary policy is not much worth. However, one cannot draw the opposite conclusion that a credible monetary policy makes incomes policy redundant.   Recent literature on monetary policy following Barro and Gordon (1983) has made an important step forward by increasing our understanding of the interplay between the expectations of private agents and the incentives of policymakers. But as yet the treatment of the wage setting process is usually somewhat simplistic. Even some keen advocates of inflationary targets (e.g. Svensson, 1994a) acknowledge that there may be an inflationary tendency in the system of wage determination, yet almost all formal models within this literature share the property that the wage setting will adapt to the inflation rate implied by a credible monetary policy. There are however several reasons why the wage setting may fail to adapt even to a credible monetary policy.

75.   First, there may exist institutional aspects that make the wage setting inflationary. One such aspect is the legal and morale position of the existing money wage; cuts in money wages are very hard to enforce (see Holden, 1994, on legal and bargaining aspects, Blinder and Choi, 1990, on fairness, and Akerlof et al., 1996, and Jacoby and Mitchell, 1990, on empirical evidence). Thus, an important benefit of being member in a trade union lies in the fact that it may achieve an increase in money wages.

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7.   Finland is perhaps a case in point. In 1990, actual unemployment and the NAWRU-estimate coincided at about 4 per cent; in 1994 they coincided again at about 18 per cent (Holm and Somervuori, 1996). It is hard to find a persuasive explanation for such a dramatic rise in the NAIRU; a story where insufficient demand is the main factor behind a large cyclical component in the massive unemployment appears much more plausible.

76.   Secondly, the fact that workers are concerned about relative wages may also involve a failure of the wage setting to adapt even to a credible non-inflationary monetary policy. Bhaskar (1990) shows that under the plausible assumption that the utility loss of workers from a loss in relative wages is greater than the utility gain from an identical gain in relative wages, then there exists a multiplicity of equilibria in the wage setting. The implication of this result is that the wage setting may lead to an outcome with high wages, even if there exist Pareto-superior equilibria with lower wages.

77.   There are thus reasons to believe that a succesful incomes policy makes monetary policy easier. In a highly unionised and centralised labour market like the Norwegian, communication between the authorities and the parties in the labour market may contribute to an understanding about how the economy works, and an understanding of the policy the government is set to pursue. In particular, this is important when there has been a change in policy to a less inflationary line. The government may also stimulate to coordination among unions, with the aim of inducing lower wage growth directly, or indirectly via an adaption of the institutional setting to a lower rate of inflation (the latter may for instance involve an increased use of bonus payments rather than rises in the wage rates, which makes money wages more flexible).

78.   Real incomes policy aims at reducing the NAIRU by shifting the wage curve in figure 1 down. This may be done by persuading unions to accept wage restraint, or changing laws and regulations such that the result is wage restraint. The former case may sound naive, yet there are situations where voluntary wage restraint is plausible. One such situation is when the economy has be subject to a negative shock (e.g. a permanent negative terms of trade shock), where the long run result inevitability is lower real wages. For several reasons, in particular that workers are concerned that their own wage restraint may have a negative impact on their relative wage position, it may take a long time before real wages adapt. The consequence may be a longish period of higher unemployment. In this situation coordination among unions may facilitate the adjustment process, leading to a shorter period with high unemployment. (Observe also that if hysteresis-mechanisms are present, a quicker adjustment will also imply a smaller increase in the NAIRU.)

79.   Real incomes policy may also aim at achieving coordinated wage restraint in a stable situation. As observed in the literature on centralisation and decentralisation of wage setting, the wage setting of one group of workers involves a number of negative external effects on other workers, among these that higher wages for one group of workers involve higher prices for other workers, and higher expenditure on unemployment and social benefits that has to financed by taxes paid by all workers (see Calmfors, 1993a, for an overview). The negative external effects will not be taken into consideration if wage setting takes place for each group of workers in isolation. However, if the various groups of workers coordinate their wage setting, they will want to set a lower real wage than the decentralised outcome due to the negative external effects.

80.   If the wage setters themselves benefit from wage restraint, what is then the role of incomes policy? To answer this question, I consider a simple game-theoretic model of incomes policy in a framework with decentralised wage setting in the next subsection.

5.2.   A game-theoretic analysis of incomes policy

81.   In this subsection, I explore the scope for achieving voluntary wage restraint in an economy with many trade unions, based on a simple game-theoretic model (the exposition draws upon Hoel, 1987,

Holden, 1990, and Holden and Raaum, 1991, where also reputation effects are considered). The underlying assumption is that the unions are strong, so that uncoordinated wage setting leads to a bad outcome for all due to too high wages.

82.   Assume that the economy consists of a given number of industries, with one union in each industry. For simplicity, all industries and unions are assumed to be identical. The utility to each union is $U = V - \alpha \bar{V}$, where V is the wage in the industry concerned and $\bar{V}$ is the average wage level in the economy. I assume that $\alpha > 1$, so that a marginal increase in the wages in all industries has a negative impact on the utility of all. This reflects the negative external effects of wages; in addition, it may also reflect that high wages induce a stricter economic policy to counteract the inflationary tendency. The unions may set low or high wages, V^L or V^H, and wage setting occurs only once, simultaneously in all industries.

83.   If wage setting takes place in each industry separately, each union will set a high wage level V^H, and the average wage level is $\bar{V} = V^H$. The payoff to each union is $U^D = V^H - \alpha V^H$. This is the Nash equilibrium in the game, ie the outcome if all unions choose the wage level that maximises their own utility, taking as given the wage set by the other unions. As $\alpha > 1$, this outcome is clearly Pareto-inferior to a situation where all unions set low wage V^L.

84.   Consider now the scope for coordinated wage restraint. Assume that a fraction k (where $0 < k < 1$) of the unions gather and discuss an agreement involving all of them setting the low wage V^L. The agreement is assumed to be binding for the participants. The remaining 1-k unions are assumed to be independent, and will in any case set a high wage. An agreement on wage restraint will give each of the cooperating unions the utility $U^S = V^L - \alpha k V^L - \alpha(1-k)V^H$. The unions will benefit from the agreement if it yields higher utility than decentralised wage setting, $U^S \geq U^D$, i.e. if:

$$V^L - \alpha k V^L - \alpha(1-k)V^H \geq V^H - \alpha V^H, \qquad\qquad [14]$$

which can be transformed to the inequality:

$$\alpha k \geq 1. \qquad\qquad [15]$$

An agreement on wage restraint is thus beneficial for the participating unions if the product of α (the negative external effect of high wages) and k (the fraction of workers in the economy that participates in the agreement) is greater than or equal to unity.

85.   When interpreting this model, three things should be noted. First, an agreement on wage restraint need not be explicit, it suffices that there is a common understanding that the unions do not fully exploit their bargaining power, so that the wage increases are lower than they otherwise could have been. Secondly, it is not necessary that all the unions that participate in the wage restraint do so voluntarily. More realistically, some unions/groups of workers participate voluntarily while others to some extent are coerced, c.f. below. Thirdly, the simple structure of the model conceals that asymmetries and different opinions about the existing state of the world make cooperative solutions difficult to realise. An important function of the Technical Committee for Income Settlements is to provide background material and "present it in a form such that disagreement among the parties about actual economic conditions as far as possible is avoided" (my translation of Longva, 1994).

86.   The negative external effects α are greater the stronger the unions, as stronger unions are able to ensure a higher wage by themselves, and by doing this they will inflict greater costs on other unions. If the authorities pursue an anti-inflationary policy and react to high wages by a stricter fiscal and monetary

policy, this will also contribute to a high α, and thus increase the possibility of realising an agreement on wage restraint.

87.   An important aspect is that the decision on wage restraint is made on basis of the perceived costs of high wages, which may differ from the actual costs. To realise an agreement on wage restraint, it is thus important that there is a widespread understanding of the costs of higher wages, among the union membership as well as the leadership. The above mentioned Employment Commission, with its broad participation of politicians, social partners and economists, and the thorough discussion of various measures to reduce unemployment, probably to some extent had this function. The Technical Committee for Income Settlements also has this as one of its tasks: "to (when asked by the ministry to do so) formulate its report so that likely economic effects of alternative income settlements as far as possible may be inferred from the report, including the effect on prices, incomes and income distribution" (my translation of Longva, 1994).

88.   Cooperation on wage restraint is also more beneficial the larger is the fraction of the workforce that participates in the agreement, i.e. the larger k in equation [15] is. There are a number of ways the authorities may influence the participation in a coordinated wage restraint. One such way is to strenghten the position of the larger employees' organisations. The Employment Commission NOU 1992:26, page 27, argues that "as part of the incomes policy, one should also consider efforts that contribute to increased membership in the organisations" (my translation). In the Norwegian tax system, union fees are deducted when calculating incomes taxes, which clearly subsidises union membership. The authorities may also strengthen the position of the main organisations (that are likely to be willing to participate in an agreement on wage restraint) relative to the position of the smaller organisations. This may e.g. be done by imposing strict requirements for employees' organisations to have a right to negotiate wages and to initiate a strike (e.g. minimal requirements on the membership, measured in number or in percentage of the total number of persons in a certain occupation).

89.   A crucial condition for achieving coordinated wage restraint is that it also covers employees in the public sector, as almost 1/3 of all wage earners in Norway work in the public sector.

90.   Both in the private and public sector there are groups of workers that have a strong bargaining position, and which would be able to achieve considerably higher wage growth than others. Obviously these groups may have very weak incentives to participate in a cooperation on wage restraint. The bargaining power of some of these groups is however severely limited by the fact that the authorities may stop a strike by law, referring the dispute to an arbitration solution in Rikslønnsnemnda. Imposed arbitration is more often used in Norway than in many other countries (in sharp contrast to Sweden, where imposed arbitration is almost never used, cf. Elvander, 1988). Norway has also several times been critisised by the International Labour Organisation ILO for imposing arbitration in cases where it, according to ILO, is not warranted. ILO only accepts imposed arbitration when a strike concerns "essential services", in particular when there is danger of life and health, but also breakdown of transportation and electricity, while pure economic interests are not included in this concept (Dagens Næringsliv, 21.5.1996). Norwegian authorities have however argued that arbitration may be imposed if the consequences of a strike are particularly serious. It is not entirely clear to what extent Norway must follow the guidelines of ILO, and under which circumstances arbitration may be imposed. This is an important aspect, as the possibility of imposing arbitration on certain groups may be important for the opportunity to achieve cooperation on wage restraint among other groups.

91.   More generally, the government may also impose ceilings on wage increases by law. In April 1988, a law was passed that limited the growth in incomes to the result agreed upon in the LO/NHO area. This agreement prohibited local wage bargaining in the first year of the wage contract period, and allowed

only a modest increase in wage rates and incomes for most groups. The income regulations were prolonged in a new law in the spring of 1989 and lasted to April 1990 (Stølen, 1993).

5.3.   *Costs of incomes policy and centralisation of wage setting*

92.   As is clear from the discussion above, the potential benefits from incomes policy are substantial. However, the various measures in the incomes policy may also involve considerable costs. Considering the direct measures (wage regulations by law) first, such measures may affect efficiency and productivity by interferring with the wage setting prosess and by involving grievances among workers (cf. the exchange between Moene and Nymoen, 1988, and Stoltenberg, 1988). The use of imposed arbitration may reduce the parties' own ability and willingness to reach an agreement by themselves.

93.   Incomes policy in the form of bargains (implicit or explicit) between government and labour market organisations may involve costs in the form of an the effect on government policy. In recent years in Norway, LO has probably had considerable influence on the labour market policy that has been pursued. However, it is difficult to assess the costs of this influence, nor is it clear to what extent this influence is a part of an implicit bargain in the incomes policy or just reflects LOs political influence in Arbeiderpartiet.

94.   Even communication between government and the labour market organisations may involve costs, as such communication usually requires implicit or explicit bargains, and thus also involves a cost in form of union influence on government policy.

95.   The relationship between government and a central trade union has received considerable attention in economic literature (cf. Hersoug, 1985, and Calmfors and Horn, 1985). The main focus of the analysis has been whether the union may exploit the government's political ambition of full employment by setting higher wages. However, this problem may not have much to do with incomes policy as such; the problem arises due to the government's desire to reduce unemployment, and does not require any form of communication between government and union.

96.   A number of the measures discussed above are aimed at inducing cooperation on wage restraint by making the alternative worse. This may of course be a risky strategy, if one fails to realise the cooperation. Strengthening the unions is a case in point, as this leads to higher real wages if the unions do not moderate their wage claims. (Outside the realm of incomes policy, strict anti-inflationary policy may have a similar effect, leading to high unemployment if unions fail to show wage restraint.)

97.   It is sometimes claimed that an important cost of Norwegian incomes policy is the effect on the wage distribution, in particular a reduction in wage differentials. It is however not clear to what extent relatively small wage differentials are the result of incomes policy, or whether it is caused by organisational structure, social norms and economic conditions. Unions generally have a desire to reduce wage differentials irrespective of any incomes policy. Furthermore, in Austria incomes policy does not seem to have similar effects on the wage distribution. But irrespective of whether the effects on the wage distribution is the result of incomes policy or centralisation of wage setting or other factors, what are the costs?

98.   Decentralised wage setting is often thought to be more efficient than centralised wage setting/incomes policy because wages may adjust to the economic situation of the individual firm. A possible theoretical basis for this argument is a framework with perfect competition and different types of labour. In this framework, wages depend on the marginal productivity of each type of labour, and under well-known conditions efficiency prevails. However, this argument confuses wage differentials between

various types of workers with wage differentials between various firms. There are reasons to believe that wage differentials between various types of workers do not fully reflect productivity differences; this is discussed in section 6 below. However, firm-level wage setting is probably primarily an issue of wage differentials between firms. In firm-level bargaining, efficiency wage effects or union/employee bargaining power may push wages above the level that would prevail under perfect competition. If wages are set from efficiency wage considerations, firm-level wage setting does generally not lead to an efficient wage distribution (cf. Weiss, 1991, and Rødseth, 1993), and the same result also holds under firm-level bargaining.

99.   One example of the possible inefficiencies of firm-level wage bargaining (due to a suggestion by Michael Hoel), is based on an economy with monopolistic competition in the product markets. Firms set prices as a markup on marginal costs, and the markup is decreasing in the price elasticity of demand. Price above marginal costs involves an efficiency loss, which is greater in the firms that face the lower price elasticities, as these firms set higher markups. Firm-level wage bargaining exacerbates the inefficiency, because it results in higher wages in the firms that face the lower price elasticities, and thus set the higher markups. The reasons for higher wages are that lower price elasticity involves 1) less elastic demand for labour (so the union pushes harder for higher wages), and 2) higher profits per worker (so that the loss of a strike increases, thus raising union bargaining power). In this example, a common wage level (which may be set at the central level) yields a more efficient wage structure than decentralised wage setting.

100.   This example points at an interesting interaction between wage setting and product market imperfections, as the inefficiency connected to firm-level wage bargaining is higher the greater the imperfections in the product markets.[8] This may suggest that centralised wage setting is relatively more favourable in economies with considerable product market inefficiencies than in countries with less product market imperfections.

101.   A second example of possible inefficiencies of firm-level wage setting is the Rehn-Meidner model, which has been important for the wage policy of the Swedish unions' confederation LO in much of the post-war period. The main point here is that requiring (almost) the same wage in all firms will push inefficient firms out of business, thus increasing growth by making scarce labour available for more efficient firms (Moene and Wallerstein, 1992).

102.   This is not meant as a statement that incomes policy and centralised wage setting in general leads to a more efficient wage distribution than decentralised wage setting, as the rather one-sided argumentation above gives no basis for a strong claim like this. My view is the more modest that the case is still open, and that this issue has not yet received sufficient attention in the literature.

5.4.   *Recent incomes policy in Norway - does it work?*

103.   Incomes policy plays a central role in the economic policy of the present Government, as it has done under other social democratic governments previously. Empirical evidence indicate that the income regulations used in 1978/79 and 1988/89 contributed to a reduction in the relative cost level (Stølen, 1993, section 4.7). In the solidarity alternative, suggested by the Employment Commission and adopted by the Government in the Long Term Program 1994-1997, incomes policy and wage moderation were crucial. The numerical simulations of the solidarity alternative were based on a two percent lower growth rate in

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8.   More precisely, the inefficiency is greater the more uneven the distribution of price elasticities, which presumably in practice is related to the level of imperfections.

money wages than our competitors for a five year period from 1993-1997, from then on a wage growth at the same rate as our competitors. The target of a two percent difference was fullfilled in 1993, while for 1994 and 1995 growth in money wages was approximately the same as for our competitors.

Figure 7. **Wages, nominal and deflated with the consumer price index**
yearly average
(percentage growth from previous year)
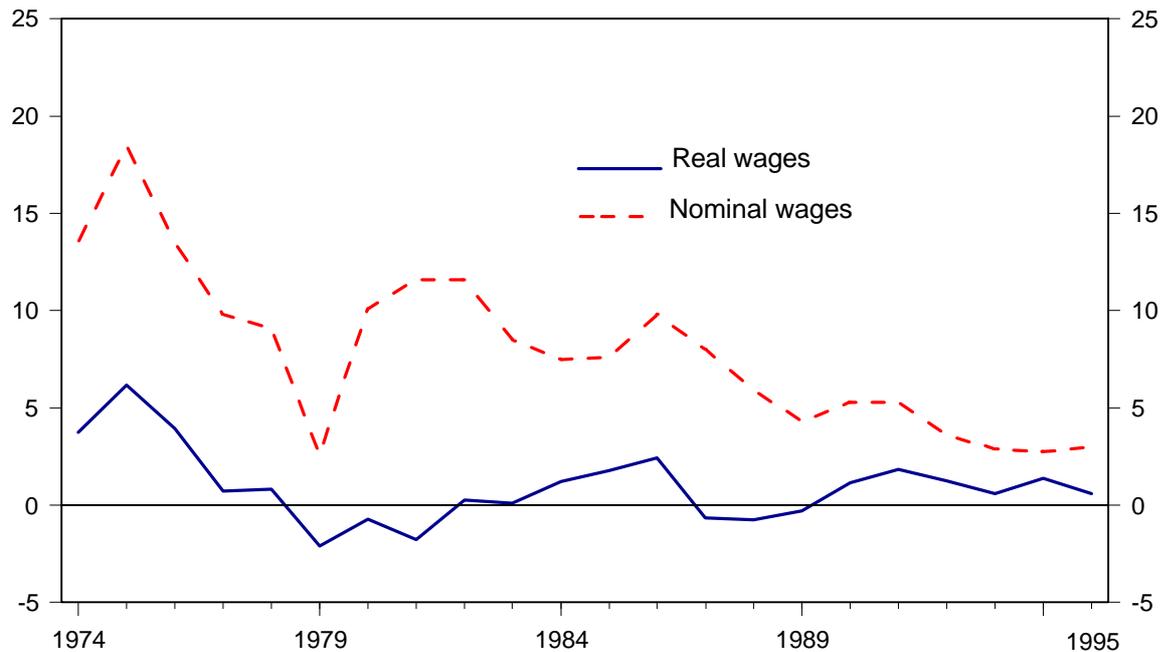
Source: Statistics Norway and Ministry of Finance.

104.   It is thus not clear to what extent wage moderation really has worked during this period. High unemployment would in any case have had a dampening effect on wage growth, and the low growth rate of consumer prices have led to a considerable growth in real wages. One cannot know what would have happened without incomes policy. Lindquist and Naug (1996) report that the wage equation of KVARTS in Statistics Norway overpredicts the wage level at the end of 1994 by less than on percent, suggesting that the solidarity alternative has only had a slight impact on wages. However, one must bear in mind that various forms of incomes policy have been used over most of the previous decades, and the effect could thus already be built into the wage equiations. My guess is that the growth in money wages would have been somewhat higher without cooperation and coordination, as wage growth has been moderate in spite of the upswing in the labour market, cf. figure 7.


6.   The Norwegian labour market

6.1.   The labour market situation

105.   Employment has grown considerably over the last few years, by about 3.9 per cent over the period 1993 to 1995. In part due to the improvement in the labour market, the labour force has also

increased so that unemployment (AKU) has only gone down from 6.0 to 4.9 over the same period, cf. figure 8.

Figure 8. **Unemployment and active labour market programme**
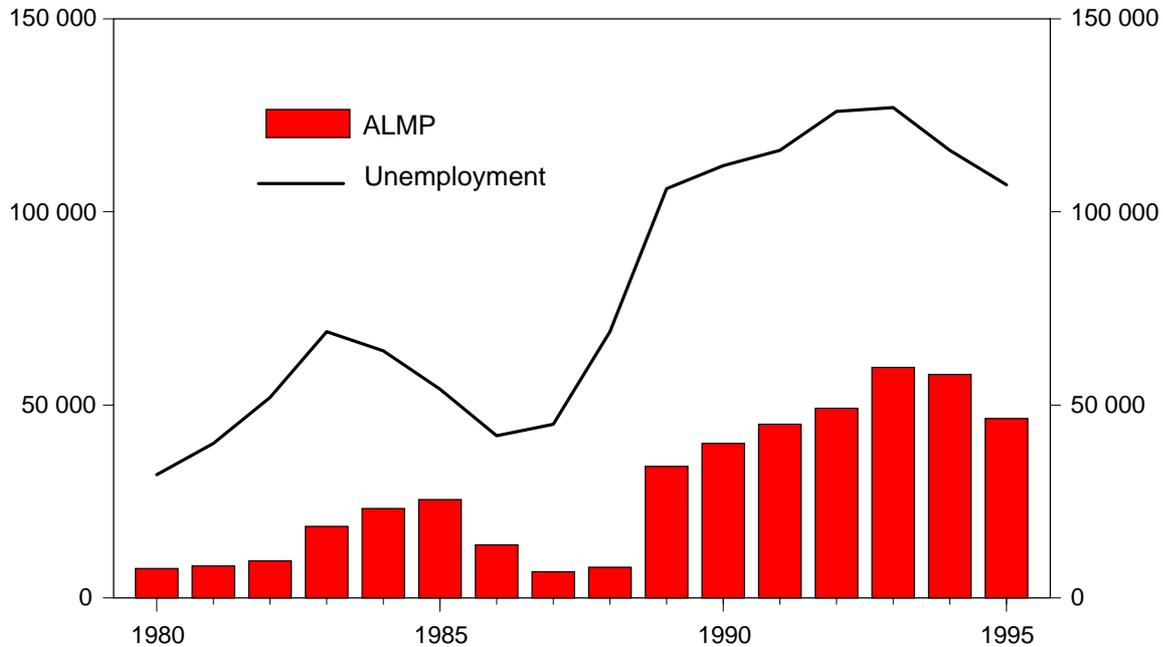
Source: Statistics Norway and Ministry of Finance.

106.   There are now clear signs of mismatch. In spite of an unemployment rate of about 5 per cent, 7 per cent of the vacancies that were announced in January and February 1995 were not filled by April/May due to lack of qualified applicants (Larsen, 1996a).[9]   The recruitment problems seemed particularily acute in health care; in the region Oslo-Akershus, 23 per cent of the vacancies were not filled due lack of qualified applicants (for the whole country the corresponding figure is 13 per cent). If one considers mismatch by occupation and region, an interesting feature appears. Outside Oslo and Akershus, vacancies where primary education is the most appropriate level almost always have qualified applicants, only 2 per cent were not filled due to lack of qualified applicants (Larsen, 1996b). However, in Oslo and Akershus, 13 per cent of the vacancies where primary education is the most appropriate level were not filled due to lack of qualified applicants. It appears that there are applicants also to these vacancies, but that in many cases the applicants lack "social competence" like reliability.

107.   By European standards, Norway has a rather low share of long-term unemployed. In April 1996, 32 per cent of the registered unemployed had been unemployed for more than six months. This figure may however give the impression that unemployment is less long-lasting and concentrated than it really is. Of all persons that became unemployed in october 1990, only 56 per cent started a job during the following 27 months (Hernæs and Strøm, 1995). Two-fifths of the persons that started a job during this period later separated from the job within the same period. Furthermore, over the period January 1988 to June 1995, 2/3 of total unemployment (measured in man-years) was associated with persons that were

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9.   Surprisingly, this is a reduction from 9 per cent in 1993, in spite of the considerable increase in employment over the same period.

unemployed for more than 12 months over the same period (own calculation based on Arbeidsdirektoratet, 1995, table 8.8). The misleading impression of the rate of long-term unemployment reflects a problem in our measures of unemployment; almost 1/3 of all registered unemployed (full-time) receiving unemployment benefits were classified as outside the labour force in the Labour Market Survey AKU (Arbeidsdirektoratet, 1994, figure 6.2). The main reasons were that these persons either were not able to accept a job within the specified time limit, or they had not actively searched for a job within the last four weeks.

108.   What are the reasons for long-term unemployment? Persons with low education generally have higher likelihood of being long-term unemployed. The high share of unfilled vacancies for persons with only primary education in Oslo and Akershus referred to above suggests that this is only a part of the answer. For many unemployed, the problem seem to be that potential employers do not perceive them as sufficiently qualified. This is a problem for immigrants. In a survey of vacancies in Oslo and Akershus from 1995 (Larsen, 1996b), a majority of the employers stated that being an immigrant from Southern or Eastern Europe, Africa or Asia would reduce the probability of being hired. The most frequently stated reason was insufficient knowledge of Norwegian language, thereafter insufficient knowledge of norms and culture in the Norwegian labour market. The results in the survey are reflected in the unemployment statistics; the unemployment rate for immigrants from the third world is almost four times as high as for native Norwegians and immigrants from Western countries (Ukens statistikk, no 24/96). For Oslo, the employment problem of immigrants may have a considerable quantitative effect on total unemployment, as almost one third of all unemployed are immigrants from Eastern Europe, Asia, Africa and Latin-America. However, for the whole country immigrants from these areas constitute less than ten percent of total unemployment.

109.   Being long-term unemployed may also be a self-enforcing situation. Larsen (1995) reports that many Norwegian employers view long-term unemployed as generally less qualified than others. Yet this does not seem to induce strong duration effects. In a study of some 14 000 unemployed Norwegians, Røed et al. (1996) find that the employment probability faced by a "mean" unemployed is only reduced by 10 per cent during the first two years of unemployment. The exceptions to this picture are people experiencing unemployment for the first time, and older workers; for both these groups the negative duration effect is considerably stronger.

110.   If differences in productivity are compensated by lower wages, persons that are perceived to be less qualified by the employers may still find a job. However, in practice there are limits to the extent that this can occur, in part due to the existence of social norms and legal restrictions with respect to unfair wage differentials. Union contracts may also involve minimum wage rates that may prevent sufficient wage differentials to compensate for productivity differentials. This may be a problem for persons with little or no working experience, cf. NOU 1994: 3. Irrespective of these issues, the wage must be set high enough to motivate the employees, and for some types of work the level of social benefits may be important for how high the wage must be to motivate workers. For older workers, an important problem may be that the distribution over time of pension premiums implies that wage costs increase substantially when the age of the worker approaches the retirement age. Thus, it may be cheaper for the firm to employ/retain a younger employee.

6.2.   *Labour market policies*

111.   The rise in unemployment in the late 1980s was met by a strong increase in the use of labour market programmes, from 8 000 places in 1988 to 60 000 places in 1993, cf. figure 7 (in comparison,

registered full-time unemployment in 1993 was 118 000 persons). Since then, the number of places has been reduced to 46 000 places in 1995, due to the increase in total employment.

112.	In evaluations of active labour market programmes, the main emphasis has been on the effects on the employment prospects of the participating individuals. In general the results vary considerably, and for many studies important objections can be raised towards the method that is used. One of the more reliable studies is Raaum and Torp (1993), on the the effects of labour market training (AMO-kurs). This study is based on a data set where participation in the training is determined by random selection among the applications, to prevent measurement errors due to systematic unobservable heterogeneity. Raaum and Torp find that only a few of the courses have significant positive impact on the employment probability 6 months after the end of the course. The effect was generally small, between 2 and 6 percentage points. For other types of labour market programmes, Norwegian evidence seems consistent with the international experience that there is good return to assistance with job-finding but weaker effects of public sector job creation.

113.	To study the overall impact of labour market programmes on unemployment, one must also take into consideration the effect on wage setting. Again, empirical results vary. For Sweden, labour market programmes appear to have a wage-raising effect (Calmfors, 1993b). For Norway, however, the general finding is a wage dampening effect (see Calmfors and Nymoen, 1990, for results on aggregate data and Raaum and Wulfsberg, 1995, for results on firm-level data). A more positive effect in Norway could be interpreted as a sign that labour market programmes are more efficient in Norway than in most other countries, but without corroborating evidence (for instance better effects on the employment probability of participating individuals), I am reluctant to draw this conclusion. A possible reason for the negative relationship between real wages and the number of places in labour market programmes in Norway is perhaps an incomes political understanding between the Government and LO, where to some extent wage moderation has been traded for a high number of places in labour market programmes.

114.	The effects of labour market programmes depend on the cyclical situation. In general, participants in labour market programmes are less active job seekers than the openly unemployed. In a situation with strong employment growth, a too high number of places in labour market programmes may imply that labour market pressure arises at a higher level of total unemployment (defined as the openly unemployed plus participants in labour market programmes). This is of course not only a question of the total extent of labour market programmes, but also of the quality and targeting of the labour market programmes; programmes that provide skills that are in short supply or are targeted at the least qualified may increase efficient labour supply and thus allieviate labour market pressure.

115.	The unemployment benefit system in Norway is fairly generous by European standards. The replacement ratio depends on the level of previous income and the number of children. The average replacement ratio for employees is 65 per cent before tax. However, four out of ten employees have a net compensation ratio (defined as 100 minus after tax rise in family income by having a job relative to being unemployed, in percent of the person's gross income) above 80 per cent, and four out of 100 would in fact have a temporary economic gain from losing their job (Arneberg, 1996).

116.	The maximum duration of unemployment benefits has increased considerably over the last decade, from 40 weeks before 1984, to three and a half year in 1992. Until the recent revision of the benefit system, participation periods on some types of labour market programmes came in addition to the maximum duration of unemployment benefits. Furthermore, for some types of labour market programmes (public employment, wage subsidy, replacement schemes), the remuneration could be used the renew the right to unemployment benefits. In theory, it was thus possible to have an endless spell (i.e. until retirement) on alternatingly unemployment benefits and labour market programmes. After the revision,

the maximum duration of the unemployment benefits are three years. After the expiration of the benefit period, a place on a labour market programme will be offered.

117.	The implications of the benefit system for the level of unemployment are hard to evaluate. As documented in OECD (1994), a generous benefit system is likely to lead to higher unemployment for several reasons. For Norway the benefit system is clearly not an important explanation for why unemployment rose in the first place. Yet the fairly generous unemployment benefit system may constitute a hindrance when it comes to reducing unemployment. In part, this could happen via reduced efforts on job seeking for the unemployed, and a stimulating effect on wages. But perhaps more important is that unemployment benefits may induce persons who otherwise would have been outside the labour force to register as unemployed to obtain benefits. Experience from other European countries may indicate that this happens (OECD, 1994), and so does the fact noted above, that many registered unemployed in Norway are classified as outside the labour force in the Labour Force Survey. Note, however, that there need not be anything unethical in this; these persons may really want a job, but if the probability of finding a job is perceived to be close to zero, they might choose not to register if there were no benefits.

118.	Employment protection rules have several important effects on the functioning of the labour market, both positive and negative. Strict employment protection rules encourage employers to undertake efforts to qualify the workforce, rather than laying off less productive workers. But strict employment protection rules may also make employers more reluctant to hire new workers, by raising the risk that the firm is stuck with workers that are unprofitable. In particular, this may make employers afraid of hiring workers that they perceive to be less productive, e.g. long term unemployed, immigrants and persons with little work experience. In general, the Norwegian rules regarding employment protection are rather similar to those in many other European countries. An exception to this picture is the strict limitations on the use of temporary employment. In the present upswing of the economy, the limitations on temporary employment may have a dampening effect on employment growth.

## 7.	Concluding remarks

119.	Let me draw two types of conclusions, one directly on Norway and one on what other countries can learn from the Norwegian experience.

120.	A further reduction in the unemployment in Norway requires several conditions to be fulfilled. First, it requires sufficient aggregate demand. This may seem unlikely to be a problem in Norway in the near future, due to our large oil revenues. The opposite problem is perhaps more likely, that aggregate demand for shorter or longer periods may be too high, thus starting an adverse wage-wage and wage-price spiral. Avoiding periods of too high demand is an important challenge for the government and the Storting.

121.	When and if employment is increased, bottlenecks are certain to materialise in an increasing share of the labour market (to some extent this has already happened). This is the crucial test of Norwegian wage setting and incomes policy. In a good scenario, these bottlenecks only cause small rises in wage growth in the sectors that are concerned, while wage earners in sectors without bottlenecks may accept this slight adjustment of relative wages. However, a bad scenario is as plausible. In this bad scenario, bottlenecks create large increases in wage growth, and the higher wage growth stimulates wage growth in the rest of the economy also. The final result of this scenario is unavoidably a contraction of economic policy; higher interest rates and stricter fiscal policy. Avoiding this adverse scenario is the great challenge for the wage setters, and for the incomes policy.

122.   Where does labour market policy and structural policy fit in? An efficient labour market policy improves the adjustment potential in the labour market, so that bottlenecks and rising wages occur at a lower level of unemployment (a lower NAIRU). Improvement of product market imperfections (among other things competition policy) reduces the scope for higher wages in the sectors that are concerned, and thus helps keeping wage growth down (in addition to the positive efficiency effect which is the standard argument for structural policies).

123.   What can other countries learn from the Norwegian experience? The reasons for the high and persistent unemployment in most OECD countries are not clear. Some, as OECD (1994), emphasise supply side factors ("societies' failure to adapt"). Others, like Bean (1994) and Ball (1996) attribute a larger share of the blame on disinflationary policies. Explanations based on insufficient demand and persistence effects are strengthened by the weakness of the empirical evidence linking unemployment to labour market regulation (Gregg and Manning, 1994). The Norwegian experience provides further evidence that demand is important. The Norwegian labour market is not less regulated than elsewhere in Europe. As unemployment rose, benefit duration was gradually increased, so that until recently it was possible to have an endless spell of alternating unemployment benefits and labour market programmes. Yet the evidence of Røed et al. (1996) indicate that there are no strong duration effects among the unemployed.

124.   In contrast to other European countries, large oil revenues have made it possible for the Norwegian government to pursue an expansionary fiscal policy, which has contributed to pushing unemployment down. In recent years, wage setters and government have explicitly aimed at wage moderation, and so far, wage growth has not exceeded the level of our competitors (although the recent rise is a cause of concern).

125.   Even if demand is important, there is little or no room for fiscal expansion in many other OECD countries due to high levels of public debt. Monetary policy is however not subject to the same limitations, and should in many countries be used more actively to counteract downturns in the economy. Moreover, a more expansionary monetary policy has benefical short term effects that may make structural policies politically feasible; more expansionary monetary policy and structural policies combined clearly also have positive long term effects.

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