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**Part-time work, underemployment  
and gender**  
Worker versus job explanations

**Abstract:**

The article analyses part-time work, both so-called voluntary and involuntary, in a gender perspective and discusses under what conditions women and men work part-time. The discussion is based on logistic regression models, including human capital, life-course- and household characteristics and job characteristics as independent variables. We use Norwegian Labour Force Survey data. The analysis shows that part-time work is a strongly gendered phenomenon, not only because it occurs much more frequently among women than among men, but also because the causes of part-time differ between the sexes. We find, as expected, that involuntary part-time is mainly tied to job characteristics, whereas voluntary part time is equally predicted by worker characteristics and job characteristics. The effect of gender is strong and significant, however less significant when controlling for job characteristics than when controlling for worker characteristics.

**Keywords:** Voluntary part-time, involuntary part-time, gender, job- and labour-market approach, individual- and life-course approach, time bargaining

**JEL classification:** J22, J23, J24

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## 1. Introduction

This article analyses part-time work, both so-called voluntary and involuntary, in a gender perspective and discusses under what conditions women and men work part time. In sociological research the question of part-time employment has predominantly been about women's part time work, and the phenomenon has most often been seen to reflect the choices made by employed women in order to balance work and family responsibilities. During later years the policy debate concerning part-time work has been broadened to include the factors of labour demand as well. In the Nordic countries this change of perspective has contributed to a stronger focus on involuntary part time and underemployment. The concern is still very much limited to women, though, and possible gender differences tied to the causes and processes behind part-time work have been far less investigated.

The Norwegian political debate on part-time work has during the last decades been characterized by certain ambivalence, mainly from a gender equality perspective. Part-time has on the one hand been regarded as a positive means to integrate women in the labour market. On the other hand focus has been on the negative implications of part time as opposed to full time work among women as it is assumed to reproduce traditional gender roles within the family and to marginalize women in the labour market. The assumption of part-timers as marginal workers and part-time jobs as atypical jobs belonging to lower, secondary, segments of the labour market, has however been disputed during later years, as certain features defining part-time work as a marginal labour market phenomenon have changed: The proportion of long part-timers has increased and job security and union membership in part-time work has improved. Consequently, since the 1980s in Norway we have witnessed a 'normalisation process' in which both working conditions and the behaviour of part-time employees changed (Ellingsæter, 1989; 1995). As is the case in several other western countries today, the Norwegian labour market regulations and agreements comprise both full-time and part-time employed, and part timers enjoy (pro rata) the same social rights as full timers (op. cit.; Sundstrøm, 1999; Euwals and Hogerbrugge, 2004).

Parallel to the normalisation of part-time work in general however, a new political concern has arisen about part-time work as an involuntary versus a voluntary labour market adjustment, and the concern of part-timers and part-time jobs as marginalized has become more attached to the involuntary part-timers or *underemployed* than to part-time employment in general. This appears for instance in the terms of reference of the 2004 Norwegian government committee appointed to 'map the occurrence and distribution of involuntary part-time work and suggest actions to reduce such work' (see also Hardoy and Schøne, 2004). This is also the case with several Swedish government financed reports

where the main concern is ‘the situation of part-time workers and the *part-time unemployed*’, part-time unemployment being a frequently used Swedish expression for involuntary part-time (SOU, 1999; Nyberg, 2003).<sup>1</sup> The argument is that the quality of part-time work, i.e. the assessment whether the development of part-time work is good or bad, cannot be made without taking into account the priorities and working time preferences of the employees. As Reynolds (2003) states, knowledge of the actual distribution of working hours is essential but not sufficient to the discussion of the division of labour in society. It is just as important to obtain knowledge of the *hour mismatch*, i.e. the distribution and the characteristics of the overworked and the underworked, as opposed to the *contented* workers. The mismatch refers to a mismatch between actual and preferred hours. The hour-mismatched workers may be part-timers or full-timers who want either more or less hours. The main group of interest in our analysis of hour mismatch is however, part-timers who want more hours, i.e. the *underemployed* or the *involuntary part-timers*.

The article aims at exploring some of the processes into part-time work, both voluntary and involuntary part time as opposed to full time. We examine the background of female and male part timers and under which conditions women and men are employed in various part-time arrangements. The analysis has a wide approach, as both demand and supply side explanations are discussed, including possible time bargaining between partners. Main focus is, however put on gender differences, and the significance of various explanations is discussed in relation to men's and women's part-time work.

The focus on hour mismatch points to the importance of including in the analysis, in addition to objective conditions such as individual background and family situation, job characteristics and labour market conditions, a subjective side of working time as well. The question of part-time work as voluntary versus involuntary is however, often more of a ‘more or less’ than an ‘either or’. There is reason to believe that part time may appear as a preferred adjustment during certain stages of the life course, because it facilitates the combination of paid work and other time consuming activities, such as education, or because it may contribute economically on top of a pension during older ages. The same is often true during years of parenthood with small children, as part time work may ease the daily work-life balance as compared to full-time work. There is however, also reason to believe that the expressed preference for part-time work during parenthood may be sensitive to the existence of

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<sup>1</sup> The Scandinavian political concern appears to be somewhat unsynchronous with, or perhaps one step further ahead of, the ongoing international debate (Euwals and Hogerbrugge, 2004). Whereas recent Scandinavian concern increasingly emphasises the involuntary and negative aspects of part-time work, Euwals and Hogerbrugge refer to U.S - (Blank, 1989; Leppel and Clain, 1988), several OECD- (Employment outlook 1990-2001) and other European studies (Bollé, 1997), and argue that the international policy debate primarily focus on part-time work as a potential advantage rather than a trap for workers.

alternative care solutions for the children, either public or private day-care facilities, or to alternative ways of organising the paid work/household work puzzle within the household. In some of these cases possible preferences for longer working hours are constrained and actually concealed by the lack of child care alternatives. Other constraints may be associated with demand side characteristics, such as poor job prospects or other local labour market constraints tied to institutional conditions and working-time cultures. Household conditions, and within-household bargaining on time and money, may also be of vital importance to the choice of, and to the expressed preferences for working hours.

## **2. Background**

By 2008 one out of four (27 percent) employed Norwegians worked part-time. Three of four of these were women. During the last twenty years women's part-time has decreased gradually from 50 percent of all employed women in 1989 to 42 percent in 2008, whereas the level among men has remained fairly stable around ten percent. Since late 1990's however we have witnessed a certain increase of male part-time, from ten to thirteen percent. This increase came almost exclusively among men in their early twenties and among elderly men. There has been an increase in part-time employment also among women under the age of 25 years. In all other age groups of women however, there has been a significant decrease (cf. Figure A1).

The gendered division of paid work is of course reflected not only in the distribution of part-time versus full-time employment, it is just as much reflected in the gendered character of various types of part-time work and the characteristics of the workers. The 1990s showed a slow but steady narrowing of the gendered life course work pattern, as the average working hours of mothers increased and the working hours of fathers decreased (Kitterød and Kjeldstad, 2004). To-day part-time work is no longer the typical working time for employed mothers. Still, out of all part-time wage earners in Norway, one third are mothers with one or more children under the age of 16, as compared to three percent fathers. Women outnumber men by far in all types of part-time adjustment. Eight out of ten Norwegian part-time wage earners are women, seven out of ten voluntary short part-timers, almost nine out of ten voluntary long part-timers and eight out of ten involuntary part-timers (Kjeldstad and Nymoene, 2004), see also appendix Tables B1 and B2 for descriptive statistics. Whereas short part-time work is very much a youth phenomenon, especially for men, long part-time mainly is a female phenomenon. Most male part-timers are young or old singles with no kids, working voluntary short part-time, often in combination with education activities. They are also elderly men who top up their retirement, pre-retirement or disability pensions with part-time salaries. The most typical female part-timer is a married/cohabiting mother working voluntary long part-time.

Underemployment or involuntary part time is a youth and young adult phenomenon both for women and men, however more so for men than for women. And whereas underemployment is almost non-existent among fathers with children under 16, women's underemployment is at its highest among mothers with children of early school age. Consequently, albeit the slowly narrowing of the gender working-time gap, having family and children still implies a work-hour 'deficit' for women, both in relation to their male counterparts and in relation to the women's own expressed preferences (op. cit.).

### **3. Approaches to part-time work**

How can the great variety of working hours among and between women and men be explained? As indicated in the introduction, the policy debates and the various ways of assessing whether part-time is 'a solution or a trap' (Bollé, 1997) reflect different cultural perspectives and political views. The recent shift in the Norwegian (and Swedish) political agenda reflects a reorientation towards part-time, or rather certain types of part-time, as a more or less unwanted labour market adjustment. The arguments predominantly rest upon a concern for gender equality and an assumption that women have more constrained options in the labour market than men. Consequently, it is argued that women with a preference for full-time employment face larger hindrances to obtaining full-time than men, either because of social norms, family expectations or employers' attitudes and hiring practices.

Nevertheless, in Norway the so-called contented part-time workers, both women and men by far outnumber the mismatched (Kjeldstad and Nymoén, 2004). One principal question is then, whether the causes and processes into part-time work vary significantly between various types of part-time. Another principal question is how to explain the various part-time adjustments among women and men. In the following we discuss shortly some of the most commonly assumed explanations of male and female part-time work. Next, we present some overall results from six groups of regression models analysing male and female voluntary and involuntary part-time in relation to characteristics of the employees on the one hand and to job- and labour-market-sector characteristics on the other.

#### ***A gender perspective***

As a rule, analyses of part-time work have usually been limited to women (Nordic examples are Kauhanen, 2008; Amble, 2008). The low interest in male part-time is partly due to men's traditional role as the main breadwinner, partly to the generally strong labour market norm of male full-time work, and hence to the fact that part-time work has not been viewed as an actual choice for men. To the extent male part-time has been examined however, the analyses have as a rule been related to a gender-neutral perspective, i.e. their role as men *as such* has not been part of the agenda. Analyses of women's part-time, on the contrary, are characterised by the gender perspective being *the* predominant paradigm (Ellingsæter, 1995). The gender perspective covers a broad spectre and a great variety of

theoretical points of departure, and gender related theories may emphasize the significance of gender at one or at many levels. A 'multi-level- effect-of gender' perspective (Bittman et al., 2003, referring to Ferree, Lorber and Hess, 1998) focuses on possible effects of gender in a broad sense. It usually covers both the individual, interactional, cultural and institutional levels, and aims at revealing the often complicated causal paths between them. Most gender related points of departure however, have a more limited scope, focussing on one or a few of these levels.

Hakim's highly disputed 'preference theory' (Hakim, 2000; 2002) focuses predominantly at the subjective individual level. The theory emphasises individual and gender differences of attitudes and lifestyle preferences as important determinants of differentiated labour market adjustments among women, and between women and men. Hakim argues that mainstream sociological tradition, focusing mainly on structural and institutional factors as hindrances of women's free choice, fails to understand the significance of individual aspirations as a major predictor of employment patterns. Taking so-called objective gender differences at all levels into account, such as human capital, institutional and interactional conditions, she maintains that the major differences in work-hour adjustment will still remain unexplained as long as the subjective level, i.e. individual preferences, are not included in the model.

Ellingsæter (1995) disputes the gender dualistic perspective imbedded in Hakim's and a great many other gender based theories. She argues that work commitment is not a universal gender 'constant' but varies in time and space. The causal direction between preferences for work and labour market adjustment may, according to Ellingsæter, just as well be reverse to Hakim's theory, as work commitment develops and strengthens through labour market participation. Referring to the increase in women's labour market participation during the last decades, and controlling for structural inequalities in women's and men's position in the labour market, she actually finds that Norwegian employed women are slightly more committed to work than men. Likewise, MacRae (2003) finds that empirical analyses give but little support to the preference theory, and maintains that women's family-work lifestyle preferences are heavily constrained by 'the situational logic confronting women'. Crompton (2004) emphasises that the gendered attribution of caring responsibilities makes a major contribution to 'agency' inequality between women and men, including both institutional barriers and normative constraints on women's capability to achieve their full 'functionings'. MacRae and Crompton and most other feminist analysts have in common that the role of women as mothers is assumed to be one principal factor structuring their options for full time employment during motherhood, and that their role as potential mothers and carers contributes to a structuring of their labour market options also during earlier and later stages of life. This, as opposed to men, whose role of fathers is assumed rather to increase their work and earning commitment.

### *Time bargaining between partners*

Having a family and children requires a certain reciprocity between the household members in dividing the responsibility for the care and the unpaid work at home and for the economic support of the family. This may entail conflicts between the partners as to how to divide household tasks and paid work. Whether conflicts are explicit or not, however, according to the so-called *exchange-bargaining theories* the partners most presumably will enter into a bargaining process to try to settle an agreement. Most analyses of time use bargaining within the household have, however, been confined to the distribution of time to household work (cf. Bittman et al., 2003; Neramo and Evertson, 2004; Kitterød and Pettersen, 2006; Kitterød, 2004). The main assumption is that both partners seek to minimise their share of the necessary household work. It is further assumed that the partner with the greater labour market resources and income earning prospects of the two will have a relative advantage in the bargaining process. Hence the better off partner most probably will win the duel and get away with a minimum of household work.

Household-work bargaining theory, when turned around, may very well apply also to the analysis of paid work-hours. The argument is that the partner with the greater labour market resources will tend to have the longer hours of paid work. Applied to our approach, the assumption would be that an employed person who has lower hourly wages than her or his spouse, will tend to work part time. This gender-neutral assumption is however inadequate, as the basis for negotiations would most probably differ between the man and the woman, even if both parties had the same earnings potentials. This is of course due to 'the effect of gender', whether multi-level or not. Bittman et al. (2003) emphasise the significance of social norms in this connection, and the cultural pressures for women to do, and men to avoid doing, household work. They find that the relationship between relative earnings and housework varies between US women and men, and that women's housework is more sensitive to relative earnings than men. Their findings are in accordance with Devereux's analysis of changes in relative wages and family labour supply in the US. Devereux (2004) finds very small effects on married men's labour supply both of changes of their own wages and of changes of the wages of their wife. Contrary, he finds a positive effect of changes in married women's own wages and a strong negative response to changes in their husband's wages. Relating to the discussion above, these findings indicate that in the bargaining of time use between spouses, very often gender 'trumps' money (Bittman et al., 2003). Still we do not know whether these asymmetric work-hour agreements are due to gender differences in life-style preferences or to other or 'multi-level' gender differences. Some suggestions may however be made from the present analysis of voluntary versus involuntary part-time.



### ***Job- and sector explanations***

Econometric modelling of working hours on Norwegian data (Dagsvik and Strøm, 2006) concludes that (p 824) ‘...it is of empirical importance to distinguish between job opportunities across sectors of the economy’. The discussion on involuntary part-time work has particularly been related to demand side explanations, i.e. to shifts and variation of labour demand in different industries and occupations. According to Nyberg (2003) and the Swedish Labour Force Surveys, the great majority of underemployed Swedish women and half of the underemployed Swedish men relate their underemployment status to such demand side characteristics. Norwegian Labour Force Surveys do not ask the interviewed to state what they perceive to be the causes of their underemployment. Still, by comparing the ability of worker characteristics models and job- and sector characteristics models in predicting voluntary versus involuntary part-time work (see next paragraph (4) of this article) by we hope to contribute to this discussion.

In most Western countries the increase of part-time work, especially among women, has been related to the growth in service sector jobs, and, in social democratic welfare states like Norway, to the increase of public care and services. Many of these jobs are characterized by a need for flexible work arrangements, both in the number employed at different times and in the organisation of daily and weekly working hours. Euwals and Hogerbrugge (2004) accentuate organisational flexibility as an important explanation of the increase in part-time employment, as the service sector has been growing and the laws on opening hours have been liberalised. The need for flexible working arrangements is however, an international phenomenon, not only confined to service and welfare sector jobs, and it is increasingly a characteristic of labour demand in all labour market sectors (Bosch, 1997; NOU, 1999; Sennet, 1998; Olsen and Kalleberg, 2004). Often flexible hours are seen as the preferable arrangement both for employers and employees. A great many analysts do, however, find that increased flexibility is for the best primarily for the employers, as it makes it easier to dismiss and replace employees in times of recession (Sennet, 1998; Rosso, 2002).

Perrons (2003) and Brandt and Kvande (2005) are concerned by the increasing differentiation of working hours, which characterises the new flexible ‘time regime’. They call attention to the extension of the working hours, especially within the occupations of the ‘new economy’ such as the ICT and media sector. There is however, reason to believe that the response to the increasing demand for organisational flexibility and time differentiation varies between occupations and labour market sectors. Part-time work is another, just as important tool for increasing labour market flexibility. Armstrong (2004) describes the flexibilisation of health care in terms of changes in ‘timing and tempo’, where both part-time and overtime work are important ingredients. Olberg (1995), Gullikstad (2002) and Amble (2008) point to the many health and care institutions and other firms with

production beyond standard working hours that use permanently appointed part-time workers who are expected to be accessible for longer work-hours when needed by the firm. According to Olberg (1995) and Gullikstad (2002) the reorganisation into more frequent use of part time in Norwegian health and care institutions is primarily a response to strict working-time and work-environment regulations.

Bollé (1997) points to part time as a mutual adjustment between the employers' need for, and the employees' willingness to take, part-time work. To the employee part-time work may offer a chance of a better balance between working life and family responsibilities, leisure and civic activities. In addition, part-time work may be a gateway to enter or re-enter the labour market and enable a gradual retirement. For the employer it permits greater flexibility in relation to market requirements and productivity gains. Bollé argues that there may also be a third part in this mutual adjustment, namely policy makers who may seek to promote part-time work in order to reduce politically-sensitive unemployment rates without requiring an increase in the total numbers of hours worked.

A demand side, or institutional, perspective on part-time work focuses on the structuring of working hours within the work place and the fact that employees often are rendered limited work-hour options. In certain parts of the labour market, such as the health- and care sector and within hotels and restaurants, there are for instance firms offering few or no alternatives to part-time engagement. As a consequence, job seekers who primarily wish to work full time often accept part-time appointment just hoping to expand working hours as time goes by (Næss, 1997; Gullikstad and Rasmussen, 2004; Amble, 2008). Other firms demand exclusively full-time workers. Abrahamsen (2002a; 2002b) relates the institutional differences in the demand for part-time versus full-time workers to differences in occupational cultures as to what types of work-hour arrangements are acknowledged and approved among colleagues. Whereas female dominated work places most often are characterised by a great variety of work-hour norms and practises, she finds that predominantly negative attitudes towards part-time work characterise many male dominated occupations. Here part time is an option neither to the employer nor to the job applicant. According to Abrahamsen, women's working hours are institutionally significantly more constrained in male dominated than in female dominated occupations.

### ***Effects of hourly earnings differences***

Analyses of the relationship between part time and earnings predominantly conclude that there is a negative relationship between hourly earnings and part time (as opposed to full-time, cf. Hardoy and Schøne, 2004). However, some analyses (Bittman et al., 2003; Devereux, 2004) indicate a stronger relationship between hourly earnings (both individual and relatively to spouse) and women's probability of working part time than the corresponding relationship with regard to men's part-time

probability. This is mainly due to the fact that most men hardly consider part-time work as a real option. In a gender-neutral perspective, hypotheses of the effects of hourly wages on part-time versus full-time work may also point in diverse directions. On the one side low wages may imply high probability of part-time as compared to full-time work, because the incentives per hour worked are relatively low. On the other side low wages may enforce full-time work, as the salary of a low-wage part-time worker most probably is insufficient to make a living.

Albeit aware of the fact that the causal direction between earnings and work-hours is not self-evident, which of course may be the case also of other relationships discussed in this paper, we include hourly wages as an explanatory variable in the analysis. We assume hourly earnings of the individual to be a relevant indicator of his or her working time preferences. Moreover, in a partner bargaining perspective, the hourly earnings of each partner may, as already mentioned, form the basis for negotiating which one of the two, if any, should work the longer or shorter hours.

A person's earnings are as a rule a function of both individual and labour market characteristics, as wages vary according to the human capital of the individual, such as education and seniority, but also between industries, firms and labour market sectors. Hence we have found it hard to decide which of the two groups of models should include hourly earnings as an explanatory variable, the worker characteristics- or the job characteristics models. The dilemma was solved by specifying separate (individual and relative) hourly earnings models and by including hourly earnings in the complete individual and spouse models (see later).

## **4. Data and methods**

Moving on to the empirical analysis, we present the overall results, i.e. the Pseudo  $R^2$  (termed  $R_*^2$ , see next paragraph, Table 2) from six groups of logistic regression models defined to represent the various perspectives on part-time work accounted for. All part-time employees and four sub-groups of part-time employees are contrasted with full-time employees. For each approach (model) a bundle of explanatory variables is included as dummy variables for men and women separately, and for all, with and without sex as an independent variable. Four groups of models are defined by individual characteristics as independent variables, and are called individual models, whereas two model groups are defined by individual and partner characteristics, called spouse models. The  $R_*^2$ s of the three complete individual models and the three complete spouse models which are presented in detail in appendix Tables A1-A3 and A4-A6, are marked bold in Table 2. The analysis is based on survey data from the Norwegian Labour Force Survey (LFS) 2001, linked with supplementary registry data on education, demographic characteristics, industry, and economic variables.

### ***Sample selection***

The LFS are quarterly, representative surveys covering a representative 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 2001 surveys the total non-response was 13 percent. About 15 percent of the interviews are indirect (i.e. given by a close family member), and are excluded from our analysis since questions about preferred working hours are not asked indirectly. Persons participating 1 to 4 times in the 2001 LFS are randomly entered only once in this study, covering exclusively salaried employees and wage earners with at least one weekly hour of work. The 'individual sample' ended up with 19701 persons. In addition, since persons are entered into the LFS as family units, we have been able to identify each partner in (married) couples, these 8986 individuals constituting our 'spouse sample'. The two samples do to some extent overlap, as married individuals are included in both. Note also that the same person may appear in the 'spouse sample' both as a respondent and as a respondent's spouse.

A person's weekly work-hours are defined as contractual work-hours. Absence from work is not subtracted and overtime is not included. Employees, who report a total number of contractual weekly work-hours of 37 hours and above, are defined as *full-time employees*. *Short part time* includes those who report 1-19 weekly work-hours, and those reporting 20-36 weekly hours are termed *long part-timers* except for employees in occupations where 32-36 weekly work-hours constitute full-time. We define part-timers of any length who want, and have tried to get more work-hours, as actively underemployed or *active involuntary part-timers*, while those who want, but have not tried to get, longer hours are defined as passively underemployed or *passive involuntary part-timers*. The remaining groups constitute the contented or *voluntary part-timers*. Hence, we classify four types of part-time employees, 1) voluntary short part time, 2) voluntary long part time, 3) passive involuntary part time and 4) active involuntary part time. These groups are compared with the full-time employees. In Table 2 the (N) shows the sample size of the groups analysed, i.e. the various groups of part-time employed plus full-time employed of the total and of women and men separately.

Table 1 (a and b) presents an overview of the variables included in the regression models, and Table 2 presents the main results of the analysis. The variable definitions are described in the annex.

**Table 1a. Categories of part-time (dependent variables) in regression models of part-time versus full-time**

Dependent variables	Part-time				
	Total	Voluntary		Involuntary	
		Short	Long	Passive	Active

**Table 1b. Independent variables included in models of part-time versus full-time**

Independent variables	Individual models				Spouse models	
	Worker characteristics	Job characteristics	Hourly earning	Complete	Relative hourly earning	Complete
Sex	(x)	(x)	(x)	(x)	(x)	(x)
Age	X			x		x
Marital status	X			x		
Family phase	X			x		x
Educational level	X			x		x
Citizenship	X			x		x
Type of industry		x		x		
Occupation		x		x		
No of Employees (Company)		x		x		
Work contract (Permanent)		x		x		
Ownership (Company)		x		x		
Quarter of year		x		x		
Hourly Earnings, NOK (ca. 0.12 €)		x	x	x		
Spouse weekly work-hours						x
Spouse gross income						x
Relative hourly earning (% of spouse)					x	x

## 5. Explaining women's and men's part-time work. Findings and discussion

Space prevents us from going into detail in discussing the results from each of the specified models in this article.<sup>2</sup> Our discussion will mainly be based on a presentation of the ‘predictive strength’ of the models as indicated by the pseudo  $R^2$ , termed  $R^{*2}$  in Table 2. The strength of each model is of course a

<sup>2</sup> Mainly as an illustration, the regression results of the complete individual and spouse models are shown in appendix tables A1-A6.

function of the included explanatory variables, however when discussing the effects of single or groups of variables, we mainly refer to tables published in Kjeldstad and Nymoen (2004: chapter 5).

Among the independent variables we take a special interest in mapping the significance of gender and gender differences. Our six groups of models constitute three groups of separate individual models, defined firstly, by individual background and life cycle characteristics, secondly by the person's job characteristics, and thirdly by her or his earnings level.<sup>3</sup> Fourthly, these three groups of models are combined into complete individual models (appendix Tables A1-A3 show the complete individual models). In addition we have defined two groups of so-called spouse models, where only married women and men are included, comprising, in addition to the most important background characteristics of the reference person, information on the spouse's working hours and total income and the two parties' relative hourly earnings (appendix Tables A4-A6 show the complete spouse models). The six groups of models are analysed in three steps. First we make a 'gender-neutral' analysis of all models not including sex as an independent variable, after which we analyse the same models including sex. Thus we seek to identify the remaining effect of gender, i.e. the unexplained effect of gender after having controlled for all other independent variables included in the models. Thirdly we analyse the same models for women and men separately to identify possible differences between women and men (see Table 2).

From our discussion so far, we expect to find that our worker characteristic models are the better predictors of voluntary part-time, and the job characteristics models are the better predictors of involuntary part-time. In addition, in keeping with what is maintained by several analyses, namely that women's work-hours are generally more sensitive to changes in individual and family characteristics as well as changes in labour demand (cf. paragraph 3), we expect to find that both groups of models are generally better predictors of women's than of men's working hours. We expect to find the same gender profile from the hourly earnings models and for the complete individual models where all independent variables from the three groups of individual models are included, *and* from the two groups of spouse models.

### ***Job characteristics most significant in explaining involuntary part time***

Looking first at the  $R_*^2$  results of the 'gender neutral' individual models where all employed women and men are included (Table 2), we find as expected the job characteristics models to be better predictors of involuntary part time than the worker characteristics and the hourly earnings models. This is especially true for active involuntary part time, with an  $R_*^2$  of respectively 0.06 resulting from

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<sup>3</sup> A set of alternative regression models where *predicted* earnings was included instead of observed earnings did not alter our main conclusions, since these results show that there is no serious simultaneity bias in our estimates of the earnings effects.

the worker characteristics model and 0.21 from the job characteristics model. But contrary to our expectations we find that the ('gender neutral') job characteristics models also are better predictors of voluntary part time. When sex is included as an independent variable however, the predictive strength of all models increases significantly. The significance of gender appears most clearly from the worker characteristics models, where the  $R^2$ 's increase from a range between 0.06 and 0.13 to a range between 0.15 and 0.21, and from the hourly earnings models where the  $R^2$ 's increase from a range between 0.01 and 0.03 to a range between 0.09 and 0.14. Hence, including gender does not only contribute to increased prediction of each and all of our analytical models, it also contributes to a levelling out of the differences in prediction between the models. This is probably because the relationship between part-time work and individual supply factors is *gendered* to a larger degree than the relationship between part time and labour demand factors. The results indicate that women with a similar background-, life-cycle and family situation as men *and* the same wage level as men, to a large degree choose, more or less voluntarily, to work the same hours as other women instead of the same hours as their male counterparts. This is true also for men, and most probably more so for men than for women.

On the other hand, the relatively lower significance of gender appearing from the job characteristics models, indicates that the relationship between working hours and job- and labour market characteristics is somewhat more gender neutral than the relationship between working hours and supply side characteristics. In contrast to the worker characteristics and the hourly earnings models, which have a rather limited capability of explaining variation in part-time work if gender is not included, the results from the job characteristics models reveal a relatively strong capability to predict part-time work also when gender is not taken into account. This is mostly due to work-hour differences between occupations (appendix Table B1, see also Kjeldstad and Nymoen, 2004, chapter 4), and may reflect occupational differences in time cultures (Abrahamsen, 2002a; 2002b). To be sure, when seeking to explain the work-hour variation in the Norwegian labour market, we find as expected, that there are job-specific work-hour organisations where gender is an important aspect of the hiring process. But not only so. Just as important are job- and sector-specific work-hour organisations where gender is more or less irrelevant to the hiring process as long as the employees are willing to accept the work-hour terms. Gender appears irrelevant only as compared to the worker characteristic models however, and not in absolute sense, as the analysis shows a clear gendered relationship also here.

**Table 2. R\*<sup>2</sup> of six groups of logistic regression models predicting various part-time patterns as opposed to full time of employees, women and men in total (gender neutral), women and men when controlling for sex, and women and men separately. Individual and spouse models.<sup>1</sup> N in parenthesis<sup>2</sup>**

	Part time (N)	Voluntary short part time (N)	Voluntary long part time (N)	Involuntary part time Passive (N)	Involuntary part time Active (N)
<b>Individual models</b>					
Worker characteristics models					
Gender neutral	0.07 (19701)	0.13 (16393)	0.04 (16655)	0.11 (14926)	0.06 (15173)
Contr/sex	0.20 (19701)	0.21 (16393)	0.18 (16655)	0.18 (14926)	0.15 (15173)
Women	0.08 (9600)	0.12 (6852)	0.07 (7323)	0.10 (5804)	0.07 (6025)
Men	0.18 (10101)	0.24 (9541)	0.06 (9332)	0.24 (9122)	0.14 (9148)
Job characteristics models					
Gender neutral	0.18	0.18	0.12	0.19	0.21
Contr/sex	0.23	0.20	0.19	0.21	0.24
Women	0.10	0.11	0.05	0.15	0.15
Men	0.19	0.19	0.09	0.20	0.22
Hourly earnings models					
Gender neutral	0.01	0.03	0.02	0.03	0.01
Contr/sex	0.14	0.11	0.14	0.09	0.12
Women	0.02	0.06	0.00	0.04	0.04
Men	0.06	0.06	0.03	0.06	0.04
Complete models					
Gender neutral	0.24	0.30	0.15	0.28	0.30
Contr/sex	<b>0.29</b>	<b>0.33</b>	<b>0.22</b>	<b>0.30</b>	<b>0.34</b>
Women	<b>0.18</b>	<b>0.28</b>	<b>0.12</b>	<b>0.27</b>	<b>0.29</b>
Men	<b>0.31</b>	<b>0.38</b>	<b>0.15</b>	<b>0.36</b> <sup>3</sup>	<b>0.35</b> <sup>3</sup>
<b>Spouse models</b>					
Relative hourly earnings models					
Gender neutral	0.04 (8986)	0.03 (7294)	0.06 (7852)	0.02 (6723)	0.01 (6827)
Contr/sex	0.22 (8986)	0.15 (7294)	0.22 (7852)	0.18 (6723)	0.17 (6827)
Women	0.01 (4429)	0.03 (2892)	0.00 (3466)	0.04 (2438)	0.03 (2527)
Men	0.04 (4557)	0.06 (4402)	0.04 (4386)	0.07 (4285)	0.05 (4300)
Complete models					
Gender neutral	0.12	0.14	0.12	0.13	0.10
Contr/sex	<b>0.26</b>	<b>0.23</b>	<b>0.24</b>	<b>0.26</b>	<b>0.23</b>
Women	<b>0.06</b>	<b>0.11</b>	<b>0.04</b>	<b>0.15</b>	<b>0.12</b>
Men	<b>0.16</b>	<b>0.25</b> <sup>3</sup>	<b>0.15</b> <sup>3</sup>	<b>0.19</b> <sup>3</sup>	<b>0.16</b> <sup>3</sup>

<sup>1</sup> R\*<sup>2</sup> is a so-called 'pseudo R<sup>2</sup>', and expresses the improvement in log likelihood of the present model relative to

the baseline model and is calculated according to Pampel (2000: 49) as:  $R_*^2 = \frac{-2 \ln L_0 - -2 \ln L_m}{-2 \ln L_0}$  L<sub>0</sub> = Likelihood of baseline model (including the regression constant only). L<sub>m</sub> = Likelihood of present model (including the complete array of selected explanatory variables).

<sup>2</sup> Number of observations (N) is indicated only for the *worker characteristics models*, as all groups of individual models are based on the same N, and for the *relative hourly earning models*, as all groups of spouse models are based on the same N.

<sup>3</sup> Uncertain numbers due to missing observations on some values.

Numbers in bold: R\*<sup>2</sup>s from detailed appendix regression tables A1-A6.

Source: Labour Force Surveys 2001, Statistics Norway



When we include all the independent variables into a number of ‘complete’ models (the fourth groups of models in Table 2), we find, quite naturally, an improved prediction level. There is still a clear significance of gender however, as including sex as an independent variable increases the  $R_*^2$ s of the various types of part time by 0.02 to 0.07 points, the highest significance of gender referring to voluntary long part time. The complete models including sex as an independent variable render fairly high prediction levels, with an  $R_*^2$  ranging from 0.22 to 0.34 for the various types of part-time. We find the best model adjustment for active involuntary part time with an  $R_*^2$  of 0.34, due to relatively high and significant odds ratio estimates of almost all included variables (appendix Table A1). Nevertheless the job characteristics are altogether the most significant in explaining involuntary part time, indicating, as expected, that involuntary part time is caused by job characteristics more than by individual and family conditions.

### ***Women's voluntary long part time not easily explained***

As the analysis of the various types of part-time is based on non-identical sub samples, comparing the  $R_*^2$ s of the various part-time types (i.e. comparing coefficients horizontally in Table 2) should be done with some caution. Still, we notice that of the various types of part time, the poorest model is for voluntary long part time. To be sure, including sex as an independent variable increases the  $R_*^2$  significantly, reflecting that long part time is a strongly gendered labour market attachment. This again is primarily a result of gendered supply side processes. This does not mean however, that our model specifications are better predictors of women's than of men's part time. Quite the contrary, and contrary to our expectations, we find that the opposite is actually the case, namely that our models generally fit better for men's than for women's part-time work patterns. As follows from the above, we should be cautious also when comparing women and men, as the analyses are obviously based on different sub samples. Somewhat surprisingly we find however, that the total  $R_*^2$  of women's voluntary long part time is rather low (0.12), and lower than that of men's (0.15). Hence, although voluntary long part time in Norway is mainly a female labour market attachment, and more female dominated than other types of part-time work, we find that the features of long part-time workers and long part-time work are less distinguished from full-time work and -workers than are the features of other types of part time. This holds true for women and men long part-timers, but more so for women. We interpret these results as partly an indication that the process leading to voluntary long part time is less systematically different from the process leading to full time than is the case for other types of part-time work. But to get a better grip of the causes and processes behind the distribution of voluntary long part-time work, we will have to dig deeper into the ‘multi-level’ gendered processes over the life course.

Voluntary short part timers are more easily distinguished from full timers as they are tied to age differences, however more so for men than for women (appendix Table A1-A6). Involuntary part time

on the other hand, is both for women and men attached to low status occupations, such as cleaning and other service with low educational requirements, *and*, contrary to our expectations, to relatively high hourly salaries. The latter most probably reflects particular dissatisfaction among those who, when involuntarily part-time employed, fail to obtain potentially high earnings. As expected, the level of prediction of the hourly earnings models is somewhat higher for men than for women (Table 2). Worth noticing is also that the effect of hourly earnings on women's voluntary long part-time work is zero when controlled for no other factors.

***Within-household work-hour bargaining tends to end up in traditional work patterns***

Turning to the models of relative hourly earnings between spouses we find, just like the case of the individual hourly earnings models, significant differences in the prediction level between the models where gender is included as an independent variable and the 'gender neutral' models ( $R^2$ : 0.15-0.22 and 0.01-0.06 respectively, Table 2). Looking at women and men separately we find however, that the relative earnings models contribute very little to explaining part time of married women and little, albeit somewhat more, of married men. Like the case of the individual hourly earnings model, the predictive strength of the relative hourly earnings on women's long part time is zero when no other factors are included in the model.

The significance of gender appears clearly also from the complete spouse models estimates, where the  $R^2$  increases from 0.10-0.14 to 0.23-0.26 when sex is included as independent variable (Table 2). As shown in appendix Tables A5 and A6, married women and men, when working part time, do so for distinctly different reasons. Whereas part-time work for married men is almost exclusively tied to him being young or elderly, married women's working hours vary significantly and systematically with the family conditions and the need for family care and money. We find with few exceptions, no effect of the spouse's income on married men's working hours, whereas for married women there is a strong and significant positive part-time effect of the spouse's income.

The estimates do not however, form a basis for a clear conclusion as to the relationship between part-time work and possible bargaining processes between partners. Men's working hours are not systematically affected by their relative-to-spouse earnings level, whereas for married women there is, quite surprisingly, a fairly systematic positive relationship between part-time work and their relative-to-spouse earnings level. To be sure, our surprise is partly tied to a gender-neutral assumption. Actually, our analysis indicates that possible within-household bargaining on the division of paid working hours is strongly gendered. The fact that married women's relative bargaining strength in the form of a high relative-to spouse earnings level, implies a high probability not only of voluntary, but also of involuntary part-time work, indicates that women's subordination in such bargaining processes

reflect a gendered, rather than an economically defined, bargaining position. The case of voluntary part time may be consistent with the assumption of gender-different preferences (Hakim, 2000; 2002), whereas the case of involuntary part time corroborates with MacRae's (2003) and Crompton's (2004) arguments on gendered agencies and gendered situational logic (see earlier in this article). Hence, as the results of our spouse analysis appear to be quite incoherent, the only conclusion to be drawn is that within-household work-hour bargaining tends to end up in traditional work patterns regardless of the partners' bargaining strength. The 'multi-level effects of gender' overrides to a large degree bargaining strength, at least when defined by relative hourly earnings.

## **6. Conclusion**

This article analyses women's and men's part-time work in contrast with full-time work. The analysis has a broad approach, discussing a great many possible causes from a great many perspectives. As such, our approach has a somewhat inductive character and differs from causal analyses that concentrate on testing the significance of one or a few hypotheses. Our analysis differs from most other sociological analyses of part-time also as it comprises both voluntary and involuntary part-time and as both men and women are included. The latter permits the results to be discussed from a gender perspective. In addition we take into account both worker specific -, interactional and job specific factors.

We find that part-time work is strongly gendered, not only because it is a much more frequent labour market situation for women than for men, but also because the processes into, and the causes of, part-time differ between the sexes. The effect of gender appears strong and significant whether the analysis assumes a supply side, a relational, or a demand side perspective. Still, our analysis reveals that the effect of gender is less significant when controlling for various job and labour market sector characteristics than when controlling for individual background and family characteristics. This in spite of the Norwegian labour market being among the more strongly gender segregated in Europe (e.g. Anker, 1998; Melkas and Anker, 1998; Teigen, 2006), *and* that part-time jobs are mainly concentrated within the female dominated parts of the labour market (Kjeldstad, 2006). Most probably this apparent paradox reflects that whenever men are recruited to female dominated labour market sector jobs, where part-time work is common, they are engaged in part-time work like women (op. cit.). Hence, our analysis indicates that the gendered characteristic of the labour demand is more tied to a gender segregated occupational and industrial structure than to a gender specific work-hour engagement culture. At the supply side however, having children and family has strongly gendered consequences.

As compared to men, factors influencing on women's part time are greatly varied. Whereas *age* is the most important predictor of men's part-time work, almost all the characteristics included in our models are significant predictors of women's part time. Still our models are generally less able to explain women's than men's working hours. This is mainly due to part-time work of women being a more complex phenomenon and most probably also less systematically different from full time work than is the case of men. This is particularly true for voluntary long part-time, which is the most gendered of all work-hour adjustments.

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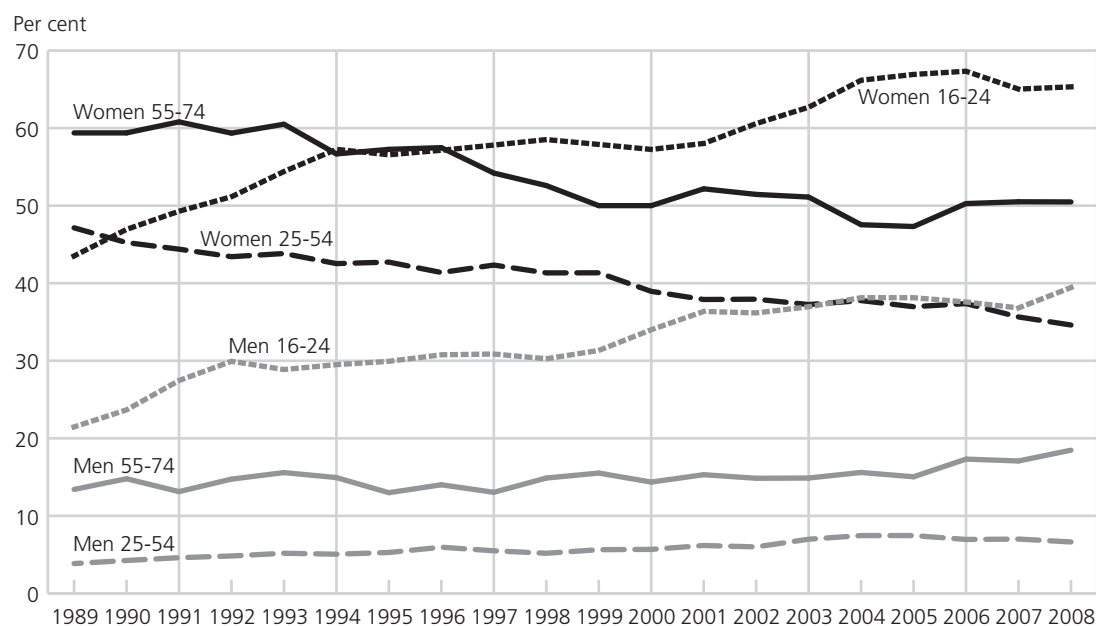
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**Figure A1. Part-time employed as percentage of all employed by sex and age. 1989-2008**

Source: Labour Force Surveys 1989 - 2008, Statistics Norway

### ***Variable Definitions***

A total of 13 independent variables are included in the analysis of the individual sample; five worker characteristics, six job- and labour-market characteristics, plus hourly earnings and sex. The analysis of the spouse sample comprises a total of eight independent variables, including characteristics of both respondent and spouse. All independent variables are coded as categorical variables, and for the regression modelling all variable categories are transformed into dummy variables (see Kjeldstad and Nymoen 2004).

#### **\* Worker characteristics**

Categorisation of *age* is based on age at the end of the calendar year. All respondents are classified by *marital status* as being either unmarried, married, previously married, or cohabitant. *Family phase*, is a variable combining number of biological and adopted children below 16 and the age at the end of the year of the youngest child. Classification by highest completed *educational level* is based on the Norwegian Standard Classification of Education, and we apply the following categories: primary (compulsory) education, secondary education, short university and college education, and long (above 4 years of) university and college education. *Citizenship* is in this study classified as either Norwegian, other western countries', or non-western countries' citizens.

#### **\* Job characteristics**



The classification of *occupation* is in accordance with Standard Classification of Occupations (ISCO-88 (COM)), and for our grouping we apply the first of four digits. Classification by *type of industry* is in accordance with the revised Standard Industrial Classification (NACE Rev.1). *Work contract* is a dichotomous variable, classifying whether the employee has a permanent or a temporary work contract. Categorisation of company/local unit by *number of employees* includes three groups, whereas *company ownership* is classified by five categories; national government, regional government, local government, private one owner and private shareowners. We included *quarter of calendar year* (January-March, April-June, July-September, October-December) to map possible seasonal differences in labour market demand.

\* Individual hourly earnings

*Hourly earnings level* is a crude estimate computed from gross (no tax deduction) annual salary and wage earnings (and sometimes entrepreneurial income in case of self employment as an additional job) divided by 52 (weeks) and further divided by the 'weekly work-hours' as reported for the reference week in the LFS. Dividing by 52 most presumably gives a somewhat low estimate of the real earnings level, but the relative distribution will hardly be skewed.

\* Spouse model variables

Three variables are unique to the spouse models. *Spouse weekly work-hours* are defined in the same way as the respondent's work-hours (see above), but with a different categorisation. We compute *relative hourly earnings level* by dividing the respondent's hourly earnings level by spouse hourly earnings level. The variable *spouse total gross income* comprises all registered income components, including dividends and other property income. Four variables included in the spouse models have already been described as part of the worker characteristics models (*age, level of education, family phase, and citizenship*).

**Table A1. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Complete models. Women and men controlling for sex**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Sex</b>					
Male*					
Female	5	4	8	4	6
<b>Age</b>					
25-54 year*					
16-19 year	10	17	2	13	5
20-24 year	3	4	-	4	2
55-66 year	2	3	2	1,5	-
67-74 year	21	42	10	5	-
<b>Marital status</b>					
Never married*					
Married	-	-	1,5	-	-
Cohabitant	0,7	0,6	-	-	-
Previously married	0,7	-	-	-	0,6
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	-	-
2 or more children, youngest aged 0-2	2	2	2	2	-
1 child, aged 3-6	1,5	-	2	2	-
2 or more children, youngest aged 3-6	2	2	3	2	3
1 child, aged 7-10	-	-	2	-	2
2 or more children, youngest aged 7-10	2	2	2	2	1,5
1 child, aged 11-15	-	-	1,5	2	-
2 or more children, youngest aged 11-15	-	-	-	-	2
<b>Educational level</b>					
Compulsory only*					
Secondary	0,7	0,6	0,7	0,4	0,7
Short University/College	0,7	-	-	0,3	0,6
Long University/College (> 4 year)	0,4	0,4	0,5	0,2	0,2
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	-	-
Non-Western	-	-	-	-	3
<b>Type of industry</b>					
Manufacturing, construction, energy, transport*					
Agriculture, Fishery	-	2	-	-	-
Trade, Hotels, Restaurants	2	2	2	1,5	2
Financial services, real estate	-	-	-	-	-
Other Services	2	2	2	-	-

**Table A1 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Occupation</b>					
Academics*					
Managers. Legislators	0,3	0,3	0,3	-	0,1
Technicians etc. (Short University/College)	-	2	-	2	-
Clerks	3	6	2	5	4
Sale, service, care	5	7	3	8	8
Agricultural	4	4	5	10	6
Crafts	-	-	-	-	-
Operators, assemblers, transportation	2	3	1,5	-	-
Other occupations (incl. cleaning)	6	11	4	16	12
<b>No of Employees (Company)</b>					
0-10*					
11-99	-	-	-	0,6	-
100+	0,6	0,5	-	0,4	0,6
<b>Work contract</b>					
Permanent*					
Temporary	2	2	-	4	4
<b>Ownership (Company)</b>					
Shareowners*					
Personal (one owner)	1,5	1,5	-	2	-
Local Government	-	2	-	2	2
Regional Government	-	2	-	2	-
National Government	-	-	0,7	-	-
<b>Quarter of year</b>					
January-March*					
April-June	-	-	-	-	-
July-September	-	0,7	-	0,7	-
October-December	-	-	-	-	-
<b>Hourly Earnings, NOK (ca. 0.12 €)</b>					
1-99*					
100-149	-	-	-	1,5	2
150-199	2	3	1,5	5	8
200-249	4	8	2	8	23
250+	7	17	3	23	49
<b>R<sup>2</sup></b>	<b>0,29</b>	<b>0,33</b>	<b>0,22</b>	<b>0,30</b>	<b>0,34</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and  $p < 0.05$ . Others: - No observations: -- .

\* Indicates reference category. Source: Labour Force Surveys 2001, Statistics Norway

**Table A2. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Complete models. Women**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Age</b>					
25-54 year*	6	11	2	8	4
16-19 year	2	3	-	4	2
20-24 year	2	3	2	-	-
55-66 year	7	22	3	6	-
67-74 year					
<b>Marital status</b>					
Never married*					
Married	2	-	2	2	-
Cohabitant	-	0,7	-	-	-
Previously married	-	-	-	-	-
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	-	-
2 or more children, youngest aged 0-2	2	3	2	2	2
1 child, aged 3-6	2	-	2	3	2
2 or more children, youngest aged 3-6	3	3	4	2	3
1 child, aged 7-10	2	-	2	-	3
2 or more children, youngest aged 7-10	2	2	2	3	2
1 child, aged 11-15	1,5	-	2	2	-
2 or more children, youngest aged 11-15	2	-	2	-	2
<b>Educational level</b>					
Compulsory only*					
Secondary	0,7	0,6	0,7	0,5	-
Short University/College	0,7	-	0,7	0,3	0,5
Long University/College (> 4 year)	0,3	0,3	0,4	0,2	0,1
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	-	-
Non-Western	-	-	-	-	-
<b>Type of industry</b>					
Manufacturing, construction, energy, transport*					
Agriculture, Fishery	-	-	-	-	-
Trade, Hotels, Restaurants	2	2	-	-	2
Financial services, real estate	-	-	-	-	-
Other Services	-	2	-	-	-

**Tabel A2 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Occupation</b>					
Academics*					
Managers, legislators	0,3	0,3	0,4	-	--
Technicians etc. (Short University/College)	2	2	1,5	3	-
Clerks	3	6	2	6	3
Sale, service, care	5	8	3	12	9
Agricultural	6	6	7	-	8
Crafts	2	3	2	-	-
Operators, assemblers, transportation	2	5	-	6	-
Other occupations (incl. cleaning)	8	15	4	30	13
<b>No of Employees (Company)</b>					
0-10*					
11-99	-	-	-	0,7	-
100+	0,6	0,5	0,7	0,4	0,7
<b>Work contract</b>					
Permanent*					
Temporary	2	2	-	3	4
<b>Ownership (Company)</b>					
Shareowners*					
Personal (one owner)	-	-	2	2	-
Local Government	-	-	-	2	2
Regional Government	-	-	-	2	-
National Government	-	-	0,7	-	-
<b>Quarter of year</b>					
January-March*					
April-June	-	-	-	-	-
July-September	-	0,7	-	-	-
October-December	-	-	-	-	-
<b>Hourly Earnings, NOK (ca. 0.12 €)</b>					
1-99*					
100-149	1,5	-	-	-	3
150-199	3	4	2	7	11
200-249	7	14	3	11	41
250+	13	43	3	50	83
<b>R<sup>2</sup></b>	<b>0,18</b>	<b>0,28</b>	<b>0,12</b>	<b>0,27</b>	<b>0,29</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and p<0.05. Others: - No observations: -- .

\* Indicates reference category.

Source: Labour Force Surveys 2001, Statistics Norway

**Table A3. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Complete models. Men**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Age</b>					
25-54 year*					
16-19 year	11	24	3	36	12
20-24 year	3	5	-	6	5
55-66 year	3	4	3	-	-
67-74 year	34	64	19	9	--
<b>Marital status</b>					
Never married*					
Married	0,5	0,6	0,5	0,3	-
Cohabitant	0,7	-	-	-	-
Previously married	0,7	-	-	-	-
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	--	-
2 or more children, youngest aged 0-2	-	-	-	-	-
1 child, aged 3-6	-	-	-	--	--
2 or more children, youngest aged 3-6	-	0,4	-	-	-
1 child, aged 7-10	-	-	-	--	--
2 or more children, youngest aged 7-10	-	-	-	-	-
1 child, aged 11-15	-	-	-	-	-
2 or more children, youngest aged 11-15	-	-	-	--	-
<b>Educational level</b>					
Compulsory only*					
Secondary	0,6	0,6	-	0,3	0,5
Short University/College	-	-	-	0,4	-
Long University/College (> 4 year)	0,5	-	-	-	-
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	3	4
Non-Western	-	-	-	-	5
<b>Type of industry</b>					
Manufacturing, construction, energy, transport *					
Agriculture, Fishery	-	-	-	-	-
Trade, Hotels, Restaurants	2	2	2	-	2
Financial services, real estate	-	2	2	-	-
Other Services	3	2	4	-	-

**Table A3 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Occupation</b>					
Academics*					
Managers, legislators	0,3	0,4	0,2	-	-
Technicians etc. (Short University/College)	-	2	-	-	-
Clerks	3	8	-	4	6
Sale, service, care	5	9	3	4	9
Agricultural	3	-	-	-	-
Crafts	-	-	-	-	-
Operators, assemblers, transportation	-	2	-	-	-
Other occupations (incl. cleaning)	4	8	-	4	10
<b>No of Employees (Company)</b>					
0-10*					
11-99	0,7	0,7	-	0,5	-
100+	0,5	0,5	-	0,3	0,4
<b>Work contract</b>					
Permanent*					
Temporary	3	2	2	4	3
<b>Ownership (Company)</b>					
Shareowners*					
Personal (one owner)	2	2	-	-	2
Local Government	-	2	-	3	3
Regional Government	-	2	-	-	-
National Government	0,6	-	0,5	-	-
<b>Quarter of year</b>					
January-March*					
April-June	-	-	-	-	-
July-September	-	0,6	-	-	-
October-December	-	-	-	-	-
<b>Hourly Earnings, NOK (ca. 0.12 €)</b>					
1-99*					
100-149	-	-	0,6	2	-
150-199	-	1,5	0,6	3	3
200-249	3	4	-	8	8
250+	6	11	2	19	28
<b>R<sup>2</sup></b>	<b>0,31</b>	<b>0,38</b>	<b>0,15</b>	<b>0,36</b>	<b>0,35</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and  $p < 0.05$ . Others: - No observations: -- .

Estimates in *italics* are unstable due to few observations. \* Indicates reference category.

Source: Labour Force Surveys 2001, Statistics Norway

**Table A4. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Spouse models. Women and men controlling for sex**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Sex</b>					
Male*					
Female	18	12	22	34	28
<b>Age</b>					
25-54 year*					
20-24 year	5	8	4	--	--
55-66 year	2	3	2	-	-
67-74 year	72	126	44	36	-
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	--	-
2 or more children, youngest aged 0-2	1,5	2	2	-	-
1 child, aged 3-6	-	-	2	-	-
2 or more children, youngest aged 3-6	2	2	2	-	3
1 child, aged 7-10	1,5	-	2	-	-
2 or more children, youngest aged 7-10	2	2	2	2	-
1 child, aged 11-15	1,5	-	2	3	-
2 or more children, youngest aged 11-15	-	-	-	-	2
<b>Spouse weekly work-hours</b>					
37-40*					
0	-	-	-	-	0,3
1-19	1,5	2	-	2	2
20-36	-	-	-	-	-
41-49	-	-	-	2	-
50+	-	-	-	-	0,3
<b>Spouse gross income, NOK (ca. 0.12 €)</b>					
0-99 999*					
100 000-199 000	-	2	-	-	-
200 000-299 000	1,5	2	-	7	2
300 000-399 000	2	3	-	6	3
400 000-499 000	2	2	-	5	3
500 000+	2	4	-	-	-
<b>Relative hourly earning (% of spouse earning)</b>					
90-110*					
0-49	-	-	-	3	-
50-89	-	-	-	-	-
111-149	1,5	-	1,5	3	3
150-199	1,5	2	-	-	4
200-299	2	3	-	9	6
300+	3	4	-	4	9



**Tabel A4 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Educational level</b>					
Compulsory only*					
Secondary	-	0,7	0,7	-	-
Short University/College	0,5	0,5	0,5	0,2	0,3
Long University/College (> 4 year)	0,3	0,3	0,3	0,2	0,1
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	-	-
Non-Western	-	-	-	-	4
<b>R<sup>2</sup></b>	<b>0,26</b>	<b>0,23</b>	<b>0,24</b>	<b>0,26</b>	<b>0,23</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and p<0.05. Others: - No observations: -- .

\* Indicates reference category.

Source: Labour Force Surveys 2001, Statistics Norway

**Table A5. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Spouse models. Women**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Age</b>					
25-54 year*					
20-24 year	3	7	-	--	--
55-66 year	2	3	1,5	-	-
67-74 year	10	35	-	22	-
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	--	-
2 or more children, youngest aged 0-2	2	3	1,5	-	-
1 child, aged 3-6	-	-	2	-	-
2 or more children, youngest aged 3-6	3	3	3	-	3
1 child, aged 7-10	2	-	2	-	3
2 or more children, youngest aged 7-10	2	2	2	3	2
1 child, aged 11-15	2	-	2	3	-
2 or more children, youngest aged 11-15	2	-	-	-	3
<b>Spouse weekly work-hours</b>					
37-40*					
0	0,4	0,5	0,4	-	0,3
1-19	2	3	-	-	3
20-36	-	-	-	-	-
41-49	-	-	-	2	-
50+	-	-	-	-	0,3
<b>Spouse gross income, NOK (ca. 0.12 €)</b>					
0-99 999*					
100 000-199 000	3	3	3	-	-
200 000-299 000	3	4	3	9	4
300 000-399 000	4	5	3	9	5
400 000-499 000	4	5	3	-	5
500 000+	5	8	4	-	4
<b>Relative hourly earning (% of spouse earning)</b>					
90-110*					
0-49	-	-	-	2	-
50-89	-	-	-	-	-
111-149	2	2	2	3	3
150-199	2	3	-	-	5
200-299	4	6	-	9	7
300+	4	5	2	4	8

**Table A5 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Educational level</b>					
Compulsory only*					
Secondary	0,7	0,6	0,7	0,6	-
Short University/College	0,4	0,4	0,4	0,2	0,2
Long University/College (> 4 year)	0,1	0,1	0,2	0,1	0,1
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	-	-
Non-Western	-	-	-	-	3
<b>R<sup>2</sup></b>	<b>0,06</b>	<b>0,11</b>	<b>0,04</b>	<b>0,15</b>	<b>0,12</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and p<0.05. Others: - No observations: -- .

\* Indicates reference category.

Source: Labour Force Surveys 2001, Statistics Norway

**Table A6. Odds ratio estimates<sup>1</sup> for different types of part-time versus full-time. Spouse models. Men**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Age</b>					
25-54 year*					
20-24 year	10	9	14	--	--
55-66 year	3	4	4	-	-
67-74 year	61	84	54	63	--
<b>Family phase</b>					
No children (under 16)*					
1 child, aged 0-2	-	-	-	--	-
2 or more children, youngest aged 0-2	-	-	3	-	-
1 child, aged 3-6	-	-	-	--	--
2 or more children, youngest aged 3-6	-	-	-	-	4
1 child, aged 7-10	-	-	--	--	--
2 or more children, youngest aged 7-10	-	-	-	-	-
1 child, aged 11-15	-	-	-	-	-
2 or more children, youngest aged 11-15	-	-	--	--	--
<b>Spouse weekly working hours</b>					
37-40*					
0	-	-	-	--	-
1-19	-	-	-	-	-
20-36	1,5	-	2	-	-
41-49	-	--	-	--	--
50+	-	--	-	--	--
<b>Spouse gross income, NOK (ca. 0.12 €)</b>					
0-99 999*					
100 000-199 000	-	2	-	-	-
200 000-299 000	-	-	-	-	-
300 000-399 000	-	-	-	-	--
400 000-499 000	-	-	-	--	-
500 000+	-	5	-	--	--
<b>Relative hourly earning (% of spouse earning)</b>					
90-110*					
0-49	3	-	5	-	-
50-89	2	-	2	--	-
111-149	-	-	-	--	-
150-199	-	-	-	--	-
200-299	-	-	-	--	-
300+	3	3	-	--	20

**Table A6 (cont.)**

Independent variable/category	Part-time	Voluntary		Involuntary	
		Short part-time	Long part-time	Passive	Active
<b>Educational level</b>					
Compulsory only*					
Secondary	-	-	-	-	-
Short University/College	-	-	-	-	-
Long University/College (> 4 year)	-	-	-	-	-
<b>Citizenship</b>					
Norwegian*					
Other Western	-	-	-	-	-
Non-Western	-	-	--	--	<i>10</i>
<b>R<sup>2</sup></b>	<b>0,16</b>	<b>0,25</b>	<b>0,15</b>	<b>0,19</b>	<b>0,16</b>

<sup>1</sup> Included in the table are odds ratio estimates lower than 0.8 and higher than 1.4 and p<0.05. Others: - No observations: -- .

Estimates in *italics* are unstable due to few observations. \* Indicates reference category.

Source: Labour Force Surveys 2001, Statistics Norway

**Table B1. Distribution of independent variables across various types of part-time and full-time employees. Individual sample, men and women, percent and N**

	Part time								Full time		Total		
	Voluntary (pct)				Involuntary (pct)				(pct)				
	Short		Long		Passive		Active				N	N	Pct
	M	W	M	W	M	W	M	W	M	W	M	W	Women
<b>All</b>	5	14	3	19	1	4	1	6	89	57	10101	9600	49
<b>Age</b>													
16-19 year	40	47	7	9	11	11	6	10	36	23	377	423	53
20-24 year	13	24	5	12	3	6	4	9	76	49	860	769	47
25-54 year	2	10	2	20	0	3	1	6	94	62	7304	6976	49
55-66 year	6	20	4	25	1	3	1	4	88	48	1466	1370	48
67-74 year	44	52	18	15	1	5	-	5	37	24	94	62	40
<b>Marital status</b>													
Never married	11	22	5	11	3	5	3	7	78	55	2646	1928	42
Married	3	14	2	25	0	3	1	5	93	53	5041	4969	50
Cohabitant	3	10	3	14	1	4	1	6	93	66	1880	1726	48
Previously married	4	12	3	14	1	3	1	5	90	66	534	977	65
<b>Family phase</b>													
No children (under 16)	7	16	4	16	1	3	2	5	86	59	6648	5851	47
1 child, aged 0-2	1	10	2	15	-	2	0	6	96	67	411	388	49
2 or more children, youngest aged 0-2	1	15	3	23	0	3	0	5	95	54	678	569	46
1 child, aged 3-6	2	9	3	20	-	4	-	7	95	60	235	289	55
2 or more children, youngest aged 3-6	1	15	2	31	0	3	1	8	96	44	745	750	50
1 child, aged 7-10	2	5	2	24	-	4	-	10	96	57	180	259	59
2 or more children, youngest aged 7-10	1	13	2	27	0	5	0	6	96	49	503	595	54
1 child, aged 11-15	2	8	2	24	0	4	1	6	95	58	536	685	56
2 or more children, youngest aged 11-15	2	10	1	22	-	2	1	8	96	57	165	214	56
<b>Educational level</b>													
Compulsory education only	13	25	4	23	3	7	2	7	77	39	1237	1190	49
Secondary school	4	14	3	20	1	4	1	7	91	54	5807	5201	47
Short University/College	4	11	3	18	1	2	2	3	91	66	2188	2775	56
Long University/college (>4 year)	3	7	3	10	1	1	0	1	93	80	869	434	33
<b>Citizenship</b>													
Norwegian Citizenship	5	15	3	19	1	4	1	6	89	57	9808	9309	49
Other Western	3	12	3	18	2	3	2	4	90	64	195	217	53
Non-Western	8	12	2	19	2	5	8	15	80	49	98	74	43
<b>Type of industry</b>													
Agriculture, Fishery	12	35	4	20	3	1	1	5	80	39	276	75	21
Manufacturing, construction, energy, transport	2	10	2	15	1	2	1	4	95	68	4548	1371	23
Trade, hotels restaurants	11	20	4	22	2	5	3	8	80	45	1728	1826	51
Financial services, real estate	4	9	3	15	1	2	1	3	91	71	1326	920	41
Other services	6	14	6	20	1	4	2	6	85	56	2223	5408	71
<b>Occupation</b>													
Managers, Legislators	1	4	1	8	0	1	0	-	97	87	1038	385	27
Academics	2	6	4	13	0	1	0	2	93	78	1245	927	43
Technicians etc. (Short University/College)	3	9	3	18	1	2	1	3	93	68	2154	2503	54
Clerks	9	13	2	18	2	2	2	4	85	63	538	1248	70
Sale, service, care	18	20	8	24	3	6	5	10	67	40	1200	3242	73
Agricultural	14	34	6	23	3	4	2	7	75	32	204	56	22
Crafts	2	6	1	16	0	1	0	2	96	74	2031	171	8
Operators, assemblers, transportation	3	10	3	14	0	2	1	2	93	72	1272	277	18
Other occupations (incl. cleaning)	15	26	6	23	4	8	5	9	70	35	419	791	65
<b>No of Employees (Company)</b>													
1 - 10 employees	8	18	4	21	2	5	2	6	85	49	2324	2213	49
11-99 employees	5	15	3	20	1	3	2	6	89	56	4299	4522	51
100+ employees	4	11	3	17	1	2	1	4	92	65	3478	2865	45

**Table B1 (cont.)**

	Part time								Full time		Total		
	Voluntary (pct)				Involuntary (pct)				(pct)		Voluntary (pct)		
	Short		Long		Passive		Short		Long		Passive	Short	Long
	M	W	M	W	M	W	M	W	M	W	M	W	Women
<b>Work contract</b>													
Permanent work contract	4	13	3	20	1	3	1	5	91	59	9228	8349	47
Temporary work contract	16	21	7	13	5	8	5	13	67	45	873	1251	59
<b>Ownership (Company)</b>													
Personal owner	13	22	5	24	3	7	3	6	76	42	450	599	57
Shareowners	5	15	3	18	1	3	1	5	90	59	7432	4162	36
Local Government	6	15	5	22	2	4	3	8	84	52	908	3074	77
Regional Government	6	13	5	21	1	3	2	4	87	59	426	990	70
National Government	3	8	3	11	1	2	0	3	93	76	885	775	47
<b>Quarter of year</b>													
January-March	6	16	4	19	1	3	1	5	89	57	2600	2401	48
April-June	5	14	3	21	1	4	1	5	90	56	2458	2340	49
July-September	5	12	3	19	1	3	1	6	90	60	2451	2368	49
October-December	6	16	3	18	1	5	1	7	89	55	2592	2491	49
<b>Hourly Earnings, NOK</b>													
< 100 NOK/hour	12	17	7	18	3	5	3	5	75	55	1527	2174	59
100-149 NOK	4	10	2	22	1	2	1	4	92	62	3056	4294	58
150-199 NOK	2	13	2	19	0	3	1	6	95	59	3035	2134	41
200-249 NOK	4	24	3	15	1	4	1	13	91	44	1243	566	31
250+ NOK	8	42	3	9	1	8	2	14	85	27	1240	432	26

Source: Labour Force Surveys 2001, Statistics Norway

**Table B2. Distribution of independent variables across various types of part-time and full-time employees. Spouse sample, men and women, percent and N**

	Part time								Full time		Total		
	Voluntary (pct)				Involuntary (pct)				(pct)		N	N	Pct
	Short		Long		Passive		Active		M	F			
	M	F	M	F	M	F	M	F					
<b>All</b>	3	13	3	26	0	3	1	5	94	52	4557	4429	49
<b>Age</b>													
20-24 year	17	35	17	29	-	-	-	-	67	35	12	17	59
25-54 year	1	11	2	26	0	3	1	6	96	54	3385	3544	51
55-66 year	6	21	4	26	0	3	1	4	89	45	1104	849	43
67-74 year	48	74	23	5	2	5	-	5	27	11	56	19	25
<b>Family phase</b>													
No children (under 16)	5	14	3	24	0	3	0	5	91	55	2241	2293	51
1 child, aged 0-2	2	12	2	16	-	-	1	5	95	67	142	118	45
2 or more children, youngest aged 0-2	1	16	4	23	0	2	0	4	95	55	416	332	44
1 child, aged 3-6	1	5	2	31	-	3	-	3	97	57	99	86	46
2 or more children, youngest aged 3-6	1	16	2	35	0	3	2	7	95	40	535	500	48
1 child, aged 7-10	1	7	-	34	-	4	-	8	99	48	118	106	47
2 or more children, youngest aged 7-10	0	14	2	30	0	4	0	5	97	46	424	421	50
1 child, aged 11-15	1	9	1	30	0	5	1	6	96	50	437	434	50
2 or more children, youngest aged 11-15	2	11	-	24	-	3	-	9	98	53	145	139	49
<b>Spouse weekly work-hours</b>													
0 hours	6	21	4	20	-	4	1	6	88	49	813	421	34
1-19 hours	3	28	2	25	0	6	1	8	93	33	629	106	14
20-36 hours	2	14	3	27	0	3	1	6	94	50	1449	317	18
37-40 hours	2	11	1	27	0	3	0	5	96	53	1540	2922	65
41-49 hours	-	11	1	26	-	6	-	5	99	52	84	271	76
50+ hours	-	18	5	25	-	4	-	3	95	50	42	392	90
<b>Spouse gross income</b>													
NOK 0- 99 000	4	10	4	15	0	1	1	6	91	68	686	71	9
NOK 100 000-199 000	4	19	2	26	0	3	1	5	93	46	1412	293	17
NOK 200 000-299 000	2	13	2	24	0	5	1	7	95	50	1666	1140	41
NOK 300 000-399 000	2	12	3	26	0	3	-	5	95	53	583	1462	71
NOK 400 000-499 000	1	11	2	29	-	3	1	4	97	53	125	631	83
NOK 500 000+	5	15	2	29	-	1	-	3	93	52	85	832	91
<b>Relative hourly earning (% of spouse)</b>													
0- 49 %	6	14	7	30	-	3	1	3	86	49	183	733	80
50- 89 %	4	10	3	28	1	2	0	4	92	56	529	1778	77
90-110 %	2	10	1	23	-	3	0	5	97	60	631	621	50
111-149 %	1	14	2	28	0	5	1	8	96	46	1070	477	31
150-199 %	1	21	1	23	0	4	0	11	98	42	651	159	20
200-299 %	1	26	1	19	1	11	1	10	96	33	390	114	23
300+ %	6	21	4	21	0	4	1	7	89	46	1103	547	33
<b>Educational level</b>													
Compulsory education only	5	18	3	30	0	5	1	6	91	40	521	524	50
Secondary school	3	14	2	27	0	4	1	7	94	48	2459	2432	50
Short University/College	2	12	3	25	0	1	1	3	94	60	1069	1285	55
Long University/college (>4 year)	2	6	3	15	0	1	0	2	94	76	508	188	27
<b>Citizenship</b>													
Norwegian Citizenship	3	13	2	26	0	3	1	5	94	52	4421	4289	49
Other Western	2	11	4	28	1	4	1	4	91	53	89	97	52
Non-Western	6	14	-	21	-	2	4	12	89	51	47	43	48

Source: Labour Force Surveys 2001, Statistics Norway