

The Impact of Occupation and Occupational Sex Segregation on Fertility in the Netherlands

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Abstract:

There is a growing interest in looking beyond a general study of the relationship between fertility and women's labor market participation and educational attainment to more nuanced examinations of the relation between occupations and fertility. Until now, however, previous studies have mostly included measurements of female dominated educational fields rather than occupational information or relied on very broad occupational classifications. The aim of this study is to extend the field by linking detailed information about educational and occupational fields and occupational sex segregation to fertility. Using data from 2,515 female respondents from three waves of the Family Survey of the Dutch Population (FNB 1998, 2000 and 2003), a series of discrete-time event history models are estimated to analyze the transition to first and then separately in a recurrent event model, second and third births. The analyses take into account educational attainment and field of study, occupation and occupational sex segregation. Results show that occupational sex segregation and the occupation itself predicts the transition to having a child.

Introduction

The last years have witnessed a growing interest in the effect of female dominated educational and occupational fields on fertility. Examinations of the effect of the field of education on fertility have been conducted using data from Sweden (Hoem et al. 2006a/b), Norway (Lappegård & Rønsen 2005), Spain (Martin-Garcia & Baizan 2006), The Netherlands (Kalmijn 1996), Austria (Neyer & Hoem 2008) and a sample of European countries (Van Bavel 2010). The results suggest that female dominated fields

of education which focus on caring and interpersonal skills, impact fertility positively and that fields of study with little occupational specificity or a more insecure starting position in the labor market are associated the postponement of first birth. The literature has revealed two possible mechanisms in which female dominated educational and occupational fields might impact fertility. The first is the supposed presence of a female preference for caring that is reflected in the educational choice as well as in earlier and higher fertility (Hoem 2006a). The second are working conditions specific to particular occupations that might form a constraint to motherhood by imposing high opportunity costs or economic insecurity or, to the contrary, facilitate family formation.

The aim of this study is to extend the field by examining the association between educational and occupational fields and occupational sex segregation on the transition to first and higher order births. The majority of previous studies has based conclusions about differences in fertility behavior between occupational groups on information about the field of study. Because the occupational specificity and the stability of employment patterns differ widely between educational fields, we believe that it is important to take into account the whole educational and occupational trajectory of an individual in order to properly examine the relationship between fertility and occupational fields. In this study we use retrospectively collected information about the whole life course of respondents. This enables us to include the whole occupational career as well as periods of education and non-employment. An additional contribution of this study is that we explicitly take into account the proportion of women in occupational groups. Furthermore we explore the topic with more theoretical depth than previous studies thereby introducing the new concepts of qualitative and quantitative dimensions of occupational sex segregation. Using a sample of 2,515 women from a repeated cross-sectional survey (Family Survey of the Dutch Population, FNB, 1998, 2000, 2003) in the Netherlands, we estimate a series of discrete-time event history models to analyze the transition to first and then separately in a recurrent event model, second and third births.

Theoretical background

In recent years, a number of studies have examined the relation of field of education with family formation and fertility. Various studies have examined this topic in Sweden

(Hoem et al. 2006a/b), Norway (Lappegård & Rønsen 2005), Spain (Martin-Garcia & Baizan 2006), The Netherlands (Kalmijn 1996), Sweden and Austria (Neyer and Hoem 2008), and various European countries (Van Bavel 2010). Most of these studies have drawn conclusions about the potential impact of differences between occupational groups and working conditions on fertility on information about the field of study. This implies that until now, very little is known about the impact of the actual occupation women work in on fertility. Studies that take into account occupational fields, are rare and the few that do exist use broad occupational classifications consisting of a small number of occupational classes (Strand et al. 1996; Zabel 2006; Martin-Garcia 2009). Another body of research has focused exclusively on professional women, comparing family formation among high-status occupations such as lawyers, physicians and academic researchers (Cooney & Uhlenberg 1989; Stanfors 2010).

Results of previous studies on educational and occupational fields have been relatively consistent across countries, with educational and occupational fields related to caring and interpersonal skills such as professions in healthcare and teaching generally associated with lower childlessness and higher fertility (Conney & Uhlenberg 1989; Kalmijn 1996; Lappegård & Rønsen 2005; Hoem et al. 2006a; Hoem et al. 2006b; Martin-Garcia & Baizan 2006; Neyer & Hoem 2008, Stanfors 2010). This has sparked the notion that fields that are regarded as typically female or female dominated are associated with higher fertility. Indeed Van Bavel (2010) found that in a sample of 21 European countries, educational fields with a higher proportion of women enrolled in them were associated with a lower probability to postpone the first birth. Results from a Swedish sample however show that while women in female dominated occupations with stable and secure employment have very low levels of childlessness and high fertility, women with an education leading to work in female dominated occupations in the private sector with less favorable working conditions (e.g., restaurant and hotel business) have relatively high levels of childlessness and fewer children (Hoem et al. 2006a; Hoem et al. 2006b).

These results suggest that the relationship between occupational field and occupational sex segregation on fertility is more multifaceted and complex than the mechanisms proposed by previous studies. In order to expand the theoretical explanations

of previous research, we introduce a new concept that is central to our argumentation in this study, namely the difference between what we term the *qualitative* and the *quantitative* dimension of occupational sex segregation. We refer to occupations as feminine in quality when they relate to qualities or attributes that are generally associated with femininity such as caring and nurturing. Occupations that we refer to as being female dominated on the quantitative dimension on the other hand are jobs where the vast majority of workers are female, such as certain administrative and service sector jobs (i.e., secretaries, restaurant and service workers). While women also form the majority of workers in jobs that are feminine in quality, we expect that these jobs are associated with a positive effect on fertility that goes beyond the quantitative effect of being in a female dominated occupation, due to the fact that they are associated with feminine character traits and traditional gender roles (see Figure 1 for the proportion of women in occupational groups).

>>> *FIGURE 1 ABOUT HERE*<<<

The 'qualitative dimension' of occupational sex segregation

Previous research has consistently found that women employed in healthcare and teaching had higher fertility respectively lower childlessness (Lappegård & Rønsen 2005; Hoem et al. 2006a; Hoem et al. 2006b; Martin-Garcia & Baizan 2006; Neyer & Hoem 2008, Stanfors 2010). This has then been interpreted as an effect of 'typically female' occupations, thus occupations related to character traits perceived as feminine. Research into the psychological underpinnings of masculinity and femininity has described masculine traits in terms of instrumentality (independence, dominance, activity and defensiveness) and feminine traits in terms of expressivity (affiliation, nurturance and sociability, Bem 1974). Individuals differ in the extent to which they incorporate or display instrumental and expressive personality traits and even though women generally score higher on feminine traits and men score higher on masculine traits, considerable differences between women in the extent to which they possess feminine traits exist (Bem 1974). The argument that stereotypical images of feminine traits are associated with occupational choice and contribute to occupational sex segregation has been proposed by

economists and sociologists (Anker 1997; Ridgeway 1997; Charles 2005; Smyth & Steinmetz 2008) as well as psychologists (Deaux & Lewis 1983; Yoder & Schleicher 1996).

We argue here that there is a tendency of individuals who perceive having a family and children as an important goal in life to select into these sex-segregated ('typically female') occupations because they are perceived as being more compatible with family responsibilities. That perceptions about future family size are also related to gender-typical occupations has been shown by psychological research. For instance, in an experiment where college students rated the future family status and family size of different occupational groups, women in non-traditional occupations on the other hand were projected to have fewer children (Baber & Monaghan, 1988). Women in non-traditional occupations were also rated by students as being more likely to forego marriage and childbearing (Yoder & Schleicher 1996). So individuals in gender-typical occupations are perceived as being more likely to have children and place greater importance on family life, and indeed previous research has also found that women employed in gender-typical occupations have higher fertility. Evidence for this mechanism can be found in an Australian study which demonstrated that individuals with more traditional attitudes about women's role (i.e., more focused on caring) were more likely to desire to have more children (Holten et al. 2009). In a Canadian study, a higher rating on femininity was also significantly and positively correlated with parental expectations, role salience and intentions to have children (Yaremko & Lawson 2007). Also women in traditional female occupations were likewise found to have higher childbearing intentions compared to those in non-traditional occupations (O'Connell et al. 1989). In a study using data from a large number of European countries, Van Bavel (2010) found that women who studied subjects where more stereotypical gender attitudes prevailed were significantly less likely to postpone the birth of their first child compared to women who studied fields with more progressive attitudes.

Based on this previous research and our theoretical reasoning, we therefore anticipate that *women in educational and occupational fields related to stereotypical feminine qualities (such as healthcare and teaching) will have a faster transition to first and higher order births (H1).*

The quantitative dimension of occupational sex segregation

Concerning the quantitative dimension of sex segregation, we expect that occupations with a large share of women will have faster a transition to first birth because the social environment or culture will be more conducive to childbearing as more co-workers and supervisors would also have children. This has also been termed the effect of social influence or socialization (Van Bavel 2010). Also working in an occupation or industry with a higher share of women has been found increase perceived co-worker support, supportive work-family culture and decrease work-family conflict (Cook & Minotte 2008).

An additional argument why a higher share of women might be associated with a faster transition to having a child is based on the preference of women for jobs with attributes that facilitate caring responsibilities, similar to the explanations for occupational sex segregation. Women choose jobs not only on basis of the wages, but also take into account working conditions. Consequently, we can use neo-classical economic theory to argue that jobs that offer relatively low wages but so-called compensating differentials, i.e., non-monetary benefits, which are attractive for women with (young) children, are female dominated (Filer 1985). Examples of compensating differentials are flexible working hours and part-time work. Occupational sex segregation can also be explained via a related mechanism of a self-selection hypothesis. Here we argue that women anticipate withdrawing from the labor market for prolonged periods of time for parenthood and therefore choose occupations with low wage penalties upon returning (Polachek 1981). Because jobs which are associated with low wage penalties after periods of withdrawal are usually those jobs which also require relatively low human capital, women should be disproportionately represented in the lower occupational segments (Desai & White 1991). Drawing on the socialization argument and the neo-classical economical theories of compensating differentials and self-selection, we expect *a positive effect of a higher proportion of women within an occupation on the transition to first and higher order births (H2)*. It is important to note however that many female dominated jobs, especially in the lower occupational segments, might not be female dominated because women choose these jobs but because employers discriminate and sort women predominantly in a small number of occupations (Anker 1997). These

occupations are typically characterized by less favorable working conditions such as low pay, high flexibility, low status and less decision making authority (ibid.). According to arguments relying on human capital and statistical discrimination, women are sorted into these less desirable occupations because they possess less labor force experience (due to absences from the labor market for caring), lower labor force attachment and lower human capital on average (ibid.). It is important to note that discrimination implies that women in these occupations cannot easily find a job with better working conditions. In line with previous research, women in unstable jobs with irregular hours were found to have higher levels of childlessness and fewer children (Mills et al. 2005; Hoem et al. 2006a; Hoem et al. 2006b).

Some authors have argued that the positive effect of certain occupations on fertility is predominantly caused by the fact that many of these jobs are located in the public sector, which in many countries compared to the private sector, offers very stable employment and more family friendly working practices such as part-time work and extended parental leave (Hoem 2006a; Hoem 2006b). In order to test whether it is indeed the working conditions that account for the positive effect of certain occupations on fertility, we include information about sector and weekly working hours in the analysis. We expect that *working in the public sector and working part-time is associated with a faster transition to having a child (H3)*.

The Netherlands

This study examines the Netherlands, which is a particularly interesting case when female labor force participation is concerned due to the fact that high female labor force participation is combined with a high share of part-time employment (see Table 1). This means that a vast majority of women have participated in the labor market before the birth of the first child, albeit often working less than full-time. The labor force participation of women has been increasing steadily from around 20% at the beginning of the 1970's to more than 80% in 2009 (see Table A2 for yearly data on labor force participation and unemployment rates for women aged 25-54). When fertility is concerned, the Netherlands is among the countries with relatively high fertility in Europe, with the mean age at first birth is also high (see Table 1). This means that women spend a

relatively long time in the labor market between finishing education and giving birth to their first child, making the Netherlands a suitable context to study the impact of occupations on fertility.

The educational system in the Netherlands provides secondary education on three levels (pre-vocational secondary education, senior general secondary education and pre-university education). After finishing secondary education, pupils can choose a vocational or higher (professional) education depending on the level of their secondary education exam. Completing a vocational education or higher professional education qualifies students to enter the next higher level of education within the same educational field. This implies that the initial choice for a certain field of education determines the occupational outcome of students as well as the field in which a further qualification might be attained (Eurydice 2010).

>>> *TABLE 1 ABOUT HERE*<<<

Data

The data used for the analysis combines three waves of the Family Survey of the Dutch Population (FSDP), a periodic large-scale survey administered in the Netherlands. The data was collected in 1998, 2000, and 2003 (de Graaf et al. 1998; 2000; 2003). The FSDP is unique in that it registers the complete life-courses of primary respondents and their partners with respect to education, occupation, religion, mobility, and partnership formation through retrospective questioning. The surveys cover the Dutch population between age 18 and 70 with an overrepresentation of couples and is based on structured face-to-face interviews and self-completion questionnaires, which were identical for primary respondents and their cohabiting or marital partners. The sample consists of all female respondents from the three waves, which amounts to a sample size of 2,515 after excluding cases with incomplete histories and missing values (see Table 2 for descriptive statistics). We restrict our analyses to female respondents due to the fact that the mechanisms connecting educational and occupational choices and fertility differ substantially between the sexes. Information about the male partner could not be included

in the analysis because the current partner is not necessarily the same partner that was present in the household at the time when children were born.

>>> TABLE 2 ABOUT HERE<<<

Method

The transition to first birth is analyzed separately from the transition to second and third births because the decision to have a first child is assumed to be guided by different considerations than the decision to have another child (Thomson 1997; Schoen et al. 1999). Two person-month data files were created which contained a record for each month of the respondents' life. For the transition to first birth, the period under observation starts at age 15 and ends either at the date of conception of the first child¹ or is censored at the date of the interview respectively when the respondent reaches age 45, whatever happens first. The transition to second and third births is analyzed as a recurrent event. Each woman who had a first child is at risk of a second birth until the date of conception of the second child or censored at the date of the interview respectively at age 45, whatever happens first. Women who had a second child are at risk of the third birth after the second conception (see Table 2 for sample descriptive statistics).

We estimate two discrete event history models. The discrete-time hazard function is defined by $P_{ij} = \Pr(y_{ij} = 1 | y_{t-1,ij} = 0)$, which denotes the probability that individual i experiences an event during interval t (of episode j) given that no event has occurred before the start of t .

The transition to first birth is modeled using a logistic hazard model defined as $\log\left(\frac{P_{it}}{1 - P_{it}}\right) = D_{it}\alpha + x_{it}\beta$ where P_{it} is the probability of individual i experiencing an event during interval t , D_{it} is a vector of functions of the cumulative duration by interval t with coefficients α and is specified as a quadratic function $D_{it}\alpha = \alpha_0 + \alpha_1 t + \alpha_2 t^2$. x_{it}

¹ For each child the date of birth was lagged by 9 months to avoid misspecification of the order of events, and for this reason the terms birth and conception are used interchangeably in this paper

denotes a vector of covariates (time-varying or constant) with coefficients β . Robust standard errors clustered by women were estimated (Steele 2005, Mills 2010).

For the transition to second and third birth, the random effects discrete time logit model is defined as $\log\left(\frac{p_{ij}}{1-p_{ij}}\right) = D_{ij}\alpha + x_{ij}\beta + u_i$ where p_{ij} is the probability of individual i in episode j experiencing an event during interval t , D_{ij} is a vector of functions of the cumulative duration by interval t with coefficients α and is specified as a quadratic function $D_{ij}\alpha = \alpha_0 + \alpha_1 t + \alpha_2 t^2$. x_{ij} denotes a vector of covariates (time-varying or defined at the episode or individual level) with coefficients β . Including shared frailty $u_j \sim N(0, \sigma_u^2)$ allows for unobserved heterogeneity between individuals due to time-invariant omitted variables (Steele 2005, Mills 2010).

Measures

Dependent variable. The dependent variable for both analyses is the duration in months until conception of a child occurs or the respondent is censored either by the interview date or age 45.

Education. The field of highest educational attainment is recoded in eight different groups based on the original 14 categories and case numbers (see Table A1 for coding and distribution). Highest educational attainment is measured in four categories based on the International Standard Classification of Education (ISCED): primary education; lower secondary / short vocational education; upper secondary / vocational education and higher professional / tertiary education (Schneider 2009; see Table A1 for distribution).

Occupation. The occupation of respondents is measured by a recoded version of the major groups of the International Standard Classification of Occupations (ISCO-88; ILO 1990, see Table A1 for distribution). Due to the fact that some of the original groups contained too few cases, some categories were merged. Moreover information from the more detailed level of sub groups of the ISCO-88 was used to differentiate between the occupational groups that we are specifically interested in, such as teaching and health care professionals and office and shop workers (see Figure 1 for the proportion of women

per occupational group in our sample). Occupation is then included as a time-varying covariate.

Occupational characteristics. Information about the proportion of women within occupations is obtained from the SEGREGAT database of the International Labour Organization (ILO) which contains data about the number of men and women in detailed occupational groups from over 80 countries and different points in time (Anker 1998). Data for the Netherlands refers to the years 1970, 1979, 1990 and 2000 and is based on labor force surveys conducted by Statistics Netherlands (CBS). The proportion of women is matched to the occupational groups (defined by the sub-major groups of ISCO88) and time period in the analysis. This implies that information about the proportion of women within occupations varies between occupations and over decades.

For each employment episode, the weekly working hours coded in three categories indicates whether the respondent worked up to 30 hours, between 30 and 40 hours, or more than 41 hours per week. Furthermore, whether the job is located in the (semi)public sector is included as a time-varying covariate.

Institutional factors. Besides the individual and occupational characteristics, we included information about female labor force participation and the unemployment rate among women on a yearly basis (OECD 2010). This is done in order to take into account the increase in female labor force participation over the years of study. The level of female unemployment is included as an approximation of economic conditions that might influence major life decisions (Mills & Blossfeld 2005).

Control variables. The effect of age is modeled by including age and age squared as time-varying covariates in order to control for the typical bell-shaped curve of the transition into motherhood.

Furthermore birth cohort, the time-varying status of main activity (coded as fulltime homemaker, in education, employed, unemployed/disabled) and the time-varying relationship status (coded as single, cohabiting, married) are included in the model. In the analysis of the transition to second and third birth, parity and the age at the birth of the first child are also included.

Results

Results of the final models are presented in Table 3. In our first hypothesis, we expected that educational and occupational fields that were associated with feminine qualities would be related to a faster transition to parenthood (*qualitative* dimension of sex segregation). We find partial support for this hypothesis. As expected, healthcare as well as teaching professionals have a significantly faster transition in both models compared to the reference category of salespersons (see Figure 2). However the other higher occupational groups of (senior) professionals and technicians also show a faster transition to having a child. The results for the educational fields show that compared to the reference category of women without a specific educational field (i.e., those without a vocational or professional education), women who obtained a degree in the technical field or in a social/cultural subject show a lower transition to having a first child. Women with a degree in languages or art, social-cultural or personal care related fields show a lower transition to second and third birth. The negative effect of the male-dominated technical field of study fits our expectation. The results concerning the social-cultural and language and art subjects are in line with previous research by Hoem (2006a/b) showing that women with a degree in these fields of study often face difficulties to establish themselves in the labor market and therefore might be exposed to relatively long periods of uncertainty after finishing their education.

In our second hypothesis we argued that working in an occupation with a higher share of women would be associated with a faster transition to having a child (*quantitative* dimension of sex segregation). This expectation is supported. Compared to the reference category of occupational groups with less than 25% women, a higher proportion of women in an occupation are associated with a faster transition to having a first child. In the analysis of second and third births, women working in occupational groups with more than 50% of women also show a significantly faster transition to having another child.

The third and final hypothesis stated that favorable working conditions in the public sector and flexibility in the form of part-time would also be related to a faster transition to having a child. The results support the expectation that when part-time work is concerned, (women who work less than 30 hours per week) a faster transitions to first as well as higher order births than women working a regular full-time job of up to 40

weekly working hours. This is not surprising result in the Dutch context where the large majority of women, and especially mother, works in part-time jobs. Since 2000, employees even have a legal right to part-time work in all firms with more than 10 employees, which means that in the Dutch case, part-time work cannot be equated to atypical or marginal work (Plantenga 2002). Whether or not the job is located in the (semi)public sector did not predict the transition to having either a first or higher order birth. This result is surprising in the light of previous research but can be explained by the fact that the Netherlands have a strong tradition of centralized collective bargaining and corporatism, ensuring that working conditions and wages do not differ widely between firms for the same occupation or sector (Hartog 1999). Moreover, throughout the 1980s and 90s the public sector has been reduced in size substantially and has been subject to strong wage restraint (ibid.).

The two institutional indicators, female labor force participation and unemployment among women, both significantly predict the transition to first and higher order births. Higher female labor force participation is associated with a lower transition to having a child, while periods of higher female unemployment are related to a faster transition to having a child.

The control variables in the models operate in the expected direction. Higher educational attainment, being in education, unemployed or in paid work as well as being born after 1960 are associated with a lower transition to having a first child compared the reference categories of women with lower occupational attainment, who are full-time homemakers and born in the 1940s. Married and cohabiting women show a considerably faster transition to having a child compared to women without a co-residing partner. The effects for higher order birth are similar. A higher age at first birth is associated with a faster transition to having a second or third birth, while the difference between birth cohorts and being in education are not significantly related to having a higher order birth. Also the differences between the educational levels diminish, except women with a lower secondary or vocational education who show a slower transition to having another child.

>>> *TABLE 3 ABOUT HERE*<<<

>>> *FIGURE 2 ABOUT HERE*<<<

Conclusion

The aim of this study was extend the field by adding more theoretical depth and detailed educational and occupational categorizations to examine their impact on fertility. We developed and tested the theoretical notion that a qualitative and a quantitative dimension of educational and occupational sex segregation exists. This attempt to place the previous findings in a theoretical framework and derive testable hypothesis will help to enlarge the theoretical scope of research on fertility and educational and occupational fields.

Our results lend some support to the idea that the quantitative dimension of sex segregation is associated with a faster transition to having a child, but the results are more ambiguous when the qualitative dimension of sex segregation is concerned. When we look at educational fields, women in technical fields as well as those in cultural and art related subjects show a lower transition to first respectively first and higher order births compared to students with general education. Higher level occupations ((senior)professionals and technicians) and lower level occupations (farm, trade and factory workers) show a faster transition to having a child, while the category in between, which consists of office and shop workers, does not differ from the reference category of salespersons. Since these jobs are female dominated and not characterized by particularly adverse working conditions, we would have expected to see at least no difference with the higher professional occupations. In order to study the fertility behavior of women in different occupations in more depth, the use of census or registration data might be a promising strategy for future research. This would also be an opportunity to test the idea of the two dimensions of sex segregation in a more reliable way, since the low number of cases in the male dominated occupations prevented us from examining these groups in detail.

A study that tests the full implications of the *qualitative* sex segregation hypothesis would need to collect data about femininity and masculinity respectively instrumental and expressive traits and gender roles of respondents early in life in order to be able to link this information to occupational choice and fertility behavior. Unfortunately this study did not contain such information. However, we were able to reconstruct the full educational, occupational and family life history of the women by

making use of the rich retrospective information in the data. Additionally we enriched our data with information about occupational sex segregation and labor market conditions from other sources. The use of two separate models for the transition to first versus the transition to higher order births enabled us to see differences and similarities between the process of entry into parenthood and extending the family.

Table 1: Main indicators of labor market participation and fertility in the Netherlands and the European Union

	<i>The Netherlands</i>	<i>European Union (EU15)</i>
<i>Female labor force participation 25-49, 2008</i>	83.5%	74.8%
<i>Change in female labor force participation 25-49, 1999-2008</i>	+ 9.5%	+ 4.9%
<i>Share of women aged 25-49 in part-time work (< 35 hours per week)</i>	75.3%	36.6%
<i>Total Fertility Rate 2006</i>	1.72	1.59
<i>Mean age at first birth 2006¹</i>	29	28.4

Source: Eurostat

¹ Source European Demographic Data Sheet 2008

Table 2: Sample descriptive statistics

	<i>N</i>	<i>Percent</i>
Number of children		
0	652	25.9
1	372	14.8
2	1,017	40.4
3	474	18.8
Wave		
1998	882	35.1
2000	645	25.6
2003	988	39.3
Birth cohort		
1941-1950	546	21.7
1951-1960	681	27.1
1961-1970	812	32.3
>1970	476	18.9
Total	2,515	100

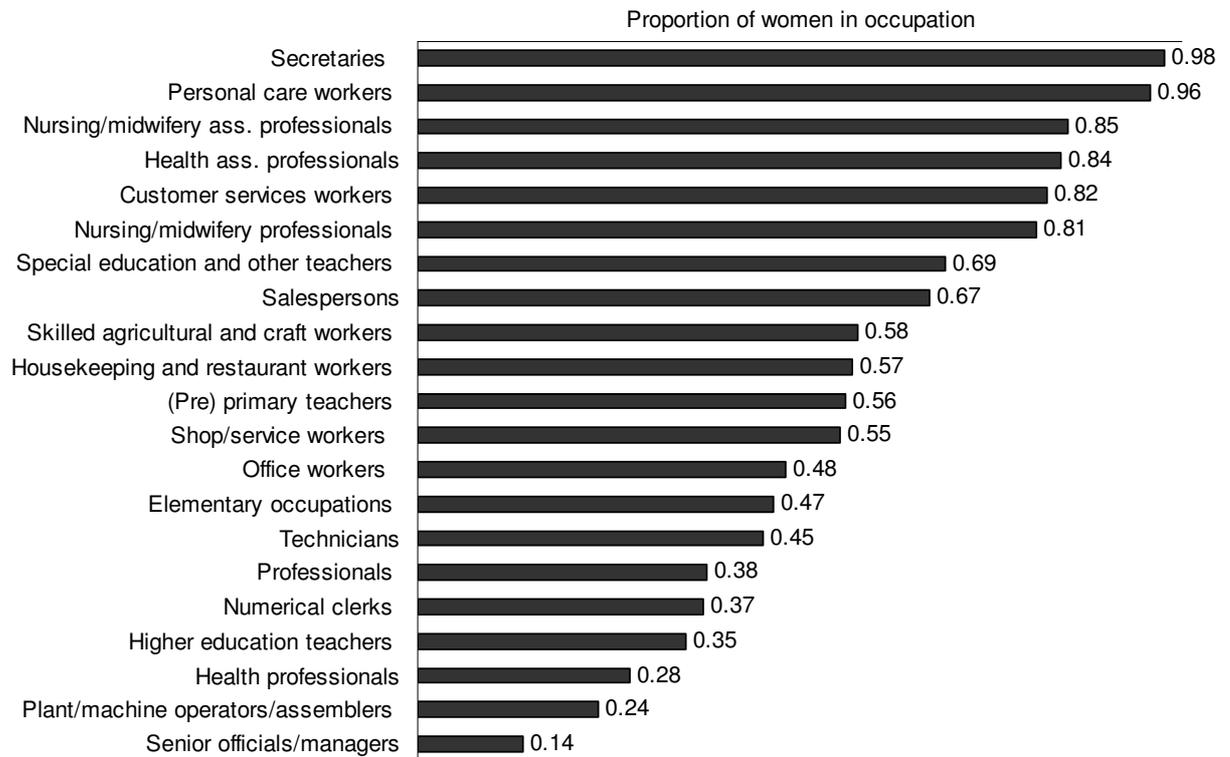


Figure 1: Proportion of women in occupational groups

Table 3: Results of (random effects) discrete time logit model of transition to first and second/third birth

Variable	Categories	1 st birth			2 nd / 3 rd birth		
		b	s.e.	P>z	b	s.e.	P>z
Age at 1st birth		n.a.			1.13	0.04	***
Parity	2 (ref)	n.a.			ref		
	3	n.a.			1.31	0.10	***
Year		2.79	0.18	***	2.14	0.06	***
Year ²		0.00	0.01		-0.10	0.01	***
Age		-2.20	0.37	***	-0.91	0.08	***
Age ²		-0.01	0.01	†	0.00	0.00	***
Birth cohort	1941-1950 (ref)	ref			ref		
	1951-1960	-0.16	0.10		0.05	0.13	
	1961-1970	-0.31	0.16	*	0.11	0.21	
	>1970	-0.60	0.23	**	-0.09	0.32	
Relationship status	Single (ref)	ref			ref		
	Cohabiting	1.49	0.09	***	0.33	0.19	†
	Married	2.68	0.08	***	1.00	0.16	***
Main activity	Housewife (ref)	ref			ref		
	In education	-1.50	0.15	***	-0.25	0.18	
	Employed	-0.86	0.15	***	-0.73	0.25	***
	Unemployed / disabled	-0.57	0.14	***	-0.21	0.14	
Highest educational attainment	Prim. school / 1 st stage of basic (ref)	ref			ref		
	Lower secondary / short vocational	-0.41	0.11	***	0.07	0.12	
	Upper secondary / vocational education	-0.60	0.12	***	0.02	0.14	
	Higher professional / tertiary education	-0.84	0.14	***	0.24	0.16	
Field of highest educational attainment	Education / teaching	0.03	0.11		-0.06	0.15	
	Languages/History/Art	-0.06	0.16		-0.48	0.22	*
	Technology / Science / Transport	-0.26	0.12	*	-0.06	0.18	
	(Para-)Medical	-0.08	0.10		-0.13	0.13	
Occupation	Economics, Administrative, Commercial	-0.07	0.08		-0.01	0.11	
	Social-cultural	-0.23	0.13	†	-0.33	0.19	†
	Personal / social care	-0.04	0.08		-0.29	0.11	**
	General education / no specific field (ref)	ref			ref		
	Not in paid work	omitted ¹			omitted ¹		
	Senior officials and managers	0.40	0.20	*	0.39	0.37	
	Professionals	0.54	0.17	***	0.91	0.29	***
<i>Health professionals (except nursing)</i>	0.77	0.25	***	-0.14	0.48		
<i>Nursing and midwifery professionals</i>	0.24	0.16		0.56	0.25	*	
<i>Higher and secondary education teachers</i>	0.57	0.25	*	1.10	0.34	***	
<i>(Pre) primary education teachers</i>	0.49	0.20	*	0.67	0.34	*	
<i>Special education and other teachers</i>	0.25	0.24		0.44	0.45		
Technicians and associate professionals	0.31	0.12	**	0.09	0.22		
<i>Health ass. professionals (except nursing)</i>	0.20	0.16		0.20	0.30		

Variable	Categories	1 st birth			2 nd / 3 rd birth		
		b	s.e.	P>z	b	s.e.	P>z
	<i>Nursing and midwifery ass. professionals</i>	-0.11	0.17		-0.10	0.29	
	Office workers	0.13	0.15		-0.15	0.29	
	<i>Secretaries</i>	0.00	0.15		-0.29	0.29	
	<i>Numerical clerks</i>	-0.04	0.31		0.04	0.61	
	<i>Customer services workers</i>	0.13	0.20		0.30	0.35	
	Shop and service workers	-0.23	0.22		0.09	0.38	
	<i>Housekeeping and restaurant services workers</i>	-0.10	0.20		-0.27	0.34	
	<i>Personal care and related workers</i>	0.26	0.14	†	-0.34	0.26	
	<i>Salespersons (ref)</i>	ref			ref		
	Skilled agricultural and craft workers	0.46	0.18	**	0.72	0.32	*
	Plant and machine operators and assemblers	0.47	0.26	†	0.42	0.48	
	Elementary occupations	0.75	0.18	***	0.60	0.27	*
% Women in	Not in paid work	omitted ¹			omitted ¹		
occupation	<=25% women (ref)	ref			ref		
	26-50% women	0.18	0.10	†	-0.17	0.17	
	51-75%	0.40	0.11	***	0.44	0.19	*
	>75% women	0.52	0.14	***	0.61	0.23	**
Weekly	Not in paid work	omitted ¹			omitted ¹		
working	< 30 h (ref)	ref			ref		
hours	31-40h	-0.15	0.07	*	-0.40	0.09	***
	>41h	0.00	0.12		0.11	0.21	
Sector	Not in paid work	omitted ¹			omitted ¹		
	Dependent / self employed (ref)	ref			ref		
	(semi) public dependent	0.03	0.06		0.09	0.11	
	Female labor force participation	-0.01	0.00	*	-0.02	0.01	*
	Unemployment rate women	0.02	0.01	*	0.07	0.01	***
	Constant	30.13	3.92	***	-9.00	1.02	***
Person-months		356,230			172,775		
Events		1,779			1,803		
N women		2,503			1,783		
Loglikelihood		-7118.1			-7577.5		
Random effect							
Var(U _{0j})		n.a.			-0.72 0.12		
σ _u		n.a.			0.70 0.04		
ρ _i		n.a.			0.13 0.01		

Source: Family Survey of the Dutch Population. calculations by authors

Note:*** p < 0.001, ** p < 0.01, * p < 0.05, † p < 0.1

¹ Information about occupation and working conditions refers only to work episodes, all non-work episodes are therefore assigned the same value as the reference category (non-work episodes can be episodes of housework, unemployment or education). This strategy is common in event-history model (Hoem 2000; Zabel 2006)

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Appendix 1: Table of exposure in person months and occurrences of events

		<i>1st birth</i>		<i>2nd / 3rd birth</i>	
		<i># Events</i>	<i>Exposure</i>	<i># Events</i>	<i>Exposure</i>
Parity	0	1,779	356,230	n.a.	n.a.
	1	n.a.	n.a.	1,374	71,417
	2	n.a.	n.a.	429	101,358
Birth cohort	1941-1950	468	68,461	522	46,392
	1951-1960	569	102,698	637	68,406
	1961-1970	605	128,812	569	51,925
	>1970	137	56,259	75	6,052
Relationship status	Single	260	247,638	62	11,831
	Cohabiting	273	45,251	106	12,435
	Married	1,246	63,341	1,635	148,509
Main activity	Housewife	226	10,437	881	70,599
	In education	72	124,962	54	4,302
	Employed	1,413	209,482	783	91,017
	Unemployed / disabled	68	11,349	85	6,857
Highest educational attainment	Prim. school / 1 st stage of basic	217	25,642	248	22,682
	Lower secondary / short vocational	679	111,483	695	71,439
	Upper secondary / vocational education	474	104,026	452	44,963
	Higher professional / tertiary education	409	115,079	408	33,691
Field of highest educational attainment	General education / no specific field	546	87,188	579	57,389
	Education / teaching	158	35,550	185	15,238
	Languages/History/Art	59	16,333	54	5,344
	Technology / Science / Transport / Communication	67	18,381	67	5,085
	(Para-)Medical	34	51,550	33	20,722
	Administrative	100	66,592	90	27,526
	Social-cultural	70	24,210	60	7,134
	Personal / social care	226	56,426	224	34,337
	Occupation	Not in paid work	366	146,748	1,020
	Senior officials and managers	34	5,810	19	2,546
	Professionals	83	12,550	63	5,911
	<i>Health professionals (except nursing)</i>	15	1,360	7	898
	<i>Nursing and midwifery professionals</i>	80	10,021	64	5,791
	<i>Tertiary, higher and secondary education teachers</i>	30	4,236	32	2,240
	<i>Primary and pre-primary education teachers</i>	53	7,648	33	3,674
	<i>Special education and other teachers</i>	26	3,698	10	1,230
	Technicians and associate professionals	237	36,925	99	12,558
	<i>Modern health associate professionals (except nursing)</i>	51	6,775	41	2,986
	<i>Nursing and midwifery associate professionals</i>	65	13,129	44	5,107
	Office workers	108	15,353	38	6,286
	<i>Secretaries and keyboard-operating clerks</i>	123	17,106	51	6,249
	<i>Numerical clerks</i>	11	1,918	4	604
	<i>Customer services workers</i>	37	5,692	17	2,570
	Service workers and shop and market sales workers	29	4,084	15	1,562
	<i>Housekeeping and restaurant services workers</i>	39	7,345	21	2,711
	<i>Personal care and related workers</i>	118	15,020	53	7,521
	<i>Models, salespersons and demonstrators</i>	138	22,133	65	7,642
	Skilled agricultural and craft and related trades workers	59	8,186	28	2,883
	Plant and machine operators and assemblers	19	2,953	8	1,341
	Elementary occupations	58	7,540	71	8,707
% Women in	Not in paid work	366	146,748	1,020	81,758

		<i>1st birth</i>		<i>2nd / 3rd birth</i>	
		<i># Events</i>	<i>Exposure</i>	<i># Events</i>	<i>Exposure</i>
occupation	<=25% women	283	45,119	157	18,538
	26-50% women	449	63,477	229	27,259
	51-75%	362	55,227	188	18,906
	>75% women	319	45,659	209	26,314
Weekly working hours	Not in paid work	366	146,748	1,020	81,758
	< 30 h	321	33,816	444	53,211
	31-40h	1,006	160,146	294	33,505
	>41h	86	15,429	43	4,118
Sector	Not in paid work	366	146,748	1,020	81,758
	Dependent / self employed	919	137,739	485	58,485
	(semi) public dependent	494	71,743	298	32,532
Time period	50s	0	1,966	-	-
	60s	238	41,488	139	4,381
	70s	415	72,582	431	23,584
	80s	503	112,776	531	44,279
	90s	552	107,086	608	67,620
	00s	71	20,332	94	32,911
Total		1,779	356,230	1,803	172,775

Appendix 2: Institutional indicators

<i>Year</i>	<i>Labor force participation rate women 25-54</i>	<i>Unemployment rate women 25-54</i>
1971 ¹	22,83	0,98
1972	24,30	1,30
1973	25,71	1,52
1974	27,15	1,70
1975	28,51	2,21
1976	29,79	2,38
1977	30,93	2,53
1978	32,02	2,82
1979	33,96	2,85
1980	36,69	3,03
1981	38,63	3,87
1982	40,57	4,93
1983	42,44	8,21
1984	43,44	8,97
1985	44,43	9,39
1986	45,26	9,68
1987	53,50	12,65
1988	55,72	12,21
1989	56,26	11,10
1990	58,47	10,35
1991	60,80	9,32
1992	61,41	7,26
1993	63,34	7,21
1994	64,47	7,85
1995	66,44	7,73
1996	66,82	7,28
1997	69,12	6,32
1998	70,16	4,81
1999	71,10	3,70
2000	72,72	3,30
2001	73,25	2,75
2002	74,61	3,17
2003	75,88	3,76

Source: OECDstat

¹1971 is the earliest available year of data. In the analysis the first respondent entered in 1956, therefore the information from 1971 is used for the period 1956 – 1971