

Gender-specific dynamics in working hours

Exploring the potential for increasing working hours in an ageing society

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DRAFT VERSION

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Abstract The Dutch labour market is characterized by a combination of high employment rates and exceptionally low and even declining average work hours. This decline in work hours poses a serious threat to current welfare levels, with the decline in working-age population caused by ageing. The aim of this paper is therefore to assess the possibilities for increasing working hours per employee. We analyse the observed changes in working hours of a group of employees who remain in the same job, to avoid bias in the results as a result of job change. First the determinants of work hours are analysed using an OLS regression, and then the dynamics in work hours are analysed with a bivariate probit model with sample selection.

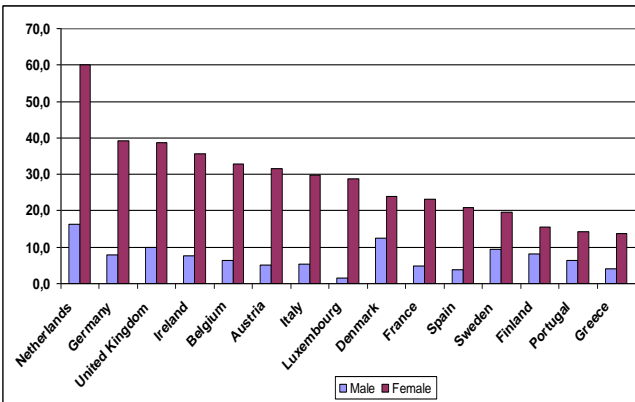
We find that women change their work hours more frequently than men, especially if they work in a minor part-time job. An increase in hours of work is more likely to occur after a decrease in the hourly wage for both male and female employees. Women also increase their hours when the youngest child reaches the secondary school-going age or when they become single. With the exception of the birth of the first child, men increase their work hours after the birth of subsequent children. Moreover we find that gay male employees work fewer hours than heterosexual men, and are more likely to decrease their hours, whereas lesbian employees work more hours than heterosexual female employees and are more inclined to increase their hours.

1. Introduction

The Dutch labour market differs from other countries due to the unique combination of high employment rates and low average number of hours worked. Dutch employment rates are among the highest in the world, with 76.1 total employment in 2008. At the same time the average number of hours worked per year per person is one of the lowest, 1,389 in 2008, while the OECD total was 1,764 average hours actually worked (OECD, 2010). Like many other countries, the Netherlands faces a decline in the working-age population as a result of ageing. The implications of ageing pose a serious threat to current welfare levels, but given the unique situation of the Dutch labour market, increasing the number of working hours seems to be an obvious solution. However, low working hours might be hard to change, due to established preferences of the worker to work a low number of hours. The aim of this paper is therefore to explore the possibilities for increasing the number of hours worked by people who are currently active in the labour market.

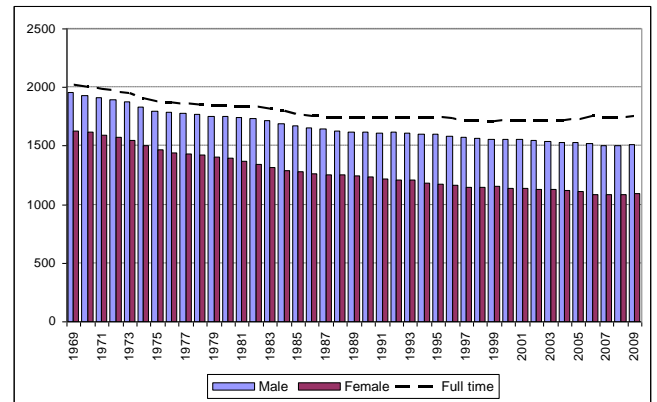
Figures 1 and 2 show that the Netherlands has the highest proportion of part-time employment and that the number of working hours continues to decrease. What is interesting to note is that although women are by far the largest group of part-time workers, the proportion of male part-time employment is also significant and much higher than in other countries. Figure 2 depicts the development of the average annual number of hours worked per job by sex in the Netherlands, compared to full-time hours of work over the past four decades. It shows that in the Netherlands hours of work per job for both males and females have fallen, but that this fall is greater for females than for males.

Figure 1 Male and female part-time (<30h) employment in the EU 15 countries 2008



Based on OECD labour Force Statistics, 2008

Figure 2 Male and female average annual working hours for the Netherlands



Based on Statistics Netherlands, 2009

Figures 1 and 2 provide convincing evidence of the low and declining working hours of female as well as male workers in the Netherlands compared to other EU 15 countries. This implies that there is ample room for addressing the adverse effects of ageing, if the negative trend of falling hours of work in Figure 2 could be slowed down or reversed. This paper will explore the possibilities for increasing working hours by analysing the observed changes in hours worked by male and female employees in the Netherlands. There might be various reasons for changes in working hours, for example the birth of a child or a change in income. However, a change in working hours might also be associated with dynamics of employment, (i.e. job finders, job switchers, job losers). In this study, we focus on changes in working hours that occur without a change in job, which in our view is the most relevant change in relation to the issue of ageing. For this purpose a unique database will be created, comprising workers who occupied the same job in the period 2003-2005.

The analysis consists of two parts. First, we assess which factors determine the actual number of hours worked for jobs carried out by both females and males. This provides an indication of the factors that might be relevant for an increase in working hours. Next, we analyse the observed changes in working hours of a given job, in order to shed light on the factors that determine the changes in working hours. The analysis of observed changes in work hour is important in order to identify factors that might slow down or even reverse the negative trend in female and male working hours as depicted in Figure 2. In addition, both analyses help to assess the possibilities for creating an increase in wealth through a change in (the trend of) working hours, in order to curb the adverse effects of ageing.

This paper is organized as follows. Section 2 presents a literature review of studies that focus on the issue of (female) working hours, and this will provide a context within which our study is embedded. A description of the data and the methodology used is provided in Section 3. The empirical results will be presented in Section 4, and finally Section 5 provides a conclusion and discussion.

2. Literature review

Part-time jobs provide opportunities to mobilize groups with traditionally low labour participation, such as mothers, youth and older workers, to take up work (Saint-Martin and Venn, 2010). At the same time, part-time work is also a form of labour under-utilization, which given the expected decrease of the working-age population poses a threat to the current level of welfare. Welfare becomes strained because more elderly people create a greater demand for resource transfers from a declining working population (Carey, 2002). Basically, differences in welfare between the EU 15 countries, that is differences in the value added per capita as shown in the last column of Table 1, can be broken down into a number of determinants. Per capita GDP of a country equals labour productivity in terms of GDP per hour, multiplied by the hours worked per employed person, labour participation, and age structure, respectively. Table 1 shows the effect of each of these determinants on welfare in the countries of the EU 15 for the period 1996-2009. Table 1 also shows the potential that the various countries have to enhance their level of wealth, or per capita GDP. The individual country's labour productivity and wealth are expressed as a percentage of the EU 15 average. The effects of working hours and labour utilization indicate their ability to fill the gap between productivity and wealth.

Table 1 Labour productivity, per capita income levels and the effects of working hours and labour utilization, EU 15 countries, 1996-2009

	Value added per hour worked (labour productivity as % of EU 15)	Effects of: Working hours (hours worked per employed person - minus EU 15)	Labour utilization: Net labour participation (net labour participation - minus EU 15)	Labour utilization: Age structure (ratio pop 15-64 and total pop - minus EU 15)	Value added per capita (wealth as % of EU 15)
Belgium	120.0	-5.1	-6.8	-1.6	106.5
Denmark	122.0	-4.0	17.0	-0.8	134.3
Germany	114.8	-11.8	3.3	0.7	107.1
Ireland	116.0	4.0	0.1	0.9	121.0
Greece	36.4	26.9	-9.6	0.3	54.1
Spain	71.0	4.1	-10.2	2.7	67.6
France	116.6	-4.1	-2.3	-2.3	107.8
Italy	91.8	12.2	-14.7	0.4	89.8
Luxembourg	189.2	-3.8	-2.5	1.1	183.9
Netherlands	117.1	-17.1	13.0	2.0	114.9
Austria	102.2	1.0	7.6	1.3	112.2
Portugal	18.2	12.2	5.1	1.1	36.6
Finland	99.7	5.4	5.0	2.7	112.7
Sweden	111.1	0.0	12.2	-3.0	120.3
UK	95.3	3.8	10.2	-1.5	107.7

Source: Eurostat and EUKLEMSdatabase

With regard to the Netherlands, Table 1 shows that between 1996 and 2009 labour productivity was 117 percent of that in the EU 15, whereas the level of wealth was about 115 percent of the EU 15. This difference is related to the fact that Dutch employed persons work far fewer hours compared to the EU 15 (-17 percent). In fact the Netherlands has the largest negative contribution of working hours of all EU 15 countries. This is caused by the fact that the Netherlands has a particularly low average number of hours that women work. At the same time labour participation in the Netherlands is much higher than the EU 15 average (+13 percent), and also the proportion of people in the working age bracket 15-64 is slightly above the EU 15 level. This implies that compared to the rest of Europe there is ample room for the Netherlands to enhance wealth if the number of working hours is increased, because the participation rate is already at a level substantially above the EU average.

Most of the research into work hours has focused on explanations for cross-sectional differences between individuals, or in some instances changes in work hours over time (Coleman and Pencavel, 1993). Few studies, however, have explored the dynamics or observed changes in work hours of individual employees, which is the

primary goal of this study. Therefore, we will analyse the observed changes in hours of work of individuals as well as in a household context. Since decisions regarding work are often made at the household level, it is important to take the attributes of the partner into account.

The labour supply of Dutch women is generally determined by age, education and stage in the life course, for example whether there are any young children in the household (Van Doorne-Huiskes, 2005). Age and education are also important determinants of the labour supply of men, as well as sector structure and regional unemployment levels (Noback et al., 2010). The determinants used in this study can be roughly summarized into three categories: socio-economic characteristics, spatial context and job characteristics. We start with an explanation of socio-economic characteristics.

Socio-economic characteristics

The decision to work a certain number of hours can be expressed using a basic utility function based on the consumption of leisure and goods (Bosworth et al., 1996). Individuals are assumed to maximize their utility subject to time and budget constraints. Time in this respect refers not only to time spent in paid work and leisure, but also comprises unpaid activities such as domestic work. A change in wage rate can be broken down into income and substitution effects. If the income effect is larger than the substitution effect, this means that a person can achieve the same level of utility while working fewer hours than before. If the substitution effect is larger, leisure has become more expensive relative to goods, and the individual substitutes goods for leisure by working more.

According to human capital theory, high-skilled workers generate a higher rate of return on human capital than low-skilled workers. Investing in human capital refers to education, but also to human capital acquired during the working career, such as on-the-job training or job experience (Becker, 1962). In addition, high-skilled people also have better access to high productivity jobs, are able to search more effectively and successfully for jobs, and are more likely to be career-oriented (Callens et al., 2000; Siegers and Zandanel, 1981).

With respect to changes in work hours over time, Coleman and Pencavel (1993) found that hours worked have increased among high-skilled workers, but have fallen

among low-skilled workers. In addition, Rosenthal and Strange (2008) found a positive relation between agglomeration and hours worked for high-skilled workers, and a negative relation for low-skilled workers. They argue that these low-skilled employees work fewer hours in cities because there are more small jobs available and the workload is spread over a larger number of individuals. At the same time those who work hard are drawn to cities and when there is more competition working longer hours can be a way of signalling ability. Agglomeration actually encourages professionals to work harder, resulting in an urban ratrace (Rosenthal and Strange, 2008).

Decisions with regard to working hours are made by individuals and at the household level. According to new home economics, utility or profit maximization takes place at the household level (Becker, 1981). Based on differences in human capital, partners divide all paid and unpaid tasks in order to maximize earning capacity. Empirical studies of the Netherlands have shown that rather than differences in human capital, cultural preferences determine the division of paid and unpaid work at the household level. Dutch women have a strong preference to take care of their own children (Vlasblom and Schippers, 2004; Turner and Niemeier, 1997), and balancing work and caring responsibilities is possible with part-time jobs that provide flexible work hours. This implies that females who are part of a family with young children work fewer hours, whereas men work more, regardless of their human capital.

By matching individuals at the household level we are able to identify gay and lesbian couples. Given the relation between gender stereotypes and labour supply, exploring the labour supply of same-sex workers might provide some interesting insights. Literature on sexual orientation states that the average labour supply of gay men is generally smaller, because gay couples consist of both primary and secondary earners, whereas heterosexual men are mostly primary earners. Lesbian couples also consist of primary and secondary earners, whereas female partners of heterosexual couples are mostly secondary earners (Ahmed et al., 2011). Men in gay households have a higher expected income as a result of the gender pay gap. According to Berg and Lien (2002), gay men will therefore opt for more leisure, less work and subsequently earn less individually than heterosexual men. Lesbian couples, on the

other hand, will have lower expected household income and may therefore opt for more hours of work, resulting in higher individual earning than heterosexual females.

There are two dominant theoretical explanations for deviating labour participation of gays and lesbians in the labour market, namely *discrimination* and household *specialization* (Ahmed et al., 2011). Discrimination refers to attitudes and stereotypes towards those who are gay, for example, lesbians being stereotyped as 'masculine' or gay men being confronted with hostility. This type of discrimination is dependent on whether homosexuality is overtly expressed. At the household level, specialization as proposed by Becker (1981) entails that heterosexual males specialize in paid work and females specialize in unpaid care and housework. Homosexual couples are unable to specialize, because there is no comparative advantage from biological differentiation (Ahmed et al., 2011). Both theoretical explanations predict that gay men experience disadvantages compared with heterosexual men, and lesbians experience advantages compared with heterosexual women.

As mentioned in the introduction, working hours are mainly determined by education, age and stage in the life course. Young people work fewer hours because they are still in the process of receiving an education, people in mid-career work more hours, and towards the end of their career decrease their working hours. This age-specific employment pattern follows an inverted U-curve. For women this is different because of their reproductive career, which might result in a (temporary) decline in working hours or withdrawal from participation in the age cohort 25-45. In the case of a temporary withdrawal, the female employment curve is a bi-modal or M-shaped curve, and in the case of permanent withdrawal the curve takes a uni-modal shape.

Based on the foregoing, we expect high-skilled employees to work more hours than low-skilled ones, regardless of gender. We expect women with young children to work fewer hours and to reduce their hours after having a baby, although they may catch up later when the children start schooling. We expect both male and female employees to reduce their hours toward the end of their career. Finally, we expect gay men to work fewer hours than heterosexual males and lesbian employees to work more hours than heterosexual female employees.

Spatial context

In six out of ten couples in the Netherlands, with or without children, both partners work at least 12 hours a week (Statistics Netherlands, 2011). The majority among these couples fit the one-and-a-half earners model, i.e. one partner works full-time and the other works part-time. As a result of these dual-career households, there has been an increase of spatial mismatches that occur between place of residence and the workplace (Van Ham et al., 2001). Where people live can also be the result of certain lifestyle preferences (De Meester et al., 2007), as some prefer highly urban environments with easy access to theatres and restaurants, while others prefer more rural areas that offer space and tranquillity.

The local opportunity structure of the residential environment offers possibilities and constraints in terms of availability of jobs, supporting services such as grocery shops or childcare services, and other consumption amenities such as restaurants and theatres. All activities take place at a certain location and people have to travel from one location to the other, which takes time. Depending on the mode of transportation and the speed at which somebody travels from one place to another, a person can only travel a maximum distance in a day. Hägerstrand (1970) characterizes this phenomenon as a person's *potential daily prism*. A car provides a much larger *daily prism*, for example, than walking or riding a bicycle does. De Meester et al. (2007) found that women work more hours in highly urbanized areas, because they either pursue a modern lifestyle or benefit from the supporting opportunity structure of large cities. On the other hand, men work fewer hours, due to a more symmetrical household arrangement, which occurs primarily in highly urban areas (Karsten, 2003).

The increase in spatial mismatch between place of residence and work causes people to commute greater distances to and from work. Commuting and work hours are closely related, because a wider *potential daily prism* implies better opportunities to obtain a higher paid job. In general, women commute shorter distances than men (Turner and Niemeier, 1997; Camstra, 1996; Hanson and Pratt, 1990). On average, women travel 28.8 km a day and men 41.8, including the commute to work and all other trips (Statistics Netherlands, 2007). Since women do a large share of the unpaid work, there is less time available for commuting to and from work (Hanson and Pratt,

1990). These trips are also relatively more expensive, since women work fewer hours and earn less than men do (Camstra, 1996).

We expect a positive relation between commute distance and hours worked for men, because a longer commute is only worthwhile for a job which generates higher returns on human capital. For women we expect a negative relation, because they face more severe time-space constraints due to a larger share of unpaid work. However, Noback and Van Dijk (2010) also found a positive significant relation between commute duration and income for women, suggesting that longer commutes do occur as long as they are worthwhile. We expect women to commute over a greater distance only if they work longer hours. An increase in commuting distance will have a negative effect on hours worked, because travel-to-work takes more time, leaving less time for work and other activities. We expect female employees who live in cities, particularly in the Randstad region which is centrally located in the Netherlands, to work more hours. Men who are part of a family with children will work fewer hours in highly urban areas, due to a higher prevalence of symmetrical household arrangements. Men with families who relocate to urban areas will reduce their hours, whereas women with families will increase them. Similarly men with families that relocate to rural areas will increase their hours and mothers will reduce them.

Job characteristics

Sector structure is also part of the local opportunity structure. Sectors differ in the prevalence of part-time jobs and flexible work schedules. Bowen and Finegan (1969) as well as Pratt and Hanson (1991) refer to 'jobs commonly held by women' and 'female-dominated sectors'. Jobs are considered to be female-dominated if over 70 percent of the workers are female. Examples of female-dominated sectors are healthcare and education, where more part-time jobs are available and flexible work hours are possible.

In addition to the possibility of working part-time, work hours may vary as a result of working in shifts or irregular work hours. This creates a possibility to exercise more flexibility at the household level in carrying out unpaid activities, for example, childcare. We therefore expect a positive effect of working irregular jobs on work hours as well as dynamics in working hours. Finally, we also take into account the size of the establishment in relation to working hours. According to Saint-Martin

and Venn (2010), part-time workers are more likely to work in smaller firms. Small establishments introduce part-time jobs out of business needs. Larger firms, however, offer more flexibility because of a larger internal labour market. Employees who work in larger firms therefore have more opportunities to switch their work hours.

We expect women who work in female-dominated industries to work fewer hours and to switch their work hours more frequently, but to what extent this also applies to men is unclear. Furthermore we expect employees who work irregular jobs, and are therefore more flexible, to work more hours and employees who change their work from regular to irregular hours to increase the number of hours they work. Finally, we expect employees working in larger firms to change their hours more frequently, and employees who work in smaller firms to work part-time more often.

3. Data and methodology

Data

To gain insight into the determinants of working hours and particularly the observed changes of working hours for Dutch men and women, a unique combination of micro-level data for the Netherlands was created. Observed changes in work hours refer to the occurrence of a change in work hours and, in the case of a change, the subsequent direction of change: an increase in hours or a decrease.

The data were compiled starting with a selection of employees with a fixed occupation who were followed from 2003 to 2005. At the heart of the analysis is the so-called Social Statistical Jobs Database (SSB-Jobs), which in essence is a matched employer-employee census. On the employee side, personal characteristics, such as age and household situation, available from the Municipality Base Registry (MBR), can be linked to the jobs. We will now continue with a short description of the data.

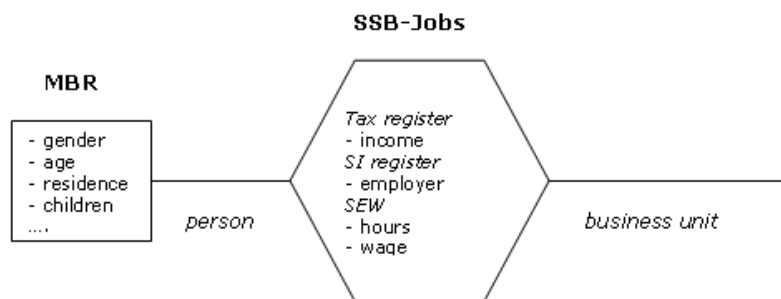
The Social Statistical Jobs Database (SSB-Jobs) is a combination of registers and surveys containing information on the jobs of all Dutch employees at the location of the branch they work in, dates they started or ended their jobs, and the business unit's main economic activity (NACE). We have information on all employees in the Netherlands in the period 2003-2005. Some indicators in this database, such as wages and hours worked, are not available for all employees, but only for a sample. This

sample is based on the Survey of Employment and Wages (SEW)¹, which is included in the SSB-Jobs. On the employer side this database comprises all business units with employees between 2003 and 2005. Hence, the SSB-Jobs is basically the core of a matched employer-employee census.

In principle, the SSB-Jobs is set up as a longitudinal database containing all employment periods of all employees in the Netherlands. This implies that there are about 10 million jobs of employees recorded for a period of a year, i.e. including jobs starting and ending within that same year. At any fixed point in time in the period under consideration, there are about 7 million employee jobs in the Netherlands. Hence there are roughly 3 million that appear and disappear within one year. This database on the number of jobs at a fixed point in time is called the cross-section database. For our analysis, the fixed point in time is set at December 31 of each year.

For the purpose of this paper we will only use the employee-side of the SSB-Jobs, which means that its matched character to employers is not fully utilized. From the employers' side we include only the industry class, firm size and firm location. Figure 3 provides a graphical description of the databases used in our analysis. The SSB-Jobs database comprises several registers, such as the tax income register and the social insurance register, the latter including all employees who are liable to pay to social insurance premiums. It also includes survey information from the SEW. For the purpose of our analysis we restricted our search to the SEW sample, because we needed information about hours worked as well as wage rates. Hence we are unable to fully benefit from the census character of the SSB-Jobs.

Figure 3 Schematic representation of MBR and SSB-Jobs databases



¹ The SEW is a survey among 80,000 firms, with a total of almost 4 million employees.

Figure 3 shows that theSSB-Jobsrepresents both the employer for whom the employee works and the employee himself or herself. From the employer side, production or balance sheet information can be linked to the SSB-Jobs. From the employee side, worker characteristics can be linked to the SSB-Jobs. Our focus lies on the analysis of the employee characteristics. These personal-characteristics are available from the Municipality Base Register (MBR). In theory, the MBR comprises information on gender, age, place of residence, marital status, number of children, and ethnicity of all 16 million inhabitants of all Dutch municipalities. However, we only have access to information for a selection of people who have a job, meaning those recorded in the SSB-Jobs data.

Because we have information on both the firmlocation and the residential location at the municipal level, we can approximate the home-work distance. Using the xy coordinates of both locations in respective municipalities we calculated the Euclidian distance between the centre points of each municipality. Although this is not an exact measure, Haandrikman and Harmsen (2008) argue that there are no serious barriers in geographical distance arising from the physical landscape and the dense infrastructure. As a consequence, people who live in the same municipality where they work will have a zero kilometre commute distance, but because Dutch municipalities are relatively very small this is not a real problem.

Despite the numerous possibilities of working with such rich micro-data, there is one serious limitation.The data do not contain information about the level of educational attainment of the employees.However, because we use hourly wage as an explanatory variable the problem of not having information about education is limited, given the high correlation between wage and education.

Finally, the MBR dataalso allow us to link people at the household level, which means that we can locate partners and children provided they have a job (SSB-Jobs). For our analysis, we focus on partners who are also included in the SEW survey, because we want to include hours of work and wages. For all men who were registered as having a partner we were able to locate 43percent of the partners, and for all women with partners we were able to locate 46percent. Because the data are gender-specific we can also identify same-sex couples. The inability to locate a partner is the result of either the partner being self-employed, unemployed or not

participating in the labour force. All three states imply that the partner is not included in the SSB-Jobs, and subsequently not in our MBR- selection.

Methodology

The aim of this study is twofold. First, we want to explore the determinants of hours worked, to obtain an idea about the factors which might also be involved in determining the observed changes in hours worked, which is the second aim. Our methodology, therefore, also consists of two parts. First, we estimate a model² to explain hours of work from worker attributes (gender, age, wage, being gay), household attributes (marital status, partner and child characteristics), residential (urbanization, commuting distance) and job characteristics (industry, type of contract, firm size). This equation reads as follows:

$$h_i = \alpha_{0,i} + \sum_j \alpha_j D_{j,i} + \sum_j \beta_j x_{j,i} + \sum_j \gamma_j x_{j,i} \cdot x_{j,i} \quad (1)$$

where h refers to hours of work and D_j are dummy variables representing socio-economic characteristics, spatial context and occupational characteristics. The variables x_j reflect characteristics measured as a continuous time variable. The final term expresses the possibility of cross-product and squared x_j variables.

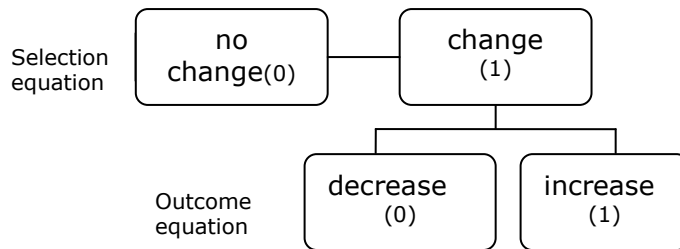
In the second part of the empirical analysis we focus on the observed changes in working hours, with particular attention to possibilities for increasing the number of hours. We confine our attention to the working hours of workers within the same job, the same occupation and employed by the same employer. As before, change in working hours within the same occupation is related to changes in personal, household, residential and firm-level characteristics. We also test the hypothesis that certain level variables, such as age, wage and being gay, also have an effect on the change in working hours.

$$\Delta h_i = \theta_{0,i} + \sum_k \theta_k D_{k,i} + \sum_k \mu_k x_{k,i} + \sum_k \eta_k \Delta x_{k,i} \quad (2)$$

² We use the statistical package STATA, which incorporates several options for robustness checks, including a correction for heterogeneity as a result of the large sample size.

Equation (2) will be specified as a bivariate probit with sample selection. This methodology is clearly described by Van de Ven and Van Praag(1981). The model, depicted in Figure 4, consists of a selection equation and an outcome equation. The selection equation determines whether people change their work hours. For those people who do change their work hours, we want to know whether they increase or decrease their hours. In order to identify the model, we include nine sector dummies in the selection equation that are not included in the outcome equation (as exclusion restrictions). As argued in Section 2, there is a relation between industrytype and flexibility in working time arrangements. Female-dominated sectors, such as health care and education, offer more variation in work hours because of part-time jobs and include companies that have a large enough internal labour market to facilitate changes in work hours. It is, however, not determined *a priori* whether this change relates to an increase in hours or a reduction.

Figure 4 Two stages in the analysis of dynamics in working hours



For the empirical analysis we will adopt a bivariate probit model with sample selection, because we assume that there is an underlying relationship that determines the utility of increasing the number of hours worked:

$$I_i^* = \chi + \delta X_i + v_i, \quad (3)$$

where I_i^* is a latent variable (i.e., it is not observed). Instead, we only see whether the individual increases or decreases their number of hours worked:

$$\begin{aligned} I_i &= 1 && \text{if } I_i^* > 0, \\ I_i &= 0 && \text{otherwise} \end{aligned} \quad (4)$$

The dependent variable of our outcome equation is therefore a dichotomous variable, which is $I_i=1$ for people who increase their working hours and $I_i=0$ for people who reduce their hours.

This dependent variable is, however, only observed for people who decide to change their working hours. We therefore model a selection equation:

$$C_i^* = \alpha + \beta X_i + u_i, \tag{5}$$

with C_i^* a latent variable capturing the utility to individuals of changing the working hours. We do not observe C_i^* directly, but observe a dichotomous variable that is $C_i=1$ for people who change their working hours and $C_i=0$ for people who do not change their hours:

$$\begin{aligned} C_i &= 1 && \text{if } C_i^* > 0, \\ C_i &= 0 && \text{otherwise} \end{aligned} \tag{6}$$

Since the error terms u_i (5) and v_i (3) might be correlated, estimation of the model in equation (4) is likely to result in biased estimates. We therefore adopt a bivariate probit with sample selection specification by using the routine “heckprob” in STATA (Baum, 2006).

4. Empirical results

Based on a combination of the SSB-Jobs with the SEW selection for hours and wages, we have information for approximately 2.5 million male and female employees³ for the period 2003-2005. Table 2 shows the average hours worked per week for the lowest and highest quartile of hourly wages of employees, further specified for the presence of young children. As expected, the average number of hours worked is lower for women than for men, and both averages are below the national average of hours worked for 2005; 39.5 for men and 28.1 for women (Statistics Netherlands,

³ The descriptive results are based on all employees in the database; the models are based on samples of approximately 50% due to data limitations in STATA.

2005). The majority of women work in part-time jobs, whereas most men work full-time.

Women with a child younger than 12 work the least number of hours, whereas their male counterparts with young children on average work the most hours a week. There appears to be no difference between the lowest and highest quartile for men. Women in the highest quartile work more hours than women in the lowest quartile. Furthermore, women without children work more hours than women with children.

Table 2 Average hours worked for the lowest and highest quartile of hourly wages of employees

	<i>Women</i>		<i>Men</i>	
	27 hours a week		37 hours a week	
	<i>Lowest quartile</i>	<i>Highest quartile</i>	<i>Lowest quartile</i>	<i>Highest quartile</i>
All				
Hours 12-20 (minor part-time)	24%	14 %	1 %	2 %
Hours 20-36 (part-time)	62 %	70 %	34 %	42 %
Hours >36 (full-time)	14 %	16 %	65 %	56 %
	Average hours	Average hours	Average hours	Average hours
All	27	29	37	37
No children	30	32	37	37
Youngest child <4	23	25	37	37
Youngest child 4-12	24	25	37	37
Youngest child >12	28	31	37	37

Let us begin with an overview of the results for the model explaining hours worked as presented in Table 3. The models are gender-specific and consist of two parts. The first part includes all employees, and the second part is a selection of employees for whom we were able to find information on the partners in SSB-Jobs and SEW (this is true for 43 percent of the women and 46 percent of the men with partners). Only partners recorded in SSB-Jobs are included, which means that we can take into account the job characteristics of the partner.

The R-squared or explained variance for the models for female work hours is much higher than that of the models for male work hours. As shown in Table 2, there is also a much greater variation in female working hours than there is for male working hours. Also the models where the job characteristics of the partner are included do not add to the explained variance, or in the case of male working hours they only add a little.

Table 3 Gender-specific results for hours worked

	All employees				Employees with matched partners			
	Women		Men		Women		Men	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
Constant	29.11	173.01	38.80	433.83	34.73	99.73	41.84	244.54
Year 2004 (reference 2003)	0.111	7.88	-0.011	-1.58	0.041	1.74	0.004	0.31
Year 2005 (reference 2003)	0.017	1.18	-0.057	-7.89	0.048	2.02	-0.042	-3.38
Age	-0.027	-4.16	0.048	11.07	-0.064	-5.00	0.001	0.13
Age squared	-0.002	-23.19	-0.001	-19.26	-0.002	-11.06	-0.001	-6.04
Ln wage	2.352	85.39	0.076	5.92	2.799	56.93	0.438	18.55
Ln wage partner					-1.326	-39.84	-0.74	-43.26
Hours worked by partner					-0.077	-30.25	-0.026	-35.52
One child (reference no children)	-1.780	-68.42	0.434	36.21	-1.599	-39.16	0.332	16.30
Two children (reference no children)	-2.864	-101.3	0.519	40.69	-2.570	-57.84	0.362	16.44
Three or more children (reference no children)	-2.485	-71.84	0.678	44.37	-2.158	-40.67	0.490	18.59
Youngest child <4 (reference no child / adult child)	-5.995	-212.7	-0.860	-64.23	-6.216	-136.1	-1.138	-49.15
Youngest child 4-12 (reference no child / adult child)	-4.289	-153.7	-0.553	-43.17	-4.497	-101.8	-0.739	-33.61
Youngest child 12-18 (reference no child / adult child)	-1.004	-34.41	-0.169	-13.20	-0.996	-21.94	-0.186	-8.75
Single	2.875	168.80	-0.332	-30.50				
Single Parent	4.318	171.89	-0.607	-20.34				
Gay	3.083	64.11	-1.004	-24.36	2.496	39.08	-0.811	-13.72
Commute distance (km)	0.013	35.70	0.002	14.48	0.017	25.88	0.002	8.79
Commute distance (km) Partner					0.001	3.64	-0.003	-10.95
Lives in Randstad region	1.627	107.81	-0.223	-27.97	1.642	62.10	-0.091	-6.68
Lives in urban municipality	0.613	43.52	-0.177	-24.35	0.482	20.61	-0.171	-13.95
Company size	3.80e-06	5.42	1.11e-05	43.19	6.31e-06	5.30	9.32e-06	22.13
Innovation and Knowledge Intensive sector	1.493	48.26	0.367	29.68	1.654	30.60	0.358	17.00
Partner works in Innovation and KI sector					-0.183	-0.50	-0.169	-6.49
Irregular shifts (reference regular work hours)	0.036	2.31	-0.384	-42.13	-0.132	-5.04	-0.374	-23.73
Irregular shifts of partner					0.019	0.63	0.172	12.79
N	1.229.564		1.302.607		421.198		456.092	
R-Squared	0.349		0.187		0.312		0.195	

Analysis includes 49 industry dummies for all employees, 98 when including the partners

Socio-economic characteristics

We find that regardless of gender, wage has a positive significant effect on hours of work. Given that wage is highly correlated to education, this implies that these results correspond to the findings of Coleman and Pencavel (1993), namely that high-skilled employees work more hours than low-skilled employees. The hourly wage of a partner has a negative relation to the hours male and female employees work. This

suggests the occurrence of household specialization, although not necessarily gender-specific, since the effect is also significant, albeit smaller for men. Similarly there is a negative significant relation between the hours worked by the partner and the working hours of both male and female employees.

As expected, the presence and age of children are important determinants of female working hours. However, being a parent also has a significant influence on male working hours. Mothers work fewer hours than women without children, regardless of the age and number of children. The impact of younger children, however, is larger than older children, suggesting a decrease in the caretaking burden as children grow older. Similarly, the transition into parenthood has a larger impact on working hours of female employees than the transition from the first child to subsequent children. For fathers we find that men work more hours when they have more children, but fewer when the children are young. With regard to household composition, we find that single men and single fathers work fewer hours, suggesting that men who are part of a family with children work more hours because of the need to earn more income for the family. Single women and single mothers, on the other hand, work more hours because they are primary earners, whereas women with partners are usually secondary earners.

In accordance with the literature on sexual orientation and labour supply, we find that gay males work significantly fewer hours and lesbian employees work significantly more hours than their heterosexual counterparts. The effect is also significant for gay couples who comprise both primary and secondary earners. Secondary earners among gay male couples result in a significant negative effect on hours worked, and primary earners among lesbian couples result in significantly more work hours.

Finally, the effect of age on the number of working hours a week is as expected: male employees work more hours mid-career and reduce their working hours towards the end of their career. For men with a recorded partner, the effect of age is only significant towards the end of their career. Female employees have the highest number of work hours when they are young, and decrease their hours before men do, due to the onset of their reproductive career.

Residential context

The relation between commuting distance and hours worked is positive and significant for both men and women. The coefficient for females is higher, which implies that they require more compensation in terms of working hours if they commute more. For the effect of partners who commute, we find a negative significant effect of the partners' commuting distance for males and for females a positive significant effect. This is not what one would expect, given that men usually have a wider potential daily prism (Hägerstrand, 1970), and women have less time available for commuting (Hanson and Pratt, 1990). However, we do not find empirical evidence for these gender-specific commute differences at the household level. Similar to the results of Noback and Van Dijk (2010), we find a positive significant effect of commuting distance for both female and male working hours.

In accordance with previous research by De Meester et al. (2007), we find that men who live in highly urban environments work fewer hours and women work more hours. The effect is greater for the Randstadregion, which is the most centralized area in the Netherlands. These relations are the same for men and women who are part of a couple, which confirms the occurrence of more symmetrical household arrangements (Karsten, 2003) in urban areas.

Job characteristics

As expected, male and female employees work more hours in larger firms. Also employees who work in high-skilled knowledge-intensive and innovative jobs work significantly more hours. For men, having a partner who works in a knowledge-intensive and innovative job has a negative significant effect on their own work hours. This effect is not significant for women.

As expected, women who work irregular hours work slightly more hours than those who work regular hours. However, this effect is completely reversed for women with a working partner. For men and males with a working partner we find that they work significantly fewer hours in an irregular job. Having a partner who works irregular hours has no significant effect on the hours worked for female employees, but it does have a positive significant effect on the work hours of male employees.

We now turn to the second part of our analysis, regarding observed changes in hours worked between the years 2003, 2004 and 2005. As depicted in Figure 4, the model consists of two parts, a selection model and an outcome model. The selection model focuses on factors that contribute to the occurrence of a change in the hours of work. The outcome model concerns the direction of the change, i.e. an expansion of hours or a reduction. Changes of less than 1 hour are not taken into account.

From Table 4 it becomes clear that women change their hours on a much larger scale than men do. There appears to be a slight tendency towards decreasing the number of hours worked rather than increasing them, especially in the case of first-time parenthood. The dynamics in the health care sector are shown, because that is the sector in which employees most frequently change their working hours.

Table 4 Descriptives for changes in hours worked

	<i>No change</i>	<i>Fewer hours</i>	<i>More hours</i>	<i>N</i>
Men	93 %	4 %	3 %	1.736.444
Women	72 %	15 %	13 %	1.639.547
First-time fathers	90 %	6 %	3 %	45.134
First-time mothers	53 %	36 %	11 %	49.358
Men in health care	89 %	6 %	6 %	156.756
Women in health care	63 %	19 %	17 %	692.594

Table 5 shows the results of the bivariate probit estimation with sample selection, i.e. the outcomes of the “heckprob” routine in STATA. As with Table 3, the models are divided into all female and male employees and employees with partners who have a job and therefore are recorded in the SSB-Jobs and SEW database.

The dependent variable in the analysis is the occurrence of a change in work hours; therefore most explanatory variables also refer to changes. Nevertheless, we also want to know which employees are more likely to change the number of hours they work, those in minor part-time jobs of 12-20 hours, those in part-time jobs of 20-36 hours, or those in full-time jobs of more than 36 hours a week.

In general we find that employees who work in minor part-time jobs change their hours significantly more than employees who work in part-time jobs. For female employees we find that women who work full-time are less inclined to change their hours than females working in part-time jobs, whereas full-time working men are

more inclined to change their hours. When they do change their hours, employees in minor part-time jobs are more likely to increase their hours, and logically full-time working employees are more likely to decrease their hours.

Table 5 Gender-specific results for changes in hours worked

Change ^A (1)/ no change ^A (0)	All employees				Employees with matched partners			
	Women		Men		Women		Men	
	Coef.	z-value	Coef.	z-value	Coef.	z-value	Coef.	z-value
Constant	-0.614	-18.08	-1.192	-30.40	-0.674	-9.91	-1.642	-20.58
Δ Year 2004-2005	0.034	14.54	0.103	32.50	0.035	8.48	0.096	17.42
Minor part-time 12-20 (reference part-time 20-36)	0.116	39.30	0.646	56.32	0.046	9.24	0.616	29.27
Full-time (reference part-time 20-36)	-0.278	-68.34	0.127	35.64	-0.292	-35.17	0.157	25.18
Age	0.051	43.07	0.015	8.84	0.045	17.90	0.017	5.02
Age squared	-0.001	-42.98	-0.002	-9.90	-0.001	-17.88	-0.002	-5.40
Ln wage	-0.737	-142.9	-0.514	-86.28	-0.769	-79.99	-0.643	-57.53
Δ wage increase € 1-5	1.301	435.36	0.757	184.45	1.343	250.29	0.772	108.82
Δ wage increase > € 5	2.219	323.30	1.534	188.72	2.240	180.57	1.561	107.65
Δ wage decrease € 1-5	1.073	358.71	0.671	158.93	1.087	208.32	0.662	90.73
Δ wage decrease > € 5	1.593	223.20	1.411	134.81	1.649	132.23	1.428	75.42
Ln wage partner					0.099	13.32	0.275	26.04
Δ Ln wage partner					0.046	4.28	0.002	0.18
Δ hours worked by partner					-0.003	-2.47	0.002	2.16
Δ birth of first child	0.373	58.82	0.174	19.36	0.338	28.73	0.223	14.61
Δ birth of first child lagged (1 year before)	0.099	16.09	0.101	10.98	0.305	2.77	0.099	7.11
Δ birth of subsequent child	0.083	12.21	0.059	6.45	0.048	4.22	0.096	6.58
Δ birth of sub. child lagged (1 year before)	0.043	7.92	0.063	8.89	0.007	0.75	0.091	8.15
Δ age youngest 3-4	0.068	9.00	0.040	3.97	0.013	1.04	0.061	3.79
Δ age youngest 12-13	0.119	15.68	-0.026	-2.46	0.111	9.16	-0.011	-0.65
Gay	-0.183	-15.11	0.128	8.37	-0.254	-14.30	0.089	3.33
Δ partner to single	-0.089	-11.06	0.032	2.82				
Δ single to partner	-0.060	-7.71	-0.013	-1.22				
Δ commute distance	0.001	2.24	0.003	1.28	0.001	1.36	-2.82e-05	-0.04
Δ commute distance partner					-0.003	-1.49	0.002	0.18
Δ move from urban to rural municipality	-0.015	-1.10	0.034	1.89	-0.052	-1.93	0.032	0.96
Δ move from rural to urban municipality	-0.051	-2.65	0.004	0.02	-0.052	-1.30	-0.104	-1.94
Δ company size	0.001	8.96	0.002	13.84	0.001	6.59	0.001	7.50
Innovation and KI sector	-0.167	-31.95	-0.345	-63.87	-0.155	-16.42	-0.303	-31.80
Innovation and KI sector partner					-0.009	-1.54	0.009	0.82
Δ regular to irregular shifts	0.173	24.65	0.105	8.07	0.143	11.13	0.068	3.02
Δ irregular to regular shifts	0.139	22.06	0.372	34.03	0.124	10.76	0.304	15.77
Partner Δ regular to irregular shifts					0.009	0.52	-0.021	-1.20
Partner Δ irregular to regular shifts					0.012	0.68	0.019	1.28

^ASelection variables for change are 9 sector dummies

Table 5 continued

	All employees				Employees with matched partners			
	Women		Men		Women		Men	
Increase (1) / decrease (0)	Coef.	z-value	Coef.	z-value	Coef.	z-value	Coef.	z-value
Constant	-0.624	-11.91	0.101	0.93	-1.725	-15.74	-0.684	-3.03
Δ Year 2004-2005	-0.014	-2.99	0.075	8.47	0.056	6.96	0.105	6.82
Minor part-time 12-20 (reference part-time 20-36)	0.342	60.51	0.497	17.64	0.318	32.71	0.539	10.38
Full-time (reference part-time 20-36)	-0.602	-64.30	-0.611	-57.17	-0.599	-30.59	-0.621	-29.88
Age	0.078	33.76	0.006	1.37	0.104	21.16	0.027	2.95
Age squared	-0.001	-34.94	-0.0002	-5.22	-0.001	-21.77	-0.0004	-4.80
Ln wage	-0.728	-67.78	-0.119	-6.51	-0.778	-40.84	-0.124	-3.19
Δ wage increase € 1-5	-0.649	-30.71	-0.821	-35.54	-0.627	-17.68	-0.833	-17.52
Δ wage increase > € 5	-0.666	-23.93	-1.013	-24.28	-0.631	-13.76	-0.967	-11.55
Δ wage decrease € 1-5	1.854	312.59	1.448	111.69	1.901	175.26	1.521	68.96
Δ wage decrease > € 5	2.439	175.46	1.666	52.81	2.498	105.67	1.791	30.23
Ln wage partner					0.198	13.69	0.093	2.89
Δ Ln wage partner					-0.176	-8.49	-0.098	-3.13
Δ hours worked partner					-0.003	-1.33	0.006	2.94
Δ birth first child	-0.943	-52.38	-0.255	-10.39	-0.953	-29.01	-0.397	-9.14
Δ birth of first child lagged (1 year before)	-0.202	-16.25	0.055	2.25	-0.219	-9.93	0.019	0.52
Δ birth of subsequent child	-0.289	-21.85	0.035	1.41	-0.297	-13.41	-0.003	-0.09
Δ birth of sub. child lagged (1 year before)	-0.034	-3.22	0.052	2.71	-0.014	-0.80	-0.017	-0.57
Δ age youngest 3-4	0.022	1.49	0.052	1.90	0.016	0.65	0.078	1.80
Δ age youngest 12-13	0.254	18.20	0.173	5.90	0.249	11.41	0.171	3.73
Gay	0.052	2.04	-0.061	-1.57	-0.081	-2.16	-0.166	-2.36
Δ partner to single	0.286	17.51	0.006	0.19				
Δ single to partner	-0.074	-4.67	-0.039	-1.41				
Δ commute distance	-0.004	-8.75	-0.003	-4.56	-0.004	-3.09	-0.003	-1.52
Δ commute distance partner					-0.001	-1.79	0.0003	0.41
Δ move from urban to rural municipality	0.064	2.37	0.105	2.21	0.191	3.55	0.177	1.95
Δ move from rural to urban municipality	0.156	4.09	-0.006	-0.09	0.211	2.70	-0.096	-0.63
Δ company size	0.002	15.00	0.0003	1.00	0.002	7.45	0.002	3.90
Innovation and KI sector	-0.003	-0.28	0.015	0.73	-0.032	-1.57	0.014	0.38
Innovation and KI sector partner					-0.032	-2.86	-0.054	-1.73
Δ regular to irregular shifts	.021	1.63	-0.122	-3.49	0.014	0.62	-0.182	-3.04
Δ irregular to regular shifts	-0.172	-14.17	-0.135	-4.89	-0.144	-6.75	-0.179	-3.53
Partner Δ regular to irregular shifts					-0.027	-0.76	-0.071	-1.49
Partner Δ irregular to regular shifts					-0.012	-0.36	-0.056	-1.32
N	1.623.753		1.735.812		495.160		546.705	
Uncensored N	461.953		119.917		155.000		40.751	
Rho	.612		.278		.658		.304	
(Prob / chi2)	(0.00)		(0.00)		(0.00)		(0.00)	

Socio-economic characteristics

We find that regardless of gender, employees with higher hourly wages, i.e. higher educated employees, are less likely to change their work hours. Having a partner with a higher wage however, increases the likelihood of changing work hours. For all employees who have changed their work hours, those with higher wages are more likely to decrease their hours. Employees who have a partner with a higher income, however, are more likely to increase their work hours.

Any change in hourly wage, increases the likelihood of changing work hours. Male and female employees who started earning more and changed their work hours are more inclined to reduce their work hours, suggesting that the income effect is larger than the substitution effect. A decrease in hourly wage, on the other hand, increases the likelihood of expanding work hours, for those employees who change their hours. Wage changes of partners only increase the likelihood of change for female employees. When a partner has experienced an increase in earning, both female and male employees are more inclined to decrease their work hours, which implies that the dominance of the income effect is also found at the household level.

Following an increase in work hours of the partner, female employees are less likely to change their work hours, whereas the reverse is true for male employees. Subsequently male employees are more likely to start working more hours after an increase in their partner's hours, while there is no significant effect on the change in work hours of female employees.

As expected, age has a positive significant effect on the likelihood of changing work hours as well as the likelihood of increasing work hours. After the completion of an individual's educational career, during which it is not uncommon to hold minor part-time jobs, hours of work increase. Towards the end of the working career, hours of work decrease in anticipation of retirement, as becomes clear from the negative significant coefficient for age squared in all models.

The birth of a child and important transitions in the age of the youngest child largely have the expected effect on the likelihood and direction of a change in work hours of both parents. In particular the transition to parenthood increases the likelihood of changing work hours and subsequently the likelihood of decreasing work hours. For male employees this is only true for the birth of the first child; subsequent children do increase the likelihood of change, but either result in an increase in hours or have no significant effect. Although transitions in the age of the

youngest child can have a positive effect on the likelihood of changing work hours, only when the youngest child reaches secondary school-going age, we find that male and female employees are more likely to increase their hours.

For women any change in the relationship status decreases the likelihood of changing work hours. Nevertheless for the female employees who have experienced a change in work hours, those who have become single again are more likely to increase their hours, whereas gaining a partner has the reverse effect and results in a decline in work hours. Men who have become single are more inclined to change their work hours, although there is no significant effect for the direction of change. With respect to household composition we also find that lesbian employees are less likely to change their hours compared to heterosexual female employees, whereas gay employees are more inclined to change their hours compared to their heterosexual counterparts. Lesbian women in general who have changed their work hours are more inclined to increase them compared to heterosexual female employees, and for all other gay employees we find a greater likelihood of decreasing work hours than their heterosexual counterparts. This implies that for lesbian women with a working partner we find the reverse effect to lesbian women with a self-employed or not working partner.

Residential context

Women who relocate from rural to urban municipalities are less likely to change their hours. Furthermore, an increase in the duration of commuting only has a positive significant effect on the opportunity to change work hours for females in general. There is no significant relation between relocating, a change in commute duration, and the likelihood of men changing their work hours.

An increase in commute duration is compensated by a reduction in work hours for the employees who have changed their hours, with the exception of men with a working partner. A change in the commute duration of the partner has no significant effect of any kind. Relocating from an urban to a rural municipality and vice versa has a positive significant effect on the likelihood of increasing work hours for female employees. For male employees the same relation is found, but only for those who have relocated from urban to rural municipalities.

Occupational effects

In general we find that employees who work in an expanding firm are more inclined to change their work hours, usually by increasing them. Working in a high-skilled innovative and knowledge-intensive sector has a negative significant effect on the likelihood of changing work hours. For the employees in that sector who do change their hours, there is no significant relation for the direction of change. A change in the type of shifts in the workplace increases the likelihood of changing work hours. A change from irregular shifts to regular work hours has a negative significant effect, which implies that employees are more inclined to decrease their hours. Since working in irregular shifts provides a certain amount of flexibility, this loss of flexibility is apparently compensated by a decrease in work hours. We do not find the reverse effect for an increase in flexibility resulting from a shift to irregular hours.

Except for women with a partner who works in a highly skilled knowledge-intensive industry, we do not find any significant effect of the job characteristics of partners.

5. Concluding remarks

High levels of employment occur simultaneously with exceptionally low average work hours in the Netherlands, and this poses some interesting questions with regard to labour utilization. Current trends show that the low average of work hours is not only the result of the majority of women working part-time; a growing number of Dutch men also work part-time. With the decline of the working-age population as a result of ageing, the increase in part-time work can be viewed as an additional threat to current welfare levels. However, low working hours are also a potential solution for solving labour market shortages due to ageing. The aim of this paper is therefore to explore the possibilities for increasing the number of work hours of those who are currently active in the labour market.

A unique micro-level dataset was compiled, consisting of employees with a fixed occupation followed from 2003 to 2005. A combination of the Social Statistical Jobs Database (SSB-Jobs) and the Municipality Base Registry (MBR) provides data on personal characteristics, household composition, residential context and job characteristics. Partners of the employees are included in the analysis if they have a job and are registered in the SSB-Jobs. The richness of the data also allowed us to

identify same-sex couples. The analysis started with an OLS regression to gain insight into the determinants of work hours. Next the dynamics in work hours were analysed by adopting a bivariate probit model with sample selection, using the “heckprob” routine in STATA.

The majority of Dutch women work in part-time jobs three or four days a week, whereas most men work full-time. As expected, we find that people work more hours when they earn more, when they work in highly skilled innovative jobs, or when they work in large firms. Women appear to benefit from the opportunity structure of highly urbanized municipalities and work more hours, whereas men who live in highly urban areas work fewer hours. This might be the result of a higher prevalence of symmetrical household arrangements in highly urban areas. Employees work fewer hours if they have children, especially when these are young. Results show several forms of gender stereotyping and household specialization; being single, being a single parent or being homosexual has a reverse effect for men as opposed to women.

Results further show that in particular people in part-time jobs of 12-20 hours are most likely to change their work hours. Men in full-time jobs are also more likely to change their work hours, whereas women in full-time jobs are less likely to change their hours. For women, a change in wage, children or job type increases the likelihood of changing their work hours. For men this is largely similar, although gay employees and those who have become single are also more likely to change their hours. Women are inclined to increase their work hours if they work in part-time jobs of 12-20 hours, when they experience a decline in wage, when the youngest child goes to secondary school and after a relocation. Finding or losing a partner affects the work hours of women, but not men, which suggests that women are more economically dependent if they are in a relationship. Men only reduce their work hours with the birth of a first child, after which further changes lead to further specialization within the household, resulting in more work hours for fathers and fewer for mothers. A change to regular shifts, implying a reduction in flexibility of work hours, leads to a reduction in work hours. Men are also more inclined to reduce their hours after a change to irregular hours, which has no significant effect for female employees.

Having a partner with higher wages increases the likelihood of changing hours, which usually translates into an increase in work hours. An increase in the wage of a partner has a negative significant effect on the direction of change, also for male employees. We do not find a significant relation for the job characteristics of partners.

The limitation of this study is that we have only considered changes at a certain point in time by constructing a cross-section dataset. The motivation for this design was that we wanted to eliminate the effect of job transitions (finding-switching-losing a job). Nevertheless, a next step is to adopt a lifecycle perspective and include all changes employees experience during their work career. A challenge in this type of study design is to disentangle the effects caused by job transitions from other changes that take place during the lifecycle, such as starting a family, (early) part-time retirement, and so on.

From a policy point of view, it is clear that female participation is relatively high in the Netherlands also because of the high prevalence of part-time jobs, which enable women to combine work with having children without leaving the labour force. When children become older the burden of caring decreases and we find that women increase their work hours. Providing high-quality, nearby childcare amenities to alleviate this burden of care at an earlier stage might motivate mothers with younger children to increase their hours. Including homosexual employees and transitions in relationship status in our analysis reveals several interesting processes of household specialization related to existing gender stereotypes. Furthermore we also find evidence that this specialization is affected by the residential context, and there is a higher prevalence of more symmetrical household arrangements in highly urbanized areas. Given that changing gender stereotypes is a difficult and slow process, continuing to invest in human capital is more realistic from a policy perspective.

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