Introduction

The main aim of this thesis is to add to the understanding of wage formation in Norway. Two ways are pursued to achieve this. First, existing theories on wage formation are adapted and developed further, in part to make them suitable for the institutional framework in Norway. Secondly, empirical evidence on the wage setting process in the manufacturing sector in Norway is provided and interpreted within the theoretical setting. This introduction summarizes the issues which have been investigated and the main findings. I shall also relate my work to earlier and current research on the same issues. First, however, I shall comment on how the thesis relates to the more general lines in the literature. Topics which concern only one of the chapters will be dealt with in the discussion of the particular chapter.

The whole thesis can be regarded as a contribution to the literature on union/firm bargaining. Wages are set through negotiations between union and firm (but for one exception in chapter three), rather than unilaterally by the firm (as in efficiency wage models), unilaterally by the union (as in monopoly union models), or by competitive forces. This seems to be well in accordance with facts (see discussion in chapter four), and is a crucial feature of the wage formation system in Norway.

Within the literature on union/firm bargaining an important distinction concerns which other issues the negotiations comprise. Pareto efficiency usually requires bargaining over the issues which the union is concerned about, which in most studies
include the employment level. However, facts seem to indicate that in general employment is determined unilaterally by the firm, cf Moene and Seierstad (1989) and Oswald (1984)\(^1\), and this is the assumption I have taken. Bargaining over any other issues, like effort, working conditions, etc, are seldom dealt with in the literature (exceptions are Johnson, 1986 and Rosén, 1989), and these issues are ignored in this thesis also.

Another key distinction within this literature concerns the preferences of the union. A basic issue is whether a trade union can be treated as a utility maximising agent (cf Dunlop, 1944), or that it should be regarded as a "political" organisation which behaviour reflects internal conflicts (cf Ross, 1948). The former view has dominated the literature (an exception is Pemberton, 1988), and is also the basis for this thesis.

On the assumption that the union maximises a well-defined utility function, a further point relates to the arguments in this utility function. The more common approach is to assume that union utility depend on both wages and employment, cf Oswald (1985), while I have largely used the alternative assumption that the union cares only about wages (as discussed in chapter four and five below). This assumption is however not important for the main results in the thesis.

Most of the thesis can also be viewed as within the literature on bargaining theory applied to wage negotiations, and the particular bargaining theory which is used, is within the

\(^1\) Some empirical studies on this issue are discussed in chapter six. Strand (1987) uses a repeated games approach to provide a justification for the view that employment is set at the Pareto efficient level without explicit bargaining over employment.
Nash program (Nash, 1950, and Binmore and Dasgupta, 1987). An important feature of the Nash program is that non-cooperative bargaining models (contests) should be used as a guide to applications of and justification for cooperative bargaining models. Thus, the Nash bargaining solution (Nash, 1950), has been justified by the non-cooperative approach initiated by Ståhl (1972) and Rubinstein (1982), cf Binmore et al (1986). In the spirit of this program, I set up an explicit non-cooperative bargaining model in chapter two, as the model there departs from one of the standard assumptions. In the other chapters however the models follow the standard assumptions, and I have used the Nash bargaining solution.

Even though the Nash bargaining solution is now widely used on wage negotiations, I shall make some remarks on how suitable this bargaining theory is for wage negotiations.

Nash bargaining theory is particularly attractive for two reasons. First, the Nash bargaining solution is theoretically appealing as it can be derived as a unique subgame perfect equilibrium in a non-cooperative bargaining game, cf Binmore et al (1986). Secondly, insights gained through non-cooperative bargaining games makes the Nash bargaining solution readily adaptable to various institutional settings. The reason is that as non-cooperative bargaining theory proceeds by finding the equilibrium of a stylized game, most institutional features can be incorporated by appropriate modifications to the rules of the game.

Applying Nash bargaining theory on wage negotiations is however not unproblematic. One problem concerns the occurrence of
conflicts. In the perfect information non-cooperative bargaining game which justifies the Nash bargaining solution, an agreement is reached immediately and no conflict occurs. Hence an essential part of wage negotiations, namely industrial conflicts, is left unexplained by the theory.\footnote{One line of research, partly motivated by this problem, is to analyse similar models with imperfect information. However, as yet no consensus has emerged whether these models can explain strikes in a theoretically satisfactory manner (see Gul and Sonnenschein, 1988, and Hart, 1989). Moreover, Farber and Bazerman (1989) argue that asymmetric information models of strikes are not able to explain strikes empirically.}

Another problem is that the results in non-cooperative bargaining models are very sensitive to small alterations in the rules of the game, cf Sutton (1986), for an example, see Shaked (1987). In part this may illustrate a real problem, that "real life" examples may be sensitive to small changes in the environment. Some predictions of non-cooperative bargaining theory are also fairly robust to the rules in the game, cf Sutton (1986).

In spite of these theoretical difficulties (and another discussed in chapter two below), there are several reasons which justify the application of Nash bargaining theory both as a part of larger models and for empirical tests on field data. First, basic predictions of the theory, like the specification and effect of the parties' disagreement points, seem to be in accordance with intuition. This makes one suspect that the predictions will hold also in more sophisticated models. Secondly, in light of the considerable amount of theoretical work within this area, it seems crucial to investigate whether the predictions are in accordance with facts. Without any empirical support, serious questions will have to be raised about the value
of non-cooperative bargaining theory within the realm of social science.

Let us now turn to the actual content of the thesis, which consists of five chapters, in addition to the introduction. Chapter two, "Non-cooperative wage bargaining", deals with non-cooperative bargaining theory applied to wage negotiations. A crucial assumption in most non-cooperative bargaining games is that the players incur a loss if there is a delay in reaching an agreement in the bargaining (the cake to be divided diminishes). However, this assumption does not necessarily hold for wage negotiations. The parties may bargain without any industrial action being taken, thus the revenue of the firm need not be affected.

Chapter two incorporates the question of whether or not the union is going to strike explicitly in the Rubinstein (1982) perfect information, infinite-horizon, alternating-offers model ("the discount case"). In each period, after a rejection of an offer, the union is assumed to decide whether or not to strike in that period. This modification to the original Rubinstein-model has important implications for the model. First, there is no longer a unique subgame perfect equilibrium. A whole interval of wage levels can be sustained as perfect equilibria. Secondly, subgame perfectness does not necessarily entail immediate agreement, as strikes with a length in real time can occur in equilibrium.

The intuition behind these results is perhaps most easily explained by an analogy to trigger strategy equilibria in
repeated games (cf eg Friedman, 1986). There are equilibria punishing each of the players, one which gives the union a very low payoff (low wage) and one which gives the firm a very low payoff (high wage). In the former, the union's strike threats are not credible, so the firm is not forced to offer a wage increase. In the latter, the union strikes until an agreement is reached, thus the firm offers a high wage to prevent a strike. Both these equilibria are subgame perfect, through the convention that if the party who is in the favourable position (ie the firm in the low wage equilibrium, the union in the high wage equilibrium) deviates from the equilibrium strategy, then this party is punished by a switch to the equilibrium which favours the other party.

Any wage level in the interval between these two equilibria can be sustained as an equilibrium outcome, through the convention that a party which deviates from the equilibrium strategies is punished in the following subgame, by a switch to one of the equilibria sketched above.

The same intuition applies for the strike equilibria. Both parties have to endure a strike in equilibrium, because if one of the parties deviates, then this party is punished by being forced down to a low payoff.

The result in chapter two raises an important question for the application of bargaining models on wage negotiations. As the actual outcome in the model hinges crucially on whether the union's strike threats are credible or not, it becomes important to investigate in what circumstances the union is willing to call a strike. Standard non-cooperative bargaining models and Nash
bargaining theory alike circumvent this issue by taking union willingness to strike for granted. However, if the union's willingness to strike depends on, for example, whether the union feels the firm's proposal is "fair" or not, then the notion of a "fair wage" may play an important role in the wage setting process. Any strong conclusions concerning this issue would be premature, but it is clearly an important issue for future research.

Another point concerns the possibility that a strike might occur in equilibrium. This can occur in perfect information models when there are multiple equilibria, as demonstrated in a specific setting in Rubinstein (1982). In light of the lack of definite results on this matter in imperfect information models, it seems worthwhile to pursue the issue of strikes also in perfect information models.

The essential part of the model in chapter two is identical to the model in Haller (1988), even though they are developed independently. However, Haller claims, incorrectly, that there are only two equilibria in the model, and not a whole interval. Furthermore, Haller does not mention the possibility that a strike may occur in equilibrium.

A model which formally is similar to the model in chapter two, but where the interpretation is different, is analysed in Moene (1988). Moene discusses different types of industrial action within a perfect-information, alternating-offers, non-cooperative bargaining model. He concludes that a player cannot credibly threaten to call an industrial action which gives himself lower payoff during the conflict than any of the
alternative actions the player can choose (my generalisation and interpretation of Moene's result). Within the model in chapter two, this would imply that strike threats are not credible, as no-strike can be interpreted as a milder form of industrial action.

Moene's result follows from his assumption of a finite number of bargaining periods, which enables him to solve the model by backwards induction. Thus, in the final period there is no reason for any of the parties to continue a conflict, as no more negotiation is to take place. Hence, threats to strike in this period will not be credible. Similar arguments apply consecutively in the second last period, third last period, etc, like in the chain store paradox (Selten, 1978). However, this line of reasoning is not very satisfactory. It does not seem reasonable to assume that the players recognise a final period, which they can use as a basis for backwards induction. It seems more intuitive to assume that as long as no agreement is reached, the players will assume that it is possible to continue the negotiations for at least one period. In this situation the appropriate assumption is infinite horizon (cf Aumann, 1959, and Rubinstein, 1989).

The problem concerning the use of the Nash bargaining solution on wage negotiations raised in chapter two does not pertain to the applications in the rest of the thesis, as the union is assumed to use work to rule as a threat in the bargaining (see discussion in chapter five).
Chapter three, "Local and central wage bargaining", analyses the interplay between central wage settlements and wage drift within a simple theoretical model. Wage drift is assumed to be the outcome of wage negotiations at firm level, simulated by the Nash bargaining solution. At the central level there is a monopoly union which determines the outcome of the central wage settlements, taking the ensuing wage drift into consideration.

The crucial feature which provides the central union with means to influence the final wage outcome is that the central settlements affect the unions' and firms' disagreement utilities in the local bargaining. Even though no open industrial actions are allowed\(^3\), the union has the opportunity to withdraw cooperation or work according to the working rules in an inflexible way (work to rule). This leads to a drop in profits, and the firm is willing to pay the workers to prevent such actions. However, as the workers retain their initial wage level during a conflict, including the centrally negotiated wage increase, the firm will have to offer a wage increase in order to reach an agreement in the negotiation. Thus the initial wage level will have a one for one impact on the resulting wage outcome.

The paper also explores the employment consequences of this set-up. Following Moene (1988), the employment level is assumed to be a long term decision variable, and is set ahead of the local wage negotiations (for a discussion of this assumption, see Hoel, 1989). In this case the firm will take into consideration that the wage outcome depends negatively on the employment level through the

\(^3\) This follows from the agreement between the unions' and employers' confederations (Hovedavtalen, LO and NAF), that no open industrial conflicts are allowed in the local negotiations.
that the wage outcome depends negatively on the employment level through the bargaining, and the firm will set a high employment level to keep wages down. Thus, the existence of local wage negotiations will, for any resulting wage level, have a positive effect on employment (this result is due to Moene, 1988). Chapter three shows that this positive employment effect also carries over to a system with central wage settlements. The central union may use the positive employment effect of the local wage bargaining to achieve both higher employment and higher wages than would have resulted from a system with only centralized wage setting. This result is in contrast to the widely held belief that a system with wage setting at two levels causes higher wages and lower employment than does a system with wage setting at one level only.

Concerning earlier theoretical studies, little work has been done to investigate the interplay between central wage settlements and wage drift. A notable exception is Holmlund (1986) which analyses a model with wage setting at two levels. In this model a monopoly union sets the central wage level under uncertainty, and afterwards wage drift occurs if excess demand for labour is realized. Thus the modelling of the wage drift process is entirely different from mine.

Chapter four, "Wage drift and bargaining", contains an empirical study of wage drift in the manufacturing sector in Norway. The theoretical basis is a bargaining model for local wage negotiations similar to the one in chapter three. Three main issues are investigated.
First, the paper analyses which factors cause wage drift. Aggregate wage drift is found to depend positively on the vacancy rate and increases in the ratio of gross product to wages and negatively on the size of inventories. There also appears to be an upward trend in aggregate wage drift, which is consistent with NOU (1977) and the Moene and Seierstad (1989) finding that over time more groups have got the right to local wage negotiations. The empirical equation is compared to and found preferable to an empirical model by Hersoug (1983), which is one way of testing whether an empirical model is satisfactory.

In the industry study also effects from other explanatory variables are detected. In addition to the impact of vacancies and inventories, wage drift is found to depend positively on increases in the rate of inflation, on growth in competitive import prices and on the ratio of gross product to wages, while it depends negatively on the unemployment rate and increases in the payroll tax rate. There also seems to be an "error correction mechanism" operating on relative wages. If the industry wage level one year is low relative to average manufacturing wages, compared to the average relative wage of the industry over the sample period, then this will tend to increase wage drift in the industry in the subsequent year.

The industry study also explores whether the wage drift process is the same in all industries. The hypothesis of common intercept in all industries is rejected, so the difference in average level of wage drift between the industries can not be explained solely by "economic" variables. However, the hypothesis of common slope coefficients in all industries cannot be rejected,
indicating that the effects of the factors which cause wage drift do not vary a lot from industry to industry.

As to earlier work, wage drift has been subject for considerable attention in most of the post-war period. The dominant explanation of wage drift has been that it is the market response to labour market pressure. Thus the unemployment rate and/or the vacancy rate are the most frequently used explanatory variables, and these variables constitutes the "core" of empirical studies like Rødseth (1969)⁴, Brunstad and Aarrestad (1972), Isachsen (1976) and Brunstad (1982) for Norway, and Hansen and Rehn (1956), Jacobsen and Lindbeck (1969), Schager (1981) and Söderström and Uddén-Jondal (1982) for Sweden. The general finding in these studies is that wage drift is highly correlated with the labour market situation.⁵

Other explanatory variables have also been suggested within the same theoretical framework. Isachsen (1976) finds that growth in output prices has a positive effect on wage drift. He interprets this effect as arising from increased demand for labour owing to rising marginal value productivity of labour, which, he argues, is not captured by the unemployment rate. Isachsen fails to find any significant effects of a proxy for labour hoarding, of the percentage increase in the consumer price index or of a dummy for first year in the central wage contract period.

OECD (1975), Isachsen, Kjær and Raaum (1982) and Söderström and Uddén-Jondal (1982) use various variables to capture the extent

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⁴ Rødseth (1969) uses however the increase in the number of people in the age group 18-69 years as the measure of labour market pressure.

⁵ This is also reflected in a negative relationship between the real wage level and the unemployment rate, which is found by eg Hoel and Nyemoen (1988).
of "low wage adjustments" of the central settlements, with the motivation that a compression of wage differentials leads to market forces causing wage drift to restore some sort of equilibrium (cf discussion below).

Hersoug (1983) follows a more eclectic approach. In addition to the effect from the labour market, Hersoug argues that growth in productivity and consumer prices lead to increased wage pressure and thus higher wage drift and finds empirical support for this. Hersoug also investigates the difference between years with or without central settlements, but no clear picture emerges.

An entirely different approach is pursued by Schager (1988). Schager develops a model where the firm recruits from a search labour market, and this model gives vacancies and the ratio of value added to wages as the main determinants of wage drift. The theoretical model is supported by evidence on aggregate wage drift in Swedish manufacturing, yet the results also seem to be consistent with a bargaining framework like the one I have used.

A work closer to the approach I have taken is Holmlund and Skedinger (1989), which also explains wage drift as the outcome of wage negotiations at firm level. However, in contrast to chapter four, Holmlund and Skedinger treat the firms' disagreement point as a fixed parameter, so neither inventories nor the initial wage level affect the firms' profit during a conflict (for the latter variable in spite of the authors' explicit recognition of go slow or work to rule as the relevant types of conflict). The theoretical model is estimated on panel data for Swedish wood industry. Holmlund and Skedinger find a negative effect on wage drift of the unemployment rate, the initial wage level, contractual wage increases, real material prices and unemployment benefit, the last
sign opposite to what was expected, and a positive effect of alternative wages.

To summarize the general comparison with earlier studies, my empirical findings seem to be well in line with earlier work. The empirical work is however extended somewhat, as new variables like inventories, and in the industry study also relative wages and the ratio of gross product to wages, are found to influence wage drift. Moreover, the theoretical approach is also different from what has been used earlier.

The second main issue concerns the relationship between central wage settlements and wage drift. The theoretical model predicts that there should be no direct effect of the central settlements on wage drift, for the reasons explained in the discussion of chapter three above. This prediction is supported by empirical evidence, leading to the the conclusion that central settlements do matter. However, one should be cautious when interpreting this result, since it is likely that there are omitted variables (eg expectations) which may bias the coefficients. Yet it is difficult to imagine a bias of the order of magnitude necessary to alter the conclusion that wage drift does not unravel the central settlements entirely.

The finding that wage drift does not undo the outcome of the central settlements is important in relation to the current literature on the effect of corporatism, see eg Bruno and Sachs (1985) and Calmfors and Driffill (1988). The Scandinavian countries, with their system of wage setting at two levels, are usually assumed to be among the most centralized as far as wage setting is concerned. If wage drift was found to undo the effects of the central settlements, then the wage setting should rather be thought
of as highly decentralized. This would undermine most of the conclusions within the literature on corporatism.

The relationship between centrally negotiated wage increases and wage drift has been subject for much less investigation than the wage drift process itself. The general findings, see Jacobsen and Lindbeck (1969), Schager (1988), Flanagan (1989), Hersoug (1983) and Rødseth and Holden (1989), is that there is little, if any, effect of centrally negotiated wage increases on wage drift, in accordance with my results. Rødseth and Holden (1989) derive this conclusion by a different method from what is used in chapter four, by utilising the institutional feature of two-year cycles in the central settlements. The total wage increase is shown to be consistently larger in the first year of the central wage contract periods than in the last, so wage drift does not offset this consequence of the central wage settlements. Thus, the conclusion that central wage settlements matter, at least in the short run, appears to be quite robust.

A more complicated picture is given in Holmlund and Skedinger (1989), where centrally negotiated wage increases turns out with a strong negative coefficient (in the interval 0.3 - 0.7) on wage drift. However, in their equations they have also included the effect of contemporary outside wages, which of course depend positively on the centrally negotiated wage increases. Combined with the risk for measurement errors when the central wage increases are calculated for each region, this makes it hard to interpret the coefficient on the central wage increase. And as the authors themselves acknowledge "the net effect on wage drift (of centrally negotiated wage increases) is ambiguous, but the "final"
reduction in drift is likely to be much smaller than what our estimates for a single region suggest".

An exception to the general finding is Andersen and Risager (1989) who find that wage drift offsets approximately half of the impact of central wage settlements on skilled/unskilled wage differentials.

A related issue concerns the effect of central settlements on relative wages. Just as to the effect on aggregate wages, one can ask whether the impact on relative wages of the settlements is undone by wage drift. In practice this would mean that extra increments given to one group of workers in the central settlements, lead to higher wage drift for other groups. I have asked: if workers in one industry get a large central wage increase in one particular year, compared to the average central wage increase in the manufacturing sector, does this lead to lower wage drift in this industry in the same year? However, no such tendency could be detected, thus the central settlement does seem to have an impact on relative wages. But in spite of this finding, and in spite of the frequent occurrence of extra increments to workers in low-paid industries, there does not seem to be any considerable reduction in the wage dispersion in the manufacturing sector (this is also the conclusion in Strøm et al, 1988). The empirical results in chapter four give two answers to this apparent paradox. First, there is the "error correction mechanism" operating on relative wages mentioned above. If the relative wage position of an industry was to erode over time, it would in part be counteracted by higher wage drift through this mechanism. If this effect is strongly non-linear, it could perhaps prevent the wage dispersion from increasing too much. However, at the prevailing relative wages, this
effect is not strong enough to keep relative wages constant. Thus, the conclusion from this study is that central wage settlements have worked, not to decrease wage dispersion, but to prevent it from growing.

This conclusion is to a certain extent at odds with previous research. Both Söderström and Uddén-Jondal (1982) (for Sweden) and Isachsen et al (1982) (for Norway) found a small but significant positive impact of low-wage adjustments in the central settlements on aggregate wage drift, supporting their hypothesis that low-wage adjustments immediately lead to higher wage drift for high-paid workers. Their result, as well as mine, can of course be biased because of omitted industry-specific variables (e.g. favourable economic conditions in a low-wage industry). However, the previous findings by Söderström and Uddén-Jondal (1982) and Isachsen et al (1982) can also be biased because of omitted aggregate variables (as they explain aggregate wage drift). Low-wage adjustments are more likely when the "general opinion" is that they can be "afforded", and favourable economic conditions can clearly lead to higher aggregate wage drift. Moreover, my study also controls for (and finds significant) more explanatory variables, like import price increases and inventories, than do the studies by Söderström and Uddén-Jondal and Isachsen et al, which should make any omitted variable bias less severe.

The third main issue concerns whether bargaining actually matters. This relates to the inherently difficult problem of discriminating between various theories, owing to the fact that different theories (if not too simple or restrictive) can give rise to very similar empirical equations. One way out of this problem, which is advocated in chapter six, is to make use of other kinds
of information in addition to the standard econometric approach. The present chapter has, however, not followed this approach, but rather attempted to investigate the explanatory power of a variable which at least is less easy to defend within other theoretical frameworks. Here I draw on one of the key insights derived by non-cooperative bargaining theory, that the disagreement points of the parties in a Nash bargaining game should reflect the consequences of a delay in reaching an agreement, cf Binmore et al (1986). One variable which is likely to affect the consequences of a conflict for the firm is the level of inventories. If the initial level of inventories is small, it is more likely that the inventories are depleted in case of a conflict, causing the firm not to be able to supply its customers. Thus the cost to the firm of a conflict will be higher the smaller the initial size of the inventories. On this assumption, non-cooperative bargaining theory predicts that wage drift is higher the smaller the initial size of the inventories. This prediction is supported by the evidence on both dataset, which lends support to the claim that non-cooperative bargaining theory is empirically relevant.

The use of inventories as an explanatory variable for wages is, at least to my knowledge, of very recent nature. Bean and Turnbull (1989) employ inventories as one of several instruments for wages in British coal industry, with a motivation similar to mine. However, it is not possible to tell from their article whether inventories have a significant impact on wages.

The idea that the size of inventories may affect the unions' bargaining position is, however, not new. In 1978, the British Conservative party's policy group on nationalized industries suggested the building up of coal stocks at power stations as a
means of weakening the power of the coal miners in the event of a strike (The Economist, 1978). This recommendation was acted on in the 1984 miners strike and this paved the way for the subsequent defeat of the miners (Paci, 1988).

There is also other anecdotal evidence suggesting that inventories affect wage negotiations. Moene and Ogmedal (1989) and Paci (1988) mention Ford as a firm particularly vulnerable to strike threats, owing to their recent policy of cutting down inventories so as to reduce costs.

Yet another approach to discriminating between theories is the use of laboratory experiments, and non-cooperative bargaining theory has of course been subject to this, with mixed results (see Roth, 1989). However, the various approaches should be seen as complementary rather than competing. Whilst laboratory experiments have the advantage that they can be taylor-made to the problem in hand, it remains that one doesn't really know to what extent laboratory results carry over to real life.

Chapter five, "A bargaining theory of inflation", explores some of the theoretical consequences of the model for local wage negotiations used in chapter three and four. The crucial feature in this model is the assumption that the workers will keep their nominal wages in case of a conflict in the local wage bargaining. In a Norwegian context this assumption can be defended by the institutional feature that strikes and lock-outs are banned in the

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6 This is not to say that non-cooperative bargaining theory is one theory, with a single set of predictions. Variations in the bargaining games will result in different predictions. Some of the predictions do however appear to be robust to slight variations in the structure (cf discussion above), and it is the testing of that type of predictions which is meant here.
local wage negotiations, so work to rule or go slow are the relevant types of disagreement. However, the analysis is of some relevance to other countries as well. In Sweden and Finland there are also rules banning strikes and lock-outs in the local negotiations, even though at least for Finland there can be raised doubt whether these rules are actually enforced. Moreover, work to rule and go slow appear to be of practical importance in countries without such rules, in Britain, for example, work to rule and go slow types of industrial action are more frequent than strikes and lock-outs.

In wage negotiations of the type in chapter five nominal wages will always rise. The intuition behind this result is the same as in the model in chapter three: The workers can inflict a cost on the firm, and the firm will be willing to increase nominal wages to prevent this. However, the firms are assumed to set prices in imperfectly competitive output markets. Thus, immediately after wages are determined the firms will find it profitable to rise prices. Real wages will return to their previous value, but at a higher nominal level. In this respect the paper has strong similarities with the "conflict/structuralist" approach to inflation, see eg Hines (1964), Qvigstad (1975) (which is based on notes from lectures by T. Haavelmo) and Scitovsky (1975), where inflation is the result of a conflict between workers and capitalists. The main difference between chapter five and the standard conflict approach is the explicit microfoundation of the wage bargaining which is provided in chapter five, which contrasts the more ad hoc postulation of wage pressure variables used within the conflict theory approach.
Chapter five also resembles the literature on the wage and price spiral at this point, cf eg Blanchard (1986), because in both, inflation is caused by the wage and price setting in an economy with rational agents. The main difference is that in Blanchard (1986) wages and prices are set alternately. Thus inflation results if unions' target real wage is inconsistent with firms' price setting, as the unions obtain their wage target in the wage setting while firms increase prices in the next period.

The explanation of the inflationary process offered in chapter five differs considerably from the more common explanation of inflation in recent years. Inflation is often viewed as the result of a game between government and the private sector, where the government tries to "fool" the private sector in order to achieve a higher activity level of the economy, cf eg Barro and Gordon (1983) and Backus and Driffill (1985). In that kind of model there is no reason why inflation should arise within the private sector. Hence inflation is usually caused by increased money stock. In contrast the present model explains inflation as owing to the wage and price setting, and money is assumed to play an accommodating role only.

The policy implications of the model in chapter five are also analysed. If unions don't care about employment, and no efficiency wage aspects are present, then the wage and price determination is independent of the level of activity in the economy. In this case the model has Keynesian features in the sense that expansionary economic policy can raise aggregate output, even without affecting the price level.

Concerning the Keynesian policy implications the model in chapter five has similarities with the literature on monopolistic
competition macro models, see eg Hart (1982) and Weitzman (1985). The difference as regards the wage setting does however imply that my model is dynamic, with inflation, while this literature usually concerns itself with essentially static models.

Chapter six, "Wage bargaining and efficiency wages: Some implications for tests of trade union models", is more loosely connected with the other chapters. It deals with one particular case of the general problem of distinguishing between different theories. Two of the key distinctions between different theories on trade unions in recent years have been:

- whether employment is determined unilaterally by the firm or through negotiations between the union and the firm.

- whether unions care about employment.

Many studies have aimed to test these and related issues empirically, see eg Brown and Ashenfelter (1986), Macurdy and Pencavel (1986), Card (1986), Svejnar (1986), Carruth, Oswald and Findlay (1986) and Bean and Turnbull (1989). In general these studies have rejected both the hypothesis that employment is determined unilaterally by the firm and the hypothesis that unions do not care about employment. The basis for these conclusions is that outside variables like the alternative wage or the unemployment rate are significant in the employment or the wage equation. Chapter six shows that these conclusions are invalid if workers' efficiency depend on the same outside variables, as is assumed in the
efficiency wage models, and that this holds true even if wages are determined through bargaining.\textsuperscript{7}

The more general conclusion which can be drawn from this is that it may be very hard to discriminate between different theories solely on the basis of econometric evidence. This suggests that also other types of information, for example of more institutional nature, will be useful as complementary to the standard econometric approach.

\textsuperscript{7} This result is later noted in Jackman, Layard and Nickell (1989).
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