

Discussion Papers No. 613, March 2010
Statistics Norway, Research Department

Randi Kjeldstad and Erik H. Nymoen

Underemployment in a gender segregated labour market

Abstract:

This article analyses factors behind underemployment in Norway and has a focus on gender. The analysis, based on Labour Force Survey data, shows that economic fluctuations during the latest one and a half decade bring about changing underemployment levels of both women and men. The Norwegian labour market is strongly gender segregated and the processes and characteristics of underemployment differ between male and female dominated labour market sectors. The former sectors are generally more exposed or sensitive to economic fluctuations than the latter. It is indicated that underemployed men are predominantly temporarily expelled on part-time basis from their jobs, while women are to a larger extent permanently excluded from longer working-hour contracts in their jobs.

Keywords: Underemployment, gender, gender segregated labour market, economic cycles

JEL classification: J21, J22, J23

Acknowledgement: This analysis is financed by The Norwegian Research Council and Statistics Norway.

Address: Randi Kjeldstad, Statistics Norway, Research Department. E-mail: rkj@ssb.no

Erik H. Nymoen, Statistics Norway, Research Department. E-mail: ehn@ssb.no

Discussion Papers	comprise research papers intended for international journals or books. A preprint of a Discussion Paper may be longer and more elaborate than a standard journal article, as it may include intermediate calculations and background material etc.
--------------------------	--

Abstracts with downloadable Discussion Papers
in PDF are available on the Internet:
<http://www.ssb.no>
<http://ideas.repec.org/s/ssb/dispap.html>

For printed Discussion Papers contact:

Statistics Norway
Sales- and subscription service
NO-2225 Kongsvinger

Telephone: +47 62 88 55 00
Telefax: +47 62 88 55 95
E-mail: Salg-abonnement@ssb.no

Introduction

The phenomenon to be discussed in this article is time-related underemployment, which reflects a mismatch between a person's working hours and her/his request for longer hours (ILO, 1998; ILO, 2010; AUSSTAT, 2003; Brown and Pintaldi, 2006). In the Nordic countries, attention has lately been drawn to what is perceived to be a relatively high level of underemployment, also called "the dark side of part-time work" (Lind and Rasmussen, 2008). The attention has partly been about the underemployed as an unused labour reserve, especially in times of tight labour markets, and partly about the negative economic- and welfare consequences of underemployment for individuals and families.

The aim of the study is twofold: Firstly, and as a background for the consecutive analysis, we describe the development of underemployment in Norway during the last one and a half decade (until 2008) focussing on the changing labour reserve of women and men. We examine whether economic upswings and recessions in the labour market bring about similar or dissimilar underemployment patterns of women and men. Our second goal is to discuss the observed changes in underemployment in relation to the gender segregated Norwegian labour market. To inquire into the gendered structure of underemployment therefore, we focus on the interrelation between labour market changes, the occupational- and workplace affiliation structure and the underemployment of women and men.

Background

Internationally the development of part-time work in general, and in involuntary part time in particular, varies. During later decades, several countries have seen a slow increase in both, e.g. Europe as a whole, and OECD countries as a whole (OECD, 2008), while the Nordic countries have witnessed a mainly unaltered or declining proportion of part-timers; in Norway mainly due to the increase of female full-time work. The least decline applies however, to involuntary part-time. As revealed by the European Working Conditions Survey (Parent-Thirion et al, 2007; Forssell and Jonsson, 2005), there is an overall negative correlation at country level, between part-time and involuntary part-time rates in Europe. This is largely congruent with the picture of the Nordic countries, as Norway has the largest proportion part-timers, and Norwegian part-timers report the lowest proportion of involuntariness (Virjo, 2006; Kjeldstad, 2009).

Norway differs from the other Nordic countries in that there has been a more stable economic growth and somewhat less clear economic downswings during the last decade or two. Hence, albeit predominantly similar labour market conditions among the Nordic countries in a global perspective, in a Nordic perspective Norway has had the most stable high employment level and stable low

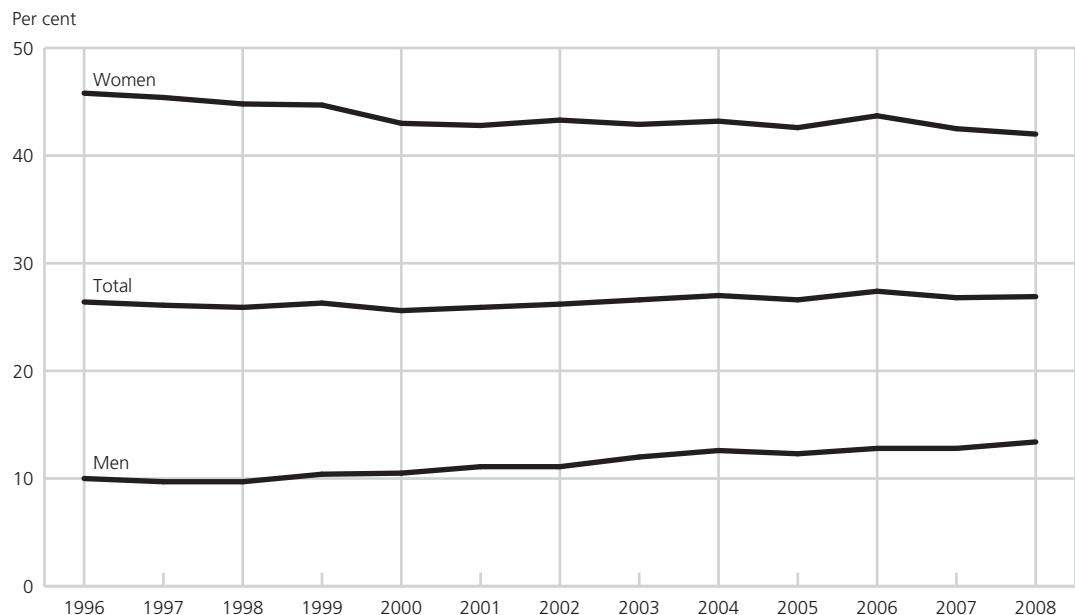
unemployment level. At the same time Norway has had the highest and most stable part-time employment level. Like the case with other countries however, part-time is mainly a female labour market adjustment. In Norway in 2008, 47 percent of all the employed persons, and 73 percent of the part-time workers, were women. This reflects a decrease of the part-time rate from 46 to 42 percent among employed women and an increase from 10 to 14 percent among employed men since 1996 (Figure 1).

Figure 2 shows co-variation between the changing number of unemployed and the number of underemployed during the last one and a half decade in Norway, a period of relatively un-dramatic labour market changes. Still, we see a cyclical development of the underemployed in line with the economic business cycles, with a low level corresponding to peaks in the economy around the turn of the millennium and in 2007/2008. At the lowest (in 2008), the number of underemployed amounted to 59 000, which equals 2.3 percent of all employed and 8.7 percent of the part-time employed, while at the highest (in 2004/2005) the numbers were almost 100 000, i.e. 16 percent of the part-time employed.

The cyclical underemployment pattern corresponds predominantly to the changes in unemployment. This concurs with several earlier studies from other countries (see Stratton 1996 for a review). Accordingly, we regard underemployment by and large to be a type of (hidden) *unemployment*. We are fully aware that like unemployment, changes in underemployment to some extent are caused by labour supply factors, such as changing human capital, changing work and working-time preferences, and changing economic incentives such as wage levels, welfare rights etc. As a rule however, such individual and social characteristics hardly shift in close line and tempo with the economic fluctuations. Hence, the focus of this study will be the demand side of the labour market. On the other hand, during the same period, the proportion part-time employed remained almost unchanged (Figure 1) and the total number of part-time employed increased steadily (not shown), thus appearing to be principally uncorrelated with the economic cycles. This suggests rather a loose connection between the changing demand for part-time positions and changes in involuntary part time, and thus, contrary to what was pointed out above, that the changes in involuntary part time are primarily attributed to shifts in the working-hour preferences among the part-time employed. According to this assumption the main focus should be put at a possible mismatch between the individual's working hours and her/his shifting working-hour preferences. Consequently, putting underemployment in par with (hidden) unemployment (cf. above) may seem less adequate. The descriptive statistics imply then, that "the demand and the heterogeneous labour market culture perspective" which we focus in this analysis, may not be the *only* useful perspective in this field. Still we argue that it is the most suitable. The argument is corroborated by the fact, as shown in Figure 2, that changing business cycles affect

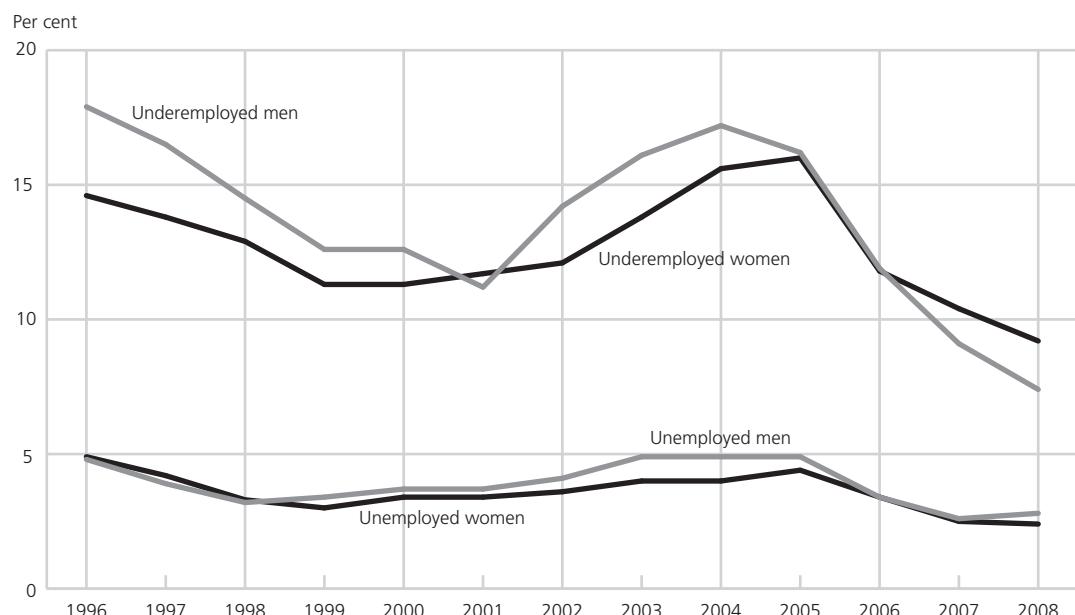
women's and men's underemployment pretty much alike, thus underlining the general impression of involuntary part time as primarily a demand side- driven phenomenon. Women constitute about three out of four of the involuntary part-timers throughout most of the period.

Figure 1. Part-time employed as proportion of all employed. Women, men and total 1996-2008



Source: Statistics Norway LFS 1996-2008

Figure 2. Underemployed as proportion of part-time employed, and unemployed as proportion of labour force. Women and men 1996-2008



Source: Statistics Norway LFS 1996-2008

Table 1 shows that women outnumber men by far in the sheltered public sector jobs, and that men outnumber women in export industry and most other industries and jobs exposed to competition. Part-time and involuntary part-time employment is far more widespread in female than in male dominated jobs. Actually, Table 1 shows significant accordance between the general underemployment rate and female predominance within sectors, industries, occupations and other job characteristics, and being employed in female dominated jobs increases the probability of underemployment for both sexes. Among the labour demand factors; quarter of the year, which we assume reflects seasonal fluctuations, and the local unemployment rate, which presumably reflects the local labour demand (see paragraphs on data), the latter shows a rather “skewed” female to male unemployment rate, i.e. a decreasing female underemployment proportion as the local unemployment rate increases.

Table 1. Key characteristics of female versus male employed and underemployed

	All employed by key characteristics N=18 381	Underemployed by key characteristics N=1 222	Per cent women of all employed	Per cent women of underemployed
Total	100	7	50	78
Quarter				
1	25	27	49	76
2	25	25	49	80
3	26	23	50	80
4	24	25	49	78
Local unemployment rate				
0.0-2.9	31	28	50	87
3.0-3.9	39	39	49	78
4.0 +	30	32	50	72
Sector				
Private	65	50	38	68
Municipal	23	41	76	89
State	12	9	62	89
Industry				
Manufacturing/transport	29	10	21	57
Sales/hotel	18	24	50	73
Finance/service	12	9	41	58
Other services	41	58	72	87
Occupation				
Clerks	8	9	66	69
Crafts	11	13	7	23
Elementary	5	13	70	70
Manager	7	-	32	80
Operator	8	3	17	45
Professional	12	3	46	78
Sale/service/care	24	54	72	84
Technician (incl. nurses)	26	17	55	80
Company size				
1-10	22	26	48	78
11-99	46	52	53	80
100 +	32	22	46	76
Work contract				
Permanent	90	71	48	81
Temporary	10	29	61	73

Source: Statistics Norway LFS 2005

A limited, unused labour reserve

According to Norwegian official statistics (the Norwegian Labour Force Surveys), the part-time employed comprise employees with a weekly number of contractual working hours below 37, which constitutes ordinary full-time jobs in Norway, excluding employees in occupations where 32-36 weekly hours constitute full-time. The contractual working-hours may constitute the sum of hours in several jobs. The underemployed comprise part-time employed persons who want longer contractual working hours, seeking longer hours by registering at the Employment Offices, advertising, contacting present employer etc, and who are able to start with increased working hours within a month. As shown by Figure 2, they are also to a large degree able to be mobilized in times of extensive labour demand.

The volume of the active labour reserve constituted by the underemployed depends however, on how many contractual working hours the underemployed actually want. Whereas several analyses in this field presuppose that the underemployed per definition prefer full-time jobs (cf. Stratton, 1996; Lind and Rasmussen, 2008), only half of Norwegian underemployed state that they want full-time work contracts, men somewhat more often than women (Kjeldstad, 2009). Hence, by 2008 the underemployed represent a relatively limited unused labour reserve in the Norwegian labour market, and significantly more limited than do the fully unemployed (op. cit). Added to the analogously converted labour reserve by the fully unemployed, the unused labour supply matches almost perfectly the number of registered vacant jobs in 2007 (Kjeldstad, 2009). However, the jobs and jobseekers are not necessarily easily matched. In Norway *one* hampering circumstance is a persistent strongly gender segregated labour market.

Underemployment at the micro level: Earlier studies

Part-time work, especially female part-time, has been subject to a multitude of research, both in Norway and internationally, and studies from Nordic countries are most relevant here. Many of these analyses have put emphasis on part time in a non-standard- or precarious work perspective. Still, only a few analyses focussing mainly on underemployment have been carried out. Among the exceptions is the U.S. where involuntary part time has been a political and analytical concern for several decades (see Larson and Ong, 1994; and Stratton, 1996 for references). During later years, part-timer's hours satisfaction has been discussed e.g. by Reynolds (2003), pointing at the importance of getting grip of the various aspects of working-hour mismatch, i.e. both the overworked and the "underworked", and Warren (2008), showing great national differences in working-hour contentment and economic well being among part-timers. Flynn (2003) finds that contextual and area opportunity factors affect labour market marginalisation including involuntary part time, significantly, especially for women. In a

comparative analysis Gash (2008) links differences in part-time workers' transitions to full time in Denmark, France and the U.K., to differences in policies supporting maternal employment, and concludes that U.K. women are more "constrained" to part time, whereas Danish and French policies to a large degree enable women to work their preferred hours. Stratton (1994 and 1996) and Bollé (1997) have investigated whether involuntary part-time implies a "trap" or a stepping stone towards longer hours. The former finds a significantly higher transition rate into full time among the involuntary than among the voluntary part timers, whereas the latter maintains that involuntary part time conceals unemployment, and thus may prevent the underemployed from registering as job seekers.

As aforementioned, there has been an increasing Nordic concern about involuntary part time and underemployment during later years. A Swedish official investigation, SOU 1999:27, was followed up by the so called HELA project, initiated in 2002 and resulted in a series of publications on underemployment and part-time unemployment. These analyses account for the many various definitions and uses of the relevant concepts in national and international statistical sources, and illustrate the many hindrances and problems encountering attempts to undertake international comparisons (Nyberg, 2003; Forssell and Jonsson, 2005; Ottosson and Lundquist, 2005). Some efforts at Nordic and European comparisons have been made, however (cf. Virjo, 2006; Fourth European Working Condition Survey (Parent-Thirion et al, 2007)). The general picture of these comparisons show that the Nordic countries, except Finland (and Iceland, which is rarely included in these studies) have a rather high part-time level as compared to most European countries, with Norway on top and Denmark at the bottom of the three "high-level" countries. In all countries women outnumber men, and the age group under 24 years by far outnumbers other age groups, the latter reflecting that a great many Nordic part-time workers combine part-time work with education (Nyberg, 2003; Kjeldstad, 2006; Lind and Rasmussen, 2008; Kauhanen, 2008; Haataja and Kauhanen, 2009). Lind and Rasmussen (2008) even "go so far" as to predict the cessation of Nordic part-time work for non-students. As regards involuntary part time, the top part-time country, Norway, with a share of 28 percent of the employed in 2005, has the lowest proportion involuntary part-timers, 13 percent of the part-timers. Finland, with the lowest part-time level, has the highest involuntary proportion, 13 percent of the employed and 29 percent of the part-time employed respectively (Virjo, 2006). As mentioned in the introduction, there seems to be a negative correlation between the part-time and involuntary part-time proportions at country level. This may reflect national and local gender-and employment cultures, in the sense that gender equality and breadwinner norms vary geographically.

Nordic studies of underemployment *duration* conclude with relatively short underemployment periods on the average. In Norway by the turn of the century, half of the underemployed were underemployed less than three months (Fevang, Røed, Raaum and Zhang, 2004). A Swedish study from the same period (Ottosson and Lundquist, 2005) concludes almost identically. Both studies reveal however, significant differences between women and men and between labour market sectors and occupations. The longest duration is found among women and in female dominated sectors with high proportion of underemployed. The shortest duration is found within manufacturing and construction work. In a relatively stable economy like the Norwegian then, the partly expelled on the average most probably experience shorter underemployment periods than the partly excluded. This is not only due to their higher “risk” of transition to full-time employment. The partly expelled are also more exposed to full-time unemployment (op.cit).

Norwegian and Nordic studies specifically focussing on the relationship between labour market- and job characteristics on the one hand and underemployment on the other hand, are few. As regards micro level analyses in a gender perspective, the literature is even more restricted. Nevertheless, although the focus of the analyses accounted for above varies, the general impression is that involuntary part-time should be regarded as mainly employer driven, i.e. employers adapting working hours to what is perceived most suitable for the company rather than to the workers’ preferences. Hence, Nordic involuntary part time is mainly viewed as a type of hidden unemployment. *Hidden* since part-timers wanting (and seeking) more work, are generally less systematically registered than the (fully) unemployed. An increase or decrease in involuntary part time should then be interpreted more as a change of full-time or longer part-time job openings, than as shifting characteristics or preferences for longer hours among the part-time employed. Changes in such labour demand may however, stem from different processes, either temporary or permanent partial redundancy, or variation among or between workplaces as regards the organisation of working hours and working-hour rotation. In the former case, the employees are partly pushed out of full-time jobs and into part time, mostly by the firm experiencing economic problems and a need for staff reduction. In periods of economic expansion most of these firms open up to full-time appointments again. In the latter case, the employees work part time because they are excluded from a contract of longer hours or full time. They hold regular part-time jobs that cannot as a rule enter into full-time jobs, and as a rule employees who want to increase their working hours will have to change jobs (Millar, Ridge and Bennett, 2006). Both groups are underemployed, the former may however, be called *partly expelled*, whereas the latter may be called *partly excluded*. The former as a rule have the rights to wage compensation from the state according to Norwegian social security rules, whereas the latter as a rule hold no such rights.

In depth Norwegian and Nordic underemployment studies have predominantly been limited to analyses of particular labour market sectors, occupations and institutions, mainly in the care and service sectors (Moland and Gautun, 2002; Abrahamsen, 2007; Amble, 2008; Kauhanen, 2008). This is no surprise, as the bulk of the underemployed are found here and the political attention has been focussed here (SOU, 1999:27; NOU, 2004:29). We know that the Norwegian, like the other Nordic labour markets, is strongly gender segregated, also compared to the most “comparable” countries (Charles, 1992; Anker, 1998; Melkas and Anker, 1998; cf. also Table 1).

Earlier analyses of LFS-data imply that whereas job characteristics and demand side factors outstrip individual and household factors in explaining involuntary part time work, the two sets of factors display somewhat equal capacities to explain the general part-time level. The picture is roughly the same for women and men (Kjeldstad, 2006; Kjeldstad and Nymoen, 2009). Individual characteristics have in earlier studies shown to have a somewhat diverse impact on voluntary and involuntary part time, and on part-time vs. full time work among women and men (Kjeldstad and Nymoen, 2004; Kjeldstad, 2006). Unfortunately, the Norwegian Labour Force Surveys (see below) contain no data on what the respondents consider to be the main reason for being involuntarily part-time employed.

Hypotheses

As a point of departure for the further analysis, we shall focus on the two (tentative) conclusions from our macro description, namely, 1) the fact that women outnumber men significantly and permanently among the underemployed, and 2) the fact that changes of labour demand affect women’s and men’s underemployment much alike, or, put in another way, the fact that gender differences in underemployment appear not to be significantly affected by changing business cycles and labour demand.

We assume that whereas women work involuntary part-time mainly as a consequence of being excluded from longer hour contracts in female dominated jobs, men work involuntary part time predominantly in the form of part-time expellees from male dominated jobs. Thus, after controlling for shifting labour demand, we expect to find a certain increase in the “effect of gender” on underemployment, and after controlling for job characteristics, we expect to find a reduced such effect. Finally, we control for the effects of local gender equality “regimes” and the individual and family characteristics of women and men.

Of the three groups of independent variables, *labour demand*, *job characteristics* and *individual and background control* variables, we hypothesize the labour demand variables to be the most important in

explaining both women's and men's involuntary part time, this as a consequence of the general picture of a significant and a rather uniform development of male and female underemployment across changing economic fluctuations. We hypothesise also a strong effect of job characteristics on the underemployment of both women and men. The latter is however, presumed to be somewhat stronger for women, and the former is presumed to be somewhat stronger for men.

To sum up and define the problems to be analysed, we put forward the following hypotheses:

I) The fact that Norwegian women are more frequently underemployed than men, is mainly due to the gender segregated labour market and the fact that most female dominated jobs are organised on a predominantly part-time basis with few openings for longer contracts and full-time employment.

II) Also due to the gender segregated labour market, changes in economic cycles and general labour demand affect men's underemployment more than women's. This is caused by many of the most male dominated jobs and industries being particularly vulnerable to economic cycles and changing labour demand.

III) Still, in Norway, as indicated by the descriptive statistics, the gender differences in underemployment to a large extent withstand cyclical changes and changes in labour demand. Accordingly, labour demand characteristics and labour demand changes are core explanatory factors of both women's and men's underemployment.

IV) Labour market- and job characteristics are more important driving forces behind underemployment than are individual and family characteristics. This relates to both women and men.

V) We assume that including individual and family characteristics and local gender equality "culture" in the models adds more to the explanation of women's than to the explanation of men's underemployment.

Data and method

Sample selection

The regression analysis is based on data from the Norwegian Labour Force Survey (LFS) 2005, linked with registry data on education, demographic characteristics and industry. The LFS (Bø and Håland, 2002) are quarterly surveys covering a representative gross sample of about 24 000 persons aged 16-74 years, randomly selected on the basis of a register of family units. Each respondent participates eight times during a period of eight subsequent quarters. In the pooled 2005 surveys the total non-response was 11 per cent. About 14 per cent of the interviews are indirect (i.e. given by a close family member). These are excluded from our analysis since questions about preferred working hours are not asked indirectly. Persons participating 1 to 4 times in the 2005 LFS are included randomly only once in this study, covering exclusively salaried employees and wage earners with at least one weekly hour

of work. We excluded persons under the age of 20 and above the age of 66 and employees in agricultural, fishing, forestry, military and unspecified occupations, leaving a total sample of 18 381 persons. The definitions of the employed and part-time employed included in the multivariate analysis are in accordance with Norwegian official statistics (cf. above). The definition of the underemployed differs however, slightly from the official definition, used in the previous descriptive analysis, as the criteria of the employee having tried to get, and being able to work, longer working hours within a month, are not included. This is mainly justified by the sample size, and the dissimilarity is assumed to be of little significance when comparing the descriptive and regression results. This leaves us with a sample of 1 222 underemployed who are contrasted to “all other” employed wage earners (17 159).

Independent variables

The logistic regression models include two groups of independent variables plus *sex* in addition to a group of control variables. Sex is included in the models of Table 2 and excluded (naturally) in Table 3 and 4, which present results separately for women and men. The first group of independent variables; *quarter of the year* and *local unemployment rate*, constitute proxies for seasonal and local labour demand. First quarter covers January through March, second quarter covers April through June et cetera. The local unemployment rate is made tripartite according to registered average unemployment rates in 2005 at the municipal level, i.e. 0-2.9, 3.-3.9 and 4+ percent respectively of the labour force. The second group of independent variables represents various characteristics of the employee’s job affiliation. *Sector* reflects company ownership and is classified by three categories; 1) private one-owners and private shareowners, 2) national government owned and 3) regional and local government owned. Classification by type of *industry* is in accordance with the revised Standard Industrial Classification (NACE Rev.1), and the classification of *occupation* is in accordance with Standard Classification of Occupations (ISCO-88 (COM)). We apply the first of four digits. Categorisation of *company/local unit size* by number of employees includes three groups, i.e. 1-10, 11-99 and 100+ employees respectively, whereas *work contract* is a dichotomous variable, classifying whether the employee has a permanent or a temporary work contract.

The control variables include an index of *gender equality* at the municipal level, developed by Statistics Norway and measuring the relative local gender equality “culture” of Norwegian municipalities. It covers among other factors, publicly owned or subsidised child care coverage in the municipality and individual income, labour market and political participation; the latter three measured both as women’s absolute and women’s relatively to men’s levels (Kjeldstad and Kristiansen, 2001). The index is entered into the regression models with four values, reflecting each municipality’s relative score. *Age* is registered at the end of the calendar year. All respondents are classified by *marital status*, i.e. unmarried, married, previously married, or cohabitor. *Child age*

reflects age of youngest biological or adopted child, where zero children comprise persons without children or with children older than 16. Highest completed *education* is based on the Norwegian Standard Classification of Education at the following levels: 1) primary (compulsory) education, 2) secondary education and 3) university or college education. *Citizenship* is in this study classified as either Norwegian, other western countries', or non-western countries' citizens.

Regression models

We have defined five logistic regression models including both sexes (Model 1-5, Table 2) and four models for each of the sexes separately (Model 2-5, Table 3 and 4). Model 1 includes only sex as independent variable. Model 2 includes (sex and) labour demand variables, Model 3 includes (sex and) job characteristics variables, Model 4 includes only (sex and) the control variables, and finally, Model 5 comprises (sex and) all independent and control variables included in the analysis. The odds ratio estimates of underemployment are calculated relatively to all other employed.

Findings and discussion

The regression models including all salaried employees (Table 2) show that the unconditional probability of women being underemployed is four times that of men. Still, although sex is a crucial factor, including only sex as an independent variable implies but a weak model adjustment (Model 1: $r^2 = .05$). As expected then (*Hypotheses I and II*), the gender differences in underemployment should not be regarded in terms of gender roles or gendered preferences and choices *per se*, but rather as a result of gender differences in participation in various segments and sectors of the labour market (see below).

The next step, adding labour demand variables, i.e. quarter of the year and local unemployment rate, among the independent variables does not increase the model strength (Model 2: $r^2 = .05$). Nor does it result in an expected increased “gender effect”. This seems contradictory to the hypothesis that labour demand affects underemployment significantly (*Hypothesis III*), and to the descriptive analysis of shifting unemployment levels across time. Separate models for women and men (Table 3 and 4) do however, as expected, reveal a somewhat more significant effect of labour demand on the underemployment of men than of women. Whereas women are hardly affected, spring months bring along reduced underemployment risk, and high local unemployment rate implies high underemployment risk, for men. This corroborates *Hypothesis II*, although the effects are moderate. The seemingly contrasting picture of similar cyclical underemployment pattern of women and men on the one hand, and women and men's different “response” to changing local labour demand on the other, indicates however, that male underemployment is primarily a local phenomenon in times of

labour redundancy whereas female underemployment is a more countrywide phenomenon. This may be due to certain characteristics of the Norwegian gender segregated labour market reflecting that traditional, economically exposed male work places to a large extent are situated in small communities, and that most female-dominated (service- and care jobs) jobs are geographically widespread.

Including job characteristics into the regression analysis increases the model adjustments significantly (Model 3: $r^2 = .17, .21$ and $.10$ in Table 2, 3 and 4 respectively) and halves the gender difference (Table 2). All the five job-characteristic variables affect the underemployment probability significantly, however, quite surprisingly, more so for men than for women. Occupation and type of work contract are by far the most important job characteristic. Holding a female dominated occupation (cf. Table 1), such as cleaning, sales-, service, care or desk jobs, implies particularly significant probabilities of underemployment; respectively ten, seven and five times the probability of employees in professional occupations. The picture is much the same for women and men, however with more significant effects for men. At the same time, holding a temporary work contract increases the probability 3.5 times on the average as compared to having a permanent work contract, five times for men and three times for women. Among the other job-characteristic variables, a job in the (female dominated, cf. Table 1) municipal sector increases the probability 50 percent as compared to the private sector, the increase is significant only for women. Holding a (male dominated, cf. Table 1) manufacturing job decreases the probability a total of 50 percent on the average as compared to sales and service, mostly for men. Finally, working in a big company with more than 100 employees, decreases the probability of underemployment 30 percent as compared to a small company, this relates mainly to women.

Including contextual, individual and family control variables brings about only slightly increased model adjustment. This by and large corroborates *Hypothesis IV*, as the effects of job characteristics are far more significant. On the other hand, *Hypothesis V*, assuming more significant effects on the average of the control variables for women than for men, is not supported by the findings. The analysis does however, corroborate the expected *gendered* effects of the control variables, revealed by the increased significance of sex as an explanatory variable in Model 4 as compared to the other models in Table 2. As expected, the local gender equality context reduces the effect of gender differences, as high gender equality score implies somewhat increased underemployment probability for men, and decreased for women. No surprise also, early adulthood increases, whereas high education decreases, the underemployment risk of both sexes. Marital status has no significant effect on women's underemployment, whereas being married or cohabiting decreases the probability for men. As expected, this gender-dissimilar pattern appears also as regards children, since the probability

of underemployment increases with age of children only for women. Being a non-western citizen increases the probability strongly, mainly for men.

Conclusion

In conclusion, of the five outlined hypotheses, the results corroborate *Hypothesis I*, as the strongest probability of underemployment occurs in female dominated jobs and labour market sectors. Quite surprisingly, however we found that this probability is even higher for men than for women. This holds true also after controlling for general labour demand and contextual, individual and family characteristics. Hence, the problems of getting and holding longer hours or full time work contracts in Norway is attributed to the organisational and cultural conditions mainly of the female labour market segment rather than to economic fluctuations or personal conditions and characteristics. Most probably the employees whether woman or man, will have to seek another type of job to obtain her or his preferred working-hour contract.

The findings give support also to *Hypothesis II* as the included proxies of general labour demand affect the underemployment of men more than that of women. To be sure, the estimated effects are rather modest, and weaker than anticipated. This applies particularly to *Hypothesis III*, where we expected labour demand characteristics to be core explanatory factors of both women's and men's underemployment. This unforeseen result may however, be caused by the relatively insignificant local and seasonal variance of the Norwegian labour demand in the actual year (2005), and is hardly fitting to reject or reduce the importance of labour demand as regards the shifts and the distribution of involuntary part time.

Hypothesis IV is by and large corroborated by the findings, as job characteristics affect underemployment more significantly than most characteristics denoted control variables in the analysis. The conclusion should however, be slightly moderated since the effects of general labour demand appear somewhat insignificant. Finally, the assumption that the control variables add more to the explanation of women's than of men's involuntary part time (*Hypothesis V*) holds no good. Contextual, individual and family conditions appear not to be more crucial to women than to men. Instead, these conditions affect women and men differently. Increased local gender-equal culture correlates to increased underemployment among men and to decreased underemployment among women. Also marital status and children have a predominantly opposite effect on women and men. And as shown by the complete models (Model 5), the significance of citizenship applies only to men.

Finally, the logistic regression analysis displays somewhat better model adjustments for men than for women. This is maybe not as surprising as it appears, as part-time work, both voluntary and involuntary, is more widespread and, as it seems, tied to a more complex conglomerate of social, economic and individual conditions for women than for men (Kjeldstad, 2006). Part-time work in general and involuntary part time in particular, is a more marginal phenomenon, and hence, easier to identify for men than for women.

During the decade preceding the present international economic recession, underemployment, like unemployment, has been relatively low in Norway. Still, in Norway like in the other Nordic countries, underemployment has been paid increasing political attention. The attention is justified on the one hand, by the fact that underemployment reflects an underutilisation of the potential, and actively seeking, labour resources. As indicated by the present analysis however, this reserve has varied, but has nevertheless been relatively moderate during the years studied. More important maybe on the other hand, is the human welfare aspect of underemployment, i.e. the underutilisation of individual resources and the loss of psychological, social and economic wellbeing experienced by the unemployed. This affects women more often than men.

The analysis indicates somewhat dissimilar causes and processes behind women's and men's underemployment. Economic fluctuations bring about changing underemployment levels of both women and men, but the fact that the Norwegian labour market is strongly gender segregated, *and* the fact that the way into underemployment differs between female and male dominated sectors, implies that the processes both into, and out, of underemployment differ between the two sexes. Whereas underemployed men are predominantly temporarily expelled on part-time basis from their jobs, women are as a rule permanently excluded from longer working-hour contracts in their jobs. The former type of jobs is generally more exposed or sensitive to economic fluctuations than the latter which as a rule are less, or only indirectly, sensitive to economic fluctuations. Within the female dominated labour market sectors, the causes of underemployment are above all attached to the working-hour culture and persistent part-time work organisations.

The analysis shows that, albeit not identical for women and men, the main driving forces of underemployment are to be found in the labour market characteristics and in women's and men's job affiliation. This is in contrast to explanations focussing on individual and gender differences in background characteristics, life- and family circumstances, and working-hour preferences. Hence, when employed in the same labour market sector and same type of job, the gender difference in the probability of underemployment is significantly reduced.

At the individual level, those who are temporarily part-time expelled (read: men), are as a rule entitled to income compensation by the welfare state, whereas those part-time excluded (read: women) as a rule have no such rights. Also, as Norwegian recession periods have been relatively short during later decades, the part-time expelled experience underemployment for a significantly shorter period than do the part-time excluded. This of course holds true only if the part-time excluded do not seek and obtain jobs in less female dominated labour market sectors. In a persistently gender segregated labour market however, such gender transition processes are slow and relatively marginal. Hence, gender differences in underemployment probability and underemployment structure persist. This indicates that the female predominance may diminish only in times of economic recession. Until to-day's international recession, however, there have been no significant changes in the gender distribution of the underemployed, most probably due to the relatively mild recession periods in Norway during the period studied.

Table 2. Odds ratio estimates¹ of underemployment. Women and men. N=18 381

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Sex (men, ref.)										
Women	4.0	380/1	4.0	381/1	2.0	76/1	4.2	393/1	2.0	70/1
Quarter (1, ref.)										
2		-							-	
3				0.8					0.7	
4		-		-					-	11/3
Local unempl. rate (< 3.0, ref.)										
3.0-3.9		-							-	
4.0 +		-		6/4					1.2	6/2
Sector (private, ref.)										
Municipal					1.5				1.6	
State					-	19/2			-	22/2
Industry (manuf./transp., ref.)										
Sales/hotel					1.6				1.5	
Finance/service					1.4				1.4	
Other services					1.4	11/3			1.4	10.3
Occupation (professional, ref.)										
Clerks					4.6				4.4	
Crafts					-				-	
Elementary					10.4				9.7	
Manager					0.3				0.3	
Operator					2.4				2.1	
Sale/service/care					7.0				6.2	
Technician (inkl. nurses)					2.3	392/7			2.2	284/7
Company size (1-10, ref.)										
11-99					-				-	
100 +					0.7	9/2			0.8	8/2
Work contract (perm., ref.)										
Temporary					3.5	287/1			3.0	193/1

Table 2 (cont.)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Gender equality (1.0-2.4, ref.)										
2.5-2.7							-		-	
2.8-3.0							-		-	
3.1-4.0							0.8	10/3	0.8	-
Age (45-54, ref.)										
20-24							2.9		1.7	
25-34							1.6		1.3	
35-44							1.3		-	
55-66							0.8	107/4	0.7	33/4
Education (primary, ref.)										
Secondary							-		-	
Tertiary							0.5	74/2	-	-
Marital status (never mar., ref.)										
Married							-		-	
Cohabitor							-		-	
Previous married							-	-	-	-
Child age (0 children, ref.)										
0-2							-		-	
3-6							-		-	
7-12							1.3		1.3	
13-16							1.4	10/4	1.5	10/4
Citizenship (Norwegian, ref.)										
Other west							-		-	
Non-west							3.1	42/2	1.8	10/2
R ²	0.05		0.05		0.17		0.09		0.18	
-2logL	8986/8528		8986/8515		8986/7480		8986/8180		8986/7371	

¹ The table includes only estimates ≤ 5 per cent significance level. Source: Statistics Norway LFS 2005

Table 3. Odds ratio estimates¹ of underemployment. Men. N=9 276

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Quarter (1, ref.)										
2		-								-
3			0.7						0.6	
4		-	-						-	8/3
Local unempl. rate (< 3.0, ref.)										
3.0-3.9			1.8						1.6	
4.0 +			2.5	27/2					2.0	13/2
Sector (private, ref.)										
Municipal					-				-	
State					-	10/2			-	9/2
Industry (manuf./transp., ref.)										
Sales/hotel					2.0				1.8	
Finance/service					2.4				2.1	
Other services					2.1	16/3			2.0	11/3
Occupation (professional, ref.)										
Clerks					11.8				13.5	
Crafts					-				-	
Elementary					25.8				24.9	
Manager					-				-	
Operator					3.6				4.0	
Sale/service/care					10.3				10.5	
Technician (inkl. nurses)					2.9	177/7			3.3	142/7
Company size (1-10, ref.)										
11-99					-				-	
100 +					-	-			-	-
Work contract (perm., ref.)										
Temporary					5.1	126/1			3.7	67/1

Table 3 (cont.)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Gender equality (1.0-2.4, ref.)										
2.5-2.7							-		-	
2.8-3.0							-		-	
3.1-4.0							1.6	11/3	-	-
Age (45-54, ref.)										
20-24							3.7		1.9	
25-34							-		-	
35-44							1.7		-	
55-66							-	38/4	-	12/4
Education (primary, ref.)										
Secondary							-		-	
Tertiary							-	-	-	-
Marital status (never mar., ref.)										
Married							0.5		0.6	
Cohabitor							0.5		0.6	
Previous married							-	24/3	-	14/3
Child age (0 children, ref.)										
0-2							-		1.9	
3-6							-		-	
7-12							-		-	
13-16							-	-	-	-
Citizenship (Norwegian, ref.)										
Other west							2.1		2.3	
Non-west							6.6	50/2	3.1	18/2
R _* ²		0.01		0.21			0.09		0.25	
-2logL		2407/2372		2407/1901			2407/2194		2407/1812	

¹ The table includes only estimates ≤ 5 per cent significance level. Source: Statistics Norway LFS 2005

Table 4. Odds ratio estimates¹ of underemployment. Women. N=9 105

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Quarter (1, ref.)										
2		-							-	
3		-							0.8	
4		-		-					-	-
Local unempl. rate (< 3.0, ref.)										
3.0-3.9		-							-	
4.0 +		-	-	-					-	-
Sector (private, ref.)										
Municipal					1.6				1.6	
State					-	16/2			-	15/2
Industry (manuf./transp., ref.)										
Sales/hotel					-				-	
Finance/service					-				-	
Other services					-	-			-	-
Occupation (professional, ref.)										
Clerks					3.2				2.8	
Crafts					-				-	
Elementary					7.3				6.5	
Manager					0.3				0.3	
Operator					2.7				2.2	
Sale/service/care					6.0				4.9	
Technician (inkl. nurses)					2.1	229/7			1.9	136/7
Company size (1-10, ref.)										
11-99					-				-	
100 +					0.7	9/2			0.7	8/2
Work contract (perm., ref.)										
Temporary					3.0	165/1			2.7	119/1

Table 4 (cont.)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Point estim	Chisq /DF								
Gender equality (1.0-2.4, ref.)										
2.5-2.7							-		-	
2.8-3.0							0.8		-	
3.1-4.0							0.6	25/3	0.7	12/3
Age (45-54, ref.)										
20-24							2.7		1.6	
25-34							1.5		-	
35-44							-		-	
55-66							0.7	73/4	0.7	23/4
Education (primary, ref.)										
Secondary							-		-	
Tertiary							0.4	82.2	-	-
Marital status (never mar., ref.)										
Married							-		-	
Cohabitor							-		-	
Previous married							-	-	-	-
Child age (0 children, ref.)										
0-2							-		-	
3-6							-		-	
7-12							1.5		1.5	
13-16							1.7	20/4	1.6	16/4
Citizenship (Norwegian, ref.)										
Other west							-		-	
Non-west							2.2	13/2	-	-
R _* ²		0.00		0.10		0.05		0.11		
-2logL		6122/6117		6122/5525		6122/5844		6122/5431		

¹ The table includes only estimates ≤ 5 per cent significance level. Source: Statistics Norway LFS 2005

References

- Abrahamsen, B. (2007). Female professionals' working hours in the welfare state services. *Ergonomia*, 29(3-4), 193-197.
- Amble, N. (2008). Ikke fullt og helt, men stykkevis og delt. Om det ønskede deltidsarbeidets vesen. *Søkelys på arbeidslivet*, 25(3), 367-380.
- Anker, R. (1998). *Gender and jobs: Sex segregation of occupations in the world*. Geneva: ILO.
- AUSSTAT. (2003). Characteristics of underemployed workers, *Australian Labour Market Statistics* (Vol. 2003, pp. 8). Canberra: Australian Bureau of Statistics.
- Bollé, P. (1997). Part-time work: Solution or trap? *International Labour Review*, 136(4), 557-579.
- Brown, G., & Pintaldi, F. (2006). A multidimensional approach in the measurement of underemployment. *Statistical Journal of the United Nations Economic Comission for Europe*, 23, 43-56.
- Bø, T. P., & Håland, I. (2002). Dokumentasjon av arbeidskraftundersøkelsen (AKU). *Notater*, 2002(24), 85.
- Charles, M. (1992). Cross-national variation in occupational sex segregation. *American Sociological Review*, 57(4), 483-502.
- Fevang, E., Røed, K., Raauum, O., & Zhang, T. (2004). *Undersysselsatte i Norge: Hvem, hvorfor og hvor lenge?* Oslo: Ragnar Frisch Centre for Economic Research.
- Flynn, N. T. (2003). The differential effect of labor market context on marginal employment outcomes. *Sociological Spectrum*, 23, 305-330.
- Forssell, J., & Jonsson, I. (2005). *Deltidsarbetslöshet och deltidsarbete i Europa. Forklaringsmodeller och statistik*. Stockholm: Arbetslivsinstitutet.
- Gash, V. (2008). Preference or constraint? Part-time workers' transitions in Denmark, France and the United Kingdom. *Work, employment and society*, 22(4), 655-674.
- Haataja, A., & Kauhanen, M. (2009). Prevalence and reasoning the part-time work in the Nordic establishments (unpublished), *Kön och arbete*. Stockholm.
- ILO. (1998). Resolution concerning the measurement of underemployment and inadequate employment situations, adopted by the 16th International Conference of Labour Statistics. In ILO (Vol. october).
- ILO. (2010). Underemployment.
http://www.ilo.org/global/What_we_do/Statistics/topics/Underemployment/lang--en/index.htm
- Kauhanen, M. (2008). Part-Time Work and Involuntary Part-Time Work in the Private Service Sector in Finland. *Economic and Industrial Democracy*, 29(2), 217-248.
- Kjeldstad, R. (2006). Hvorfor deltid? *Tidsskrift for samfunnsforskning*, 47(4), 513-544.
- Kjeldstad, R. (2009). En reservearmé av kvinner (og menn)? *Søkelys på arbeidslivet*, 26(1), 13-27.
- Kjeldstad, R., & Kristiansen, J. E. (2001). Constructing a regional gender equality index: Reflections on a first experiment with Norwegian data. *Statistical Journal of the United Nations Economic Commission for Europe*, 18(1), 41-49.

Kjeldstad, R., & Nymoen, E. H. (2004). *Kvinner og menn i deltidsarbeid. Fordelinger og forklaringer*. Oslo: Statistics Norway.

Kjeldstad, R., & Nymoen, E. H. (2009). *Part-time work, underemployment and gender. Worker versus job explanations*. Oslo: Statistics Norway.

Larson, T., & Ong, P. M. (1994). Imbalance in Part-Time Employment. *Journal of Economic Issues*, 25(1), 187-196.

Lind, J., & Rasmussen, E. (2008). Paradoxical Patterns of Part-Time Employment in Denmark? *Economic and Industrial Democracy*, 29(4), 521-540.

Melkas, H., & Anker, R. (1998). *Gender equality and occupational segregation in Nordic labour markets*. Geneva: International Labour Organization.

Millar, J., Ridge, T., & Bennett, F. (2006). *Part-time work and social security: increasing the options?* London: Department for Work and Pensions.

Moland, L. E., & Gautun, H. (2002). *Deltid: Bidrag eller hemsko for fornyelse av pleie- og omsorgssektoren?* Oslo: FAFO.

NOU. (2004:29). Kan flere jobbe mer? Deltid og undersysselsetting i norsk arbeidsliv (Vol. 2004). Oslo.

Nyberg, A. (2003). *Deltidsarbete och deltidsarbetslöshet. En uppföljning av DELTA utredningen (SOU 1999:27)* (No. 19). Stockholm: Arbetslivsinstitutet.

OECD. (2008). Labour Force Statistics 1987-2007: OECDpublishing.

Ottosson, J., & Lundquist, K. (2005). *Deltidsarbetslöshet i Sverige - en kartläggning*. Stockholm: Arbetslivsinstitutet.

Parent-Thirion, A., Macías, E. F., Hurley, J., & Vermeylen, G. (2007). *Fourth European Working Conditions Survey*. Dublin: European Foundation for the Improvement of Living and Working Conditions.

Reynolds, J. (2003). You Can't Always Get the Hours You Want: Mismatches Between Actual and Preferred Work Hours in the U.S. *Social Forces*, 81, 1171-1199.

SOU. (1999:27). DELTA - Utredningen om deltidsarbete, tillfälliga jobb och arbetslössetsersättning (Vol. 1999). Stockholm: Fritzes.

Stratton, L. S. (1994). Reexamining Involuntary Part-Time Employment. *Journal of Economic and Social Measurement*, 20(2), 95-115.

Stratton, L. S. (1996). Are "Involuntary" part-time workers indeed involuntary? *Industrial and Labor Relations Review*, 49(3), 522-535.

Virjo, I. (2006). *Employment Rate Potential in the Nordic Countries. An overview*. Copenhagen: Nordic Council of Ministers.

Warren, T. (2008). Universal disadvantage? The economic well-being of female part-timers in Europe. *European Societies*, 10(5), 737-762.