Family formation and retreat from the labour market:

An exploration of socio-economic differentials in Belgium

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Persistent socio-economic differentials in the transition to first, second and third births

Retrospective research for Belgium, based on the 1991 and 2001 census, has focused extensively on socio-economic differentials in cohort profiles of order-specific fertility (Neels, 2006; Gadeyne, Neels and De Wachter, forthcoming). It was found that women from the 1930 birth cohorts already showed marked fertility differentials in terms of educational attainment. Higher educated women (albeit a select group at that time) realized significantly fewer first births than lower educated women (Figure 1) with not less than 30% of the higher educated women remaining ultimately childless. The vast majority of these women translated their increased investment in human capital into active labour market participation. This experience has surely contributed to the fact that higher educated women postponed their childbearing to a considerable extent. The mean age at first birth among higher educated women on the other hand generally experienced few difficulties in realizing a first birth. In comparison with their higher educated age-mates they became mothers at relatively young ages.





Source: Gadeyne, Neels and De Wachter (forthcoming)

The results further indicate, however, that the difference between higher and lower educated women runs in the opposite direction with respect to higher order births. Figure 2 depicts the parity progression ratios for second and third births according to highest level of education.

Higher educated women who did make the transition into parenthood turn out to have a second and even a third birth more frequently than lower educated women. Parity progression ratios for lower educated women are considerably lower, despite the fact they had their first child at generally younger ages. Only with respect to fourth births, lower educated women still realized higher parity progression ratios (results not shown). The result that higher educated women frequently make progressions to higher order births did not compensate at the time for the large proportion of higher educated women remaining childless. As a result, higher educated women in the older birth cohorts had lower completed fertility by the end of their reproductive life-span than their lower educated age-mates.

Figure 2 Parity progression ratios for second and third births according to highest level of education, Belgian women, 1930-1961 birth cohorts



Source: Gadeyne, Neels and De Wachter (forthcoming)

Over subsequent birth cohorts, the transition to parenthood has become increasingly frequent, but even for the most recent cohorts observed, we still notice a sizable gap between university and other educated women in the progression to a first birth. For the most recent cohort born in 1961, the proportion of university educated women who ultimately remain childless amounts to about 20%. With respect to second births, parity progression ratios remained fairly constant over time for higher educated women, whereas they dropped considerably for lower educated women. For third births, parity progression ratios dropped for all educational groups. Still, university educated women more frequently make the transition to a third birth. Progression to third births is also frequent for women with at most primary education, but the relative weight of this group has become increasingly smaller over subsequent birth cohorts.

Analyzing educational differentials in labour market attachment and its impact on childbearing behaviour

In a recent paper Neels and De Wachter (forthcoming) explored educational differentials in labour market attachment and its impact on first-time motherhood among Belgian women. The analyses revealed that educational background has a clear effect on occupational status. Higher educated women typically enjoy more stable career prospects and are less confronted with labour market insecurities. After graduating, higher educated women experience relatively few difficulties in finding their way to the labour market and the vast majority is already engaged in either full-time or part-time employment. However, among lower educated women, the share of women participating in the labour force is considerably lower. Lower educated women find themselves more often in insecure or uncertain labour market positions. Among childless women aged 22-27 years with lower educational levels, 21.7 to 28.9 per cent is unemployed, whereas the unemployment share among women with higher educational levels is less than 5.5 per cent. The same picture comes forward when comparing the labour market attachment at higher ages with lower educated women finding themselves in more insecure labour market positions compared to higher educated women.

When estimating the effect of labour market attachment on the hazard of becoming a first-time mother, Neels and De Wachter (forthcoming) found that for younger age-groups first birth hazards are highest among women actively engaged on the labour market, regardless of educational attainment. Furthermore, there were no significant differences between full-time and part-time working women, suggesting that women prefer to gain at least some foothold on the labour market before having a first child. Interestingly however, the impact of unemployment seemed to differ among women from different educational backgrounds. Although all educational groups experienced a negative effect of unemployment on the hazard of becoming a first-time mother, the impact of being unemployed seemed to affect higher educated women more severely. Also at higher ages, the negative impact of unemployment seemed to be more articulated among higher educated women. At the same time, however, higher educated women experience few difficulties in finding stable employment.

Extending the model: the transition to higher order births and the impact of male labour market attachment

In this paper the relationship between labour market attachment and childbearing behaviour will be studied in further detail. First, we expand the scope of the analysis by estimating the impact of labour market attachment on first, second and third births. The reconstruction of cohort profiles of order-specific fertility in Belgium learned that higher educated women manage to combine later ages at childbearing with more frequent transition to motherhood. Nevertheless, at the end of the reproductive life-span, higher educated women are still more often childless compared to lower educated women. At the same time, once higher educated women make the transition to motherhood, they frequently progress to a second and even third birth. Lower educated women on the other hand combine a young fertility schedule with a declining transition to motherhood. Despite their earlier transition to motherhood, they record lower parity progression ratios for second and third births compared to higher educated women. The results thus seem to suggest that the bottleneck in the transition to motherhood situates itself along first births for higher educated women, and along second and third births for lower educated women. The question we try to answer is to what extent differential labour market attachment explains differential behaviour in order-specific fertility.

Counter-cyclical fertility

According to neoclassic economic theory the decline of period total fertility rates over the last few decades is the result of rising female wages and the increased opportunity costs associated with childbearing (Becker 1981). It is argued that as long as women's labour force participation rates are rising (or remain at a high level) fertility is going to decline and will finally stabilize at a low level. Unless women are going to retire from the labour market or there is a substantial increase in the availability of childcare, theory expects a strong negative association between

female wages and fertility (Butz and Ward 1979). The theoretical underpinning of the neoclassical approach is that families try to maximize utility and that the demand for children is a function of both individual preferences and the costs associated with childbearing and childrearing. Children are considered to be normal goods and the decision to have a child is subject to both direct and indirect costs. Given the fact that the neoclassic economic reading assumes that women are the primary caregivers and men the primary providers, rising female wages are expected to mainly raise the indirect costs of childbearing, resulting in the postponement and renouncement of parenthood. It further states that the opportunity costs associated with childbearing will rise in accordance with increased investments in human capital accumulation. As such, the negative effect of female labour force participation will be more articulated among higher educated women. It can be argued that after the birth of the first child, women become more aware of the difficulties in reconciling parenthood with labour force participation (Brewester and Rindfuss 1999). As such, the negative impact of female labour force participation should become more pronounced for second and third births, especially for higher educated women.

Pro-cyclical fertility

Evidence that female labour force participation is positively related to childbearing behaviour comes from the Nordic countries. In Scandinavia high female labour force participation rates are accompanied by high levels of period fertility, and fertility seems to be positively related to the business cycle (Andersson 2000). The positive association between female labour force participation and fertility in Nordic countries has often been criticized on the grounds that it might be an artefact of the wide availability of publicly subsidized childcare arrangements. As already suggested by Butz and Wardz (1979) the availability of childcare facilities can lead to a less negative impact of female labour force participation on fertility. However some evidence in support of pro-cyclical fertility also comes from neoclassic economic models. For instance, Macunovich (1996) found that female wages are positively related to childbearing behaviour. It is argued that the positive income effect of female labour force participation increasingly outweighs substitution effects, resulting in a positive association between female employment and fertility. Moreover, given the fact that higher educated women can expect higher returns from labour force participation, it is expected that the positive income effect will be more articulated among higher educated women.

There are some good arguments in support of pro-cyclical fertility trends and the notion that positive income effects are increasingly outweighing substitution effects: men are experiencing a deteriorating position on the labour market and are increasingly confronted with spells of unemployment, society is getting more and more geared to the dual earner family strategy, the gap between women's and men's wages is declining, women will soon out-educate their male partners, and as such, women's and men economic and household roles are becoming more and more similar (Vikat 2004). In this context female labour force participation is likely to become a necessary condition for having children rather than a barrier to it. Furthermore, given the fact that higher educated women have more prospects to establish themselves on the labour market and generally find themselves in a better position to deal with the direct costs associated with childbearing, the direct income effect may play a dominant role in decisions about having a higher order birth. Higher educated women might also be employed in sectors that offer more opportunities to reconcile labour force participation and childbearing, and as such, the care for a larger family.

Unemployment and economic insecurity

Recently there has been renewed interest in the impact of unemployment and economic insecurity on childbearing behaviour. This interest was triggered by the sharp decline of period total fertility rates in Southern Europe on the one hand and Eastern Germany and several Central and Eastern-European countries on the other hand. In the first group of countries the decline in fertility has been associated with high youth unemployment, rigid labour markets, the increasing use of temporary work contracts, and the insufficient availability of publicly subsidized childcare facilities. In the second group of countries the decline of fertility has been explained by the transition from a planned to a market economy and the sharp increase in economic insecurity is picked up at the aggregate level relating unemployment cycles to period total fertility rates. A few studies have picked up the unemployment question at the individual level and the results have been mixed. (Kraval 2002). Some studies find clear negative effects of unemployment on fertility while others find positive effects.

It is important to consider that the impact of unemployment on childbearing behaviour might be contingent on the level of educational attainment. For instance, it can be argued that unemployment among higher educated women provides a strong incentive to postpone fertility. While a similar argument could be formulated for lower educated women, there are reasons to suspect that unemployment spells have a less negative or even a positive effect on fertility for women with lower levels of education. More particularly, Hechter, Friedman and Kanazawa (1994) argue that women who face limited opportunities to reduce uncertainty in life might choose the alternative career of childbearing. Kravdal (1994) further suggests that women who face limited opportunities on the labour market might opt for parenthood. Some studies have indeed found an interaction effect between educational attainment and unemployment. For instance Kreyenfeld (2009) found that the impact of objective and subjective economic insecurity yields a different fertility response depending on the woman's level of education (Kreyenfeld 2009).

Male perspective

Given the fact that the vast majority of births still take place within the context of a relationship it is rather surprising that male characteristics are hardly ever taken into account in most demographic studies. A number of possible explanations can be given for this finding. First, the lack of a male perspective is to a large extent due to a lack of available data. For example, Belgium has a longstanding tradition in organizing population censuses, but neither census contains information about the paternity history of men. Only women are asked to provide information about the birth year of the children. Second, we have become so accustomed to the male breadwinner model that we take the situation for granted. However, as already suggested above, society has undergone important changes and the gender-specific division of labour and household tasks is becoming more and more blurred. Third, the male point of view has somewhat disappeared from our thinking. In this respect Oppenheimer (1994) raises an interesting point as she claims that the absence of male data is partly the result of a disenchantment with the Easterlin hypothesis. Fourth, the decline of fertility since the mid 1960s seemed so intimately connected with the expansion of female labour force participation that this seemed to be the predominant explanation. Most theoretical underpinning at the individual level about the impact of male labour force participation on childbearing behaviour is found in the neoclassical approach (Becker 1981). Assuming a gender-specific division of household tasks, it is expected that male labour market participation will not be affected by the birth of a child. Men are perceived as the providers of the family, and hence income effects are expected to dominate substitution effects (Liefbroer and Corijn, 1999). As such, male labour force participation should have a clear positive effect on childbearing. Consequently, male unemployment should have a clear negative effect (Kravdal, 2002). Furthermore, the effect of women's labour market attachment might disappear when we control for their partner's labour force participation. However, studies from Scandinavian countries suggest that female labour force participation has an independent effect on childbearing even after control for partner characteristics.

Data and Methods

The analysis makes use of data drawn from the 1991 and 2001 Belgian census. Using a prospective research design, the paper explores (i) the correlation between educational attainment and labour market attachment, and (ii) estimates the effect of activity status on first, second and third birth hazards in the subsequent 3-year period. Information about activity status is extracted from the census of March 1st 1991. To avoid issues of state and rate dependence –a change in activity status in anticipation or resulting from entry into parenthood-the discrete-time event history model uses duration since entry into the risk set on January 1st 1992 and restricts the follow-up period to 1992-1994. In a first phase only female characteristics are taken into account. In a second phase also male partner characteristics are introduced into the model. The analyses are stratified according to age-group and highest level of education. The stratification procedure is motivated by the fact that the effect of activity status (a) differs both by age and educational attainment, and (b) further interacts with the baseline hazard function. A discrete-time event history model is used because occurrence of first, second and third births, recorded in the census of 1st October 2001, is measured in years.

Results

First births

Among childless women aged 22-27 years with lower educational levels (i.e. no education, primary and lower secondary education), 38.7 to 46.3 per cent is working full-time, 24.9 to 29.2 per cent is working part-time, and 20.7 to 27.6 per cent is unemployed (Table 1). Among women with higher levels of education (i.e. short and long type tertiary education) a substantial proportion is still enrolled in education at those ages (19.9 and 52.6 per cent respectively). After graduating however they easily find their way to the labour market and are working either on a full-time or part-time basis. Less than 6 per cent is unemployed. The educational differences in activity status are even more articulated among women aged 28-33 years. The majority of the higher educated women (i.e. short and long type tertiary education) have found their way to the labour market with 59.8 to 68.4 per cent working full-time and 24.1 to 34.7 per cent working part-time. The proportion of lower educated women (i.e. no education, primary and lower secondary education) with active labour force participation is considerably lower with 37.0 to 38.0 working full-time and 24.4 to 27.9 per cent working part-time. They are also much more likely to be unemployed with figures ranging from 19.4 to 29.2 per cent. Lower educated women find themselves in a more insecure and uncertain labour market position.

TABLE 1 ABOUT HERE

The results from the event history analyses indicate that educational differentials in activity status in turn affect entry into motherhood. Considering women aged 22-27 years (table 2), women with full-time employment have the highest hazard of having a first child in the subsequent 3 years. The hazard of entering parenthood is actually a bit higher among part-time working women but the difference is only significant for women with short type tertiary education. Compared to full-time working women, being unemployed has a clear negative effect on parenthood, regardless of educational attainment. Turning to women aged 28-33 years (table 3), the penalty of unemployment seems to be more articulated among higher educated women (i.e. short and long type tertiary education) with first hazards being 37 to 43 per cent lower compared to full-time working women. After controlling for male activity status there remains an independent effect of female activity status. Moreover, the coefficients remain quite constant. Male unemployment results in lower first birth hazards (tables 5 and 6) but its negative impact remains quite modest given the small proportion of unemployed men. With the exception of partners of lower educated women, the proportion of unemployed males lies below 6 percent (table 4).

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Second births

Educational differentials in activity status are even more articulated among women having one child. Considering women aged 22-27 years, 26.2 to 30.1 per cent of the lower educated women (i.e. no education, primary and lower secondary education) is working full-time and 25.8 to 31.2 per cent is working part-time, and 36.4 to 44.7 per cent is unemployed (table 1). Among tertiary educated women (i.e. short type and long type tertiary education) the proportion of working women is considerably higher with 41.6 to 45.3 per cent working full-time and 35.5 to 46.3 per cent is working part-time. The proportion of unemployed women is considerably lower with unemployment levels ranging from 10.2 to 11.4 per cent. Among women aged 28-33 years, educational differentials in activity status are fairly constant, but the proportion in full-time and part-time employment is somewhat higher. The low levels of unemployment among women with short and long type tertiary education (6.3 to 6.5 per cent respectively) is indicative of their strong labour market attachment, while the group of unemployed women might be a selective group that deliberately chooses to stay at home and care for the child. An alternative explanation for the low levels of unemployment among higher educated women would be that they are employed in job sectors that offer more opportunities to reconcile labour force participation and parenthood. Conversely, the higher levels of unemployment among lower educated women (25.8 to 33.9 per cent) might not only be reflective of a more strong tendency to retreat from labour force participation following childbirth. It might also reflect the more precarious labour market position of lower educated women. For instance, a temporarily break from labour force participation due to childbearing might result is an unwanted retreat from the labour market if there are less means to reconcile labour force participation and the care for a child.

Turning to the results from the event-history analyses it seems that activity status is only partly related to second birth hazards. Among women aged 22-27 years (table 7), part-time working women report the highest second birth hazards but the difference is only significant among women with short type tertiary education. Compared to full-time working women, being unemployed has a negative effect on second-time motherhood, although the results are only significant among women with higher secondary and short type tertiary education. At ages 28-33 (table 8) we find the same conclusions, but only women with short type tertiary education report significantly higher second birth hazards. Also after control for male characteristics female activity status remains only partly related to second birth hazards. Among women aged 22-27 years (table 9) second birth hazards are higher among part-time working women with higher secondary and short type tertiary education. Compared to full-time working women aged 22-27 years (table 9) second birth hazards are higher among part-time working women, unemployment has a negative impact on second birth hazards are higher are no significant for women with short type tertiary education. At ages 28-33 years (table 10) there are no significant effects of female activity status. Male unemployment results in lower second birth hazards, but the negative impact remains modest given the low incidence of male unemployment (table 4).

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Third birth hazards

Among women with 2 children we find the most articulated educational differentials in activity status (table 1). Considering women aged 22-27 years, 16.2 to 18.5 per cent of the lower educated women is working full-time, 22.6 to 28.0 is working part-time, and 50.1 to 57.0 per cent is unemployed. Among women with higher education 27.3 to 30.5 per cent is working full-time, 41.9 to 53.5 per cent is working part-time, and 17.5 to 22.8 per cent is unemployed. Turning to women aged 28 to 33 years, the strong labour market attachment of higher educated women is striking, 29.2 to 41.3 per cent is working full-time, 47.4 to 60.0 per cent is working part-time, and 9.9 to 10.2 per cent is unemployed. Even when having 2 children, higher educated women seem more strongly attached to the labour market, although with a clear preference for part-time employment. The small proportion of unemployed women suggest that this a relatively select group who deliberately stay at home to care for the child. Lower educated women on the other hand are more likely to stay at home following the birth of the second child, 22.6 to 26.7 is working full-time, 29.5 to 36.3 is working part-time, and 33.6 to 43.5 per cent is unemployed.

The results from the event history analysis suggest that full-time employment and having a third child is a difficult combination. Among women aged 22-27 years (table 11), compared to full-time working women, third birth hazards are higher among unemployed and part-time working women, regardless of educational attainment. There seems to a tendency however that the differential is more articulated among higher educated women. Considering women aged 28-33 years (table 12),

the same picture comes forward with unemployed and part-time working women recording the highest third birth hazards. Also at higher ages the positive effects of unemployment and part-time employment are more pronounced among higher educated women. The same conclusions can be drawn after control for male characteristics (table 13 and 14). Part-time employment and unemployment still have a significant positive effect on third birth hazards among women. An interesting finding however is that third birth hazards among men who live together with a lower educated woman are significantly higher compared to full-time working men. Yet again its impact remains modest given the low incidence of male unemployment (table 4).

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		Age-g	roup 22-	27 in 199	1 by educ	ation	Age-group 28-33 in 1991 by education					
		PE	LSE	HSE	HEST	HELT	PE	LSE	HSE	HEST	HELT	
Childless	In education Full-time Part-time Unemployed Otheract	2.5% 38.7% 24.9% 27.6% 6.3%	1.0% 46.3% 29.2% 20.7% 2.8%	3.0% 55.0% 27.8% 13.6% 0.7%	19.9% 48.5% 26.3% 5.3% 0.1%	52.6% 30.4% 11.8% 5.0% 0.1%	0.1% 37.0% 24.4% 29.2% 9.3%	0.1% 48.0% 27.9% 19.4% 4.6%	0.1% 59.7% 27.4% 11.6% 1.3%	0.5% 59.8% 34.7% 4.7% 0.4%	2.3% 68.4% 24.1% 5.0% 0.3%	
	Ν	15291	23361	82364	72206	33454	12891	13684	30764	25289	11669	
1 Child	In education Full-time Part-time Unemployed Otheract	0.1% 26.2% 25.8% 44.7% 3.1%	0.1% 30.1% 31.2% 36.4% 2.2%	0.2% 36.1% 35.3% 26.8% 1.6%	1.5% 41.6% 46.3% 10.2% 0.4%	7.5% 45.3% 35.5% 11.4% 0.3%	0.0% 32.5% 30.0% 33.9% 3.6%	0.0% 37.2% 34.3% 25.8% 2.6%	0.0% 44.3% 36.7% 17.5% 1.4%	0.1% 43.8% 49.1% 6.5% 0.5%	1.0% 54.0% 38.4% 6.3% 0.3%	
	Ν	9196	11407	22449	7241	885	19666	19931	33110	16360	4001	
2 Children	In education Full-time Part-time Unemployed Otheract N	0.0% 16.2% 22.6% 57.0% 4.2% 5447	0.1% 18.5% 28.0% 50.1% 3.2% 5608	0.1% 24.2% 34.2% 39.2% 2.3% 8687	0.4% 27.3% 53.5% 17.5% 1.2% 2001	4.2% 30.5% 41.9% 22.8% 0.6% 167	0.0% 22.6% 29.5% 43.5% 4.5% 20667	0.0% 26.7% 36.3% 33.6% 3.4% 21637	0.0% 31.7% 43.7% 22.6% 2.0% 38635	0.1% 29.2% 60.0% 9.9% 0.8% 23330	0.4% 41.3% 47.4% 10.2% 0.7% 5000	

Table 1: Distribution of women aged 22-33 by age-group, educational level, parity andactivity status, Belgium, 1991 census

Table 2: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on first birth hazards between in 1992-1994

	Models stratified by level of education and observation period:											
	PE		LSE		HSE		HEST	Γ	HEL	Т		
Age (in 1991, time-vary	/ing)											
Linear	0.98		1.12	***	1.21	***	1.51	***	1.83	***		
Quadratic	0.99	*	0.98	***	0.98	***	0.97	***	0.96	***		
Years since graduation	(in 1991, tir	ne-consta	ant)									
Linear	1.18	***	1.06	*	1.05	**	0.95	*	0.90	*		
Quadratic	0.99	***	0.99	**	0.99	***	1.00		1.00			
Living with a partner (in	n 1991, time	-constan	t)									
No	-		-		-		-		-			
Yes	2.41	***	2.62	***	3.21	***	4.13	***	4.26	***		
Activity Status (in 1991	, time-const	ant)										
Full-time	-		-		-		-		-			
Part-time	1.02		1.02		1.02		1.05	**	1.01			
Unemployed	0.77	***	0.83	***	0.85	***	0.71	***	0.68	***		
Other	0.36	***	0.71	*	0.84	*	1.13		0.85			
Siama u	0.47		0.54		0.63		0.62		0.62			
Sigilia_u	0.47		0.54		0.05		0.02		0.02			
N Events	4345		6651		27678		20730		5411			
N Person-periods	39750		51034		209437		152222		42328			
Deviance (-2LL)	-13115		-19019		-77690		-55708		-14821			

Table 3: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on first birth hazards between in 1992-1994

	Models stratified by level of education and observation period:												
	PE		LSE		HSE		HES	Г	HEL	Т			
Age (in 1991, time-vary	ing)												
Linear	0.81	***	0.87	**	0.99		0.97		0.97				
Quadratic	1.00		0.99		0.98	***	0.99	***	0.99	*			
Years since graduation	(in 1991, tir	ne-consta	ant)										
Linear	1.20	*	0.96		1.08	*	1.10	**	1.04				
Quadratic	0.99	*	1.00		0.99	***	0.99	***	0.99	*			
	1001 time		•)										
Living with a partner (in	1 1991, time	e-constan	t)										
Yes	1.84	***	1.79	***	2.34	***	3.23	***	3.75	***			
Activity Status (in 1991,	time-const	ant)											
Full-time	-		-		-		-		-				
Part-time	1.10		0.97		0.96		1.02		0.97				
Unemployed	0.76	***	0.70	***	0.70	***	0.63	***	0.57	***			
Other	0.34	***	0.77		0.55	***	0.61		0.81				
Sigma_u	0.01		0.80		0.95		0.62		0.49				
N Events	1772		2184		7077		7566		3780				
N Person-periods	36612		32295		83/14		66497		29770				
Deviance (-2LL)	-6802		-7729		-23241		-21994		-10470				

Table 4: Distribution of women aged 22-33 by age-group, educational level, parity andactivity status of women and their male partners, Belgium, 1991 census

		Age-	group 22-	27 in 199	1 by educ	ation	Age-	group 28-	33 in 199	1 by educ	ation
		PE	LSE	HSE	HEST	HELT	PE	LSE	HSE	HEST	HELT
	Female activity	status									
	In education										
	Full-time	0.2%	0.1%	0.2%	1.8%	8.6%	0.1%	0.0%	0.0%	0.2%	1.2%
	Part-time	45.2%	49 5%	57.1%	59.3%	61.6%	40.1%	49.2%	58.2%	57.7%	67.9%
	Unemployed	27.1%	30.5%	30.2%	34.2%	23.9%	27.8%	29.5%	29.9%	37.7%	26.6%
	Otheract	25.0%	18.5%	11.9%	4.5%	5.8%	28.1%	18.8%	10.9%	4.5%	4.2%
lless	Ν	5791	9428	32358	19074	4548	5949	6679	14548	10049	3920
Child		+									
	Iviale activity sta	1tus	02.20/	05.20/	06.29/	02 40/	00.20/	02 70/	05.20/		04.00/
	Employed	89.0%	93.3%	95.3%	96.3%	92.4%	89.2%	92.7%	95.2%	95.8%	94.8%
	Onemployed	8.3%	5.1%	3.3%	2.1%	3.5%	8.4%	5.2%	3.0%	2.9%	3.2%
	Otheract	2.7%	1.6%	1.4%	1.5%	4.1%	2.5%	2.1%	1.2%	1.3%	2.0%
	Ν	5791	9428	32358	19074	4548	5949	6679	14548	10049	3920
	Female activity	status									
	In education	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Full-time	28.7%	32.3%	37.0%	42.1%	48.3%	34.0%	38.3%	44.6%	43.5%	54.2%
	Part-time	27.3%	32.6%	36.6%	48.0%	40.0%	31.4%	35.8%	37.9%	50.1%	39.6%
	Unemployed	40.9%	32.9%	24 9%	9.5%	11 3%	31.0%	23 5%	16.1%	6.0%	5.8%
	Otheract	3.1%	2.3%	1.6%	0.4%	0.4%	3.6%	2.5%	1.4%	0.4%	0.3%
Child	Ν	7174	9406	19744	6616	758	15814	16492	28351	14497	3527
H	Male activity sta	itus									
	Employed	89.0%	92.7%	95.7%	97.6%	95.6%	92.6%	95.1%	96.7%	97.4%	97.2%
	Unemployed	8.8%	5.6%	3.4%	1.8%	2.8%	5.6%	3.4%	2.4%	2.0%	1.9%
	Otheract	2.2%	1.7%	0.9%	0.6%	1.6%	1.8%	1.4%	0.9%	0.7%	0.8%
	Ν	7174	9406	19744	6616	758	15814	16492	28351	14497	3527
	Female activity	status									
	, In education	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Full-time	17.4%	19.2%	24.8%	27.5%	31.0%	23.3%	27.0%	31.5%	29.0%	41.1%
	Part-time	23.5%	29.3%	34.9%	54.3%	43.9%	30.5%	37.1%	44.4%	60.5%	48.0%
	Unemployed	54 9%	48.2%	38.1%	17.2%	24 5%	41 7%	32.5%	22.1%	9.8%	10.1%
	Otheract	4.2%	3.3%	2.3%	1.1%	0.6%	4.5%	3.4%	2.0%	0.8%	0.7%
ildren	Ν	4686	4996	8099	1918	155	18120	19658	36169	23390	4760
5 Ch	Male activity sta	tus									
	In education	87 NV	92 0%	95 1%	98 5%	QQ 1%	92.6%	95 5%	97.6%	98 5%	08 5%
		07.070	52.0%	33.470 270/	0.00/	JO.170	52.0% E 70/	2 1 0/ 2 1 0/	J 70/	1 00/	JO.J%
	Part-time	1 7%	0.3% 1.6%	5.7% 0.9%	0.8%	1.9%	5.7% 1.7%	5.⊥‰ 1 २%	1.7% 0.6%	1.0% 0.4%	1.1% 0.5%
		1.770	1.070	0.370	0.770	0.070	1.770	1.370	0.070	0.470	0.570
	Ν	4686	4996	8099	1918	155	18120	19658	36169	23390	4760

Table 5: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on first birth hazards between in 1992-1994, Women with cohabiting male partner

	None & I	M Primary	lodels stra Low Secon	tified by /er dary	v level of edu Higher See	cation and condary	d observatio Short Te	o n period rtiary	l: Long Te	ertiary
Age (in 1991, time-va	rving)									
Linear	0.95		1.12	**	1.07	***	1.27	***	1.34	**
Quadratic	0.99		0.98	***	0.99	***	0.98	***	0.98	*
Years since graduation	n (in 1991, ti	me-consta	ant)							
Linear	1.10		0.95		0.96		0.96		0.95	
Quadratic	0.99		1.00		1.00		1.00		1.01	
Marital status (in 199	1, time-const	ant)								
Cohabiting	-		-		-		-		-	
Married	1.46	***	1.66	***	1.74	***	2.08	***	2.15	***
Activity Status of wor	men (in 1991	, time-coi	nstant)							
Full-time	-		-		-		-		-	
Part-time	0.98		1.03		0.99		1.03		1.07	
Unemployed	0.84	**	0.85	**	0.87	***	0.78	***	0.73	**
Activity Status of mar <i>Employed</i>	n (in 1991, tii -	ne-consta	unt) -		-		-		-	
Unemployed	0.76	**	0.74	**	0.82	***	0.84	*	0.82	
Educational level of p	artner (in 19	91, time-c	constant)							
Low	0.92		0.95		0.94	**	0.91	**	1.01	
Medium	-		-		-		-		-	
High	1.39	**	1.11		1.14	***	1.06	*	1.22	**
Sigma_u	0.51		0.70		0.67		0.55		0.43	
N Events	2369		3895		16479		11393		2564	
N Person-periods	13567		19477		74269		40957		8904	
Deviance (-2LL)	-6170		-9577		-38785		-23806		-5224	

Table 6: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on first birth hazards between in 1992-1994, Women with cohabiting male partner

	None & I	M Primary	Iodels strat Low Second	t ified by er dary	v level of educ Higher Sec	cation and condary	d observati Short Te	o n period rtiary	l: Long Te	ertiary
Age (in 1991, time-va	arving)									
Linear	0.82	***	0.85	**	0.92	*	0.96		0.94	
Quadratic	1.00		0.99		0.98	**	0.98	***	0.99	
Years since graduation	on (in 1991, ti	me-consta	ant)							
Linear	1.03		0.91		0.97		1.08		0.99	
Quadratic	1.00		1.00		1.00		0.99	**	1.00	
Marital status (in 199	1, time-consta	ant)								
Cohabiting	-		-		-		-		-	
Married	1.02		1.10		1.41	***	1.41	***	1.70	***
Activity Status of wo	men (in 1991	, time-coi	nstant)							
Part-time	- 1 01		-		- 0.01	*	-		- 1 02	
Unamployed	1.01		0.55		0.91		1.00		1.02	de de ale
Onempioyeu	0.78	* *	0.75		0.67	* * *	0.03	***	0.50	* * *
Activity Status of ma	n (in 1991, tir	ne-consta	ant)							
Employed	-		-		-		-		-	
Onemployed	0.89		0.72	**	0.81		0.84		0.90	
Educational level of p	partner (in 199	91, time-o	constant)							
Low	0.75	***	0.78	**	0.76	***	0.83	***	1.06	
Medium	-		-		-		-		-	
High	1.50	**	1.46	**	1.29	***	1.24	***	1.26	**
Sigma_u	0.02		0.22		-0.01		-0.64		-0.99	
N Events	1047		1312		4308		4532		2116	
N Person-periods	15563		15613		37057		23555		8557	
Deviance (-2LL)	-3673		-4330		-12679		-11019		-4608	

Table 7: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on second hazards between in 1992-1994

	Mone & Primary		lodels strat Low Second	t ified by er dary	v level of edu Higher Sec	cation and condary	l observati Short Te	on period rtiary	: Long Te	ertiary
Years since first child	(in 1991, tin	ne-varvin	g)							
Linear	0.84	***	0.94		1.12	**	1.40	***	1.11	
Quadratic	1.00		0.99	**	0.97	***	0.95	***	0.97	
Age at first child										
Linear	0.82	***	0.89	*	0.77	***	0.74	**	0.86	
Quadratic	1.01	**	1.01		1.02	***	1.02	***	1.01	
Years since graduation	n (in 1991, tii	me-const	ant)							
Linear	1.02		1.06		1.03		1.13	*	1.23	
Quadratic	1.00		0.99	*	0.99	**	0.98	**	0.97	
Living with a partner	(in 1991, tim	e-constan	nt)							
No	-		-		-		-		-	
Yes	1.36	***	1.42	***	1.93	***	2.28	***	2.99	***
Activity Status (in 199	91, time-cons	tant)								
Full-time	-		-		-		-		-	
Part-time	1.07		0.98		1.06		1.10	**	1.09	
Unemployed	1.01		0.97		0.93	*	0.81	***	0.95	
Other	0.79	*	1.15		1.04	*	1.37		0.69	
Sigma_u	0.22		0.60		0.66		0.46		0.00	
N Events	3337		4144		11059		5062		689	
N Person-periods	23370		25259		52533		14344		1423	
Deviance (-2LL)	-9309		-10969		-26230		-9031		-93!	

	Models stratified by level of education and observation period:												
	None & F	Primary	Low Secon	ver dary	Higher Sec	ondary	Short Te	rtiary	Long Te	ertiary			
Years since first child	l (in 1991, tin	ne-varvin	g)										
Linear	0.65	***	0.65	***	0.70	***	0.76	***	0.90				
Quadratic	1.01	***	1.01	***	1.00		0.99	***	0.98	***			
Age at first child													
Linear	0.79	***	0.77	***	0.79	***	0.65	***	0.59	***			
Quadratic	1.00		1.01	**	1.01	***	1.01	***	1.02	***			
Years since graduation	on (in 1991, ti	me-consta	ant)										
Linear	1.00		0.97		0.92	*	1.04		1.06				
Quadratic	1.00		1.00		1.00		0.99	**	0.99	*			
Living with a partner	(in 1991, tim	e-constan	ıt)										
No	-		-		-		-		-				
Yes	0.80	***	1.01		1.38	***	1.79	***	1.99	***			
Activity Status (in 19	91, time-cons	stant)											
Full-time	-		-		-		-		-				
Part-time	1.09		0.98		1.05		1.05	*	0.99				
Unemployed	1.04		0.97		0.95		0.92		1.03				
Other	0.99		0.75		1.06		1.12		1.40				
Sigma_u	0.07		0.55		0.42		0.02		0.01				
N Events	2925		3180		8380		7828		2611				
N Person-periods	55247		49139		87955		37743		8040				
Deviance (-2LL)	-10615		-10818		-24752		-17032		-4609				

Table 8: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on second birth hazards between in 1992-1994

Table 9: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on second birth hazards between in 1992-1994, Women with cohabiting male partner

	None & I	M Primary	lodels stra Low Secon	tified by ver dary	level of educ Higher Sec	cation and condary	d observati Short Te	on period ertiary	Long Tertiary
Years since first child	(in 1991, tin	ne-varyin	g)						
Linear	0.86	**	1.05		1.25	***	1.69	***	1.15
Quadratic	0.99		0.98	***	0.96	***	0.92	***	0.97
Age at first child									
Linear	0.79	***	0.88	*	0.72	***	0.75	*	0.65
Quadratic	1.01	**	1.01		1.02	***	1.02	**	1.02
Years since graduation	i (in 1991, ti	me-consta	ant)						
Linear	1.04		1.08		1.02		1.15	*	1.25
Quadratic	1.00		0.99	*	0.99	*	0.98	**	0.97
Marital status (in 1991	, time-const	ant)							
Cohabiting	-		-	di di di	-	di di di	-		-
Married	1.09		1.33	***	1.62	***	1.90	***	1.30
Activity Status of wom	nen (in 1991	, time-coi	nstant)						
Full-time	-		-		-		-		-
Part-time	1.06		0.99		1.08	**	1.08	*	1.07
Unemployed	1.02		1.00		1.00		0.86	*	0.96
Activity Status of man	(in 1991, tii	ne-consta	unt)						
Employed Unemployed	- 0.98		- 0.83	*	- 0.98		- 0.76	*	- 0.85
Educational level of pa	artner (in 19	91, time-c	constant)						
Low	0.94		0.83	***	0.84	***	0.80	***	0.84
Medium	-		-		-		-		-
High	1.27		1.22	*	1.35	***	1.29	***	1.23
Sigma_u	0.41		0.69		0.68		0.49		0.00
N Events	2626		3488		10003		4806		654
N Person-periods	17046		19962		44384		12921		1249
Deviance (-2LL)	-7089		-8968		-22848		-8281		-850

Table 10: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on second birth hazards between in 1992-1994, Women with cohabiting male partner

	None & F	M Primary	lodels strat Low Second	t ified by er dary	level of edu Higher Sec	cation an condary	d observatio Short Te	on period rtiary	: Long Te	ertiary
Years since first child (in 1991, tim	e-varvin	g)							
Linear	0.66	***	0.68	***	0.73	***	0.84	***	1.06	
Quadratic	1.00		1.00		1.00	*	0.98	***	0.96	***
Age at first child										
Linear	0.77	***	0.72	***	0.72	***	0.61	***	0.57	***
Quadratic	1.00		1.01	**	1.01	***	1.02	***	1.02	**
Years since graduation	(in 1991, tir	ne-consta	ant)							
Linear	1.00		0.89		0.92	*	1.04		1.01	
Quadratic	1.00		1.00		1.00		0.99	*	1.00	
Marital status (in 1991, Cohabiting	, time-consta	unt)	_		_		_		_	
Married	0.84	**	0.94		1.13	*	1.34	***	1.65	***
Activity Status of wom <i>Full-time</i>	en (in 1991, -	time-con	nstant) -		_		-		-	
Part-time	1.09		1.01		1.05		1.04		1.02	
Unemployed	1.03		0.97		0.98		0.97		1.07	
Activity Status of man Employed Unemployed	(in 1991, tin - 1.05	ne-consta	unt) - 0.97		- 0.81	*	- 0.88		- 0.97	
Educational laval of no	rtnor (in 100)1 time o	(anatant)							
Low	n 95 0 97	, ume-c	0 92		0.85	***	0.86	***	0.95	
Medium	-		-		-		-		-	
High	1.41	**	1.34	***	1.39	***	1.33	***	1.42	***
Sigma_u			0.55		0.35		0.02		0.16	
N Events N Person-periods Deviance (-2LL)	2194 42189 -7840		2638 39360 -8694		7442 72899 -21166		7299 32391 -15214		2428 6860 -4086	

Table 11: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on third birth hazards between in 1992-1994

	Models stratified by level of education and observation period: None & Primary Lower Higher Secondary Short Tertiary Long Tertia											
	None & F	rimary	Low Second	er dary	Higher Secondary	Short Te	rtiary	Long Tertiary				
Years since second ch	nild (in 1991,	time-varv	ying)									
Linear	1.07	-	1.05		1.14	2.59	**	2.90				
Quadratic	0.98	**	0.98		0.98	0.90	**	0.88				
Age at second child												
Linear	0.87		0.82		0.81	0.88		1.42				
Quadratic	1.00		1.01		1.01	1.01		0.99				
Years since graduatio	on (in 1991, tii	me-consta	ant)									
Linear	0.86		0.77	*	0.94	1.42		2.06				
Quadratic	1.01		1.01		0.99	0.94	*	0.89				
Living with a partner	(in 1991, tim	e-constan	nt)									
No	-		-		-	-		-				
Yes	0.78	**	1.00		0.88	1.14		0.74				
Activity Status (in 19	91, time-cons	tant)										
Full-time	-		-		-	-		-				
Part-time	1.27	*	1.22		1.16	1.48	*	1.91				
Unemployed	1.46	***	1.59	***	1.21 *	2.17	***	1.83				
Other	1.27		1.47		1.25	1.94		\$				
Sigma_u	0.73		0.09		0.60	1.66		1.02				
N Events	1482		1281		2169	733		84				
N Person-periods	14557		13601		23383	5066		376				
Deviance (-2LL)	-4680		-4149		-/094	-2053		-194				

Table 12: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on third birth hazards between in 1992-1994

	M None & Primary		Models stratified by le Lower Secondary		y level of education and Higher Secondary		d observation period Short Tertiary		I: Long Tertiary	
Years since second ch	ild (in 1991,	time-varv	ying)							
Linear	0.79	***	0.91	*	0.92	*	0.99		1.09	
Quadratic	1.00		0.99	*	0.99	**	0.98	***	0.96	***
Age at second child										
Linear	0.69	***	0.69	***	0.61	***	0.60	***	0.75	
Quadratic	1.01	**	1.01	**	1.02	***	1.01	***	1.01	
Years since graduation	n (in 1991, ti	me-const	ant)							
Linear	0.80	**	0.78	*	0.84	**	0.98		0.92	
Quadratic	1.01	**	1.01		1.00		0.99	*	1.00	
Living with a partner	(in 1991, tim	e-constar	ıt)							
No	-		-		-		-		-	
Tes	0.62	***	0.63	***	0.71	***	1.30	*	1.36	*
Activity Status (in 199	91, time-cons	stant)								
<i>Full-time</i>	-		-		-		-		-	
Part-time	1.11		0.98		1.11	*	1.29	***	1.28	***
Unemployed	1.33	***	1.12		1.28	***	1.55	***	1.29	**
Other	1.37	**	1.16		1.47	**	1.59	*	1.71	*
Sigma_u	0.51		0.60		1.41		1.08		0.01	
N Events	2192		1992		4409		4338		1628	
N Person-periods	59348		53064		105983		64438		12882	
Deviance (-2LL)	-9084		-8321		-17843		-15202		-4654	

	None & Primary		l odels stratified by Lower Secondary		y level of education and Higher Secondary		d observation period Short Tertiary		: Long Tertiary			
Years since second child (in 1991, time-varying)												
Linear	1.16		1.07		1.27	*	2.84	**	2.60			
Quadratic	0.97	**	0.98		0.97	*	0.89	**	0.90			
Age at second child												
Linear	0.82		0.86		0.84		0.48		0.39			
Quadratic	1.00		1.01		1.01		1.04		1.06			
Years since graduation	n (in 1991, tir	ne-const	ant)									
Linear	0.85		0.68	**	1.01		1.85	*	2.14			
Quadratic	1.01		1.02		0.98		0.92	**	0.88			
Marital status (in 1991	, time-consta	int)										
Cohabiting	- 0.70	*	-		-		-	*	-			
Marriea	0.79		0.95		0.93		5.50		1.08			
Activity Status of wom Full-time	nen (in 1991, -	time-co	nstant) -		-		-		-			
Part-time	1.27	*	1.23		1.16		1.44	*	1.86			
Unemployed	1.36	**	1.59	***	1.20	*	2.13	***	1.86			
Activity Status of man	(in 1991, tin	ne-consta	ant)									
Employed	-		-		-		-		-			
Unemployed	1.26	*	1.30	*	1.05		1.30		1.60			
Educational level of pa	artner (in 199	1. time-	constant)									
Low	1.06		0.96		0.88		0.91		0.91			
Medium	-		-		-		-		-			
High	0.69		1.55	*	1.38	**	1.90	***	1.55			
Sigma_u	0.79		1.16		1.48		1.66		1.05			
N Events	1166		1079		1928		694		82			
N Person-periods	11876		11632		21138		4791		361			
Deviance (-2LL)	-3713		-349		-6321		-1922		-189			

Table 13: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on third birth hazards between in 1992-1994, Women with cohabiting male partner

	None & Primary		lodels stratified by Lower Secondary		v level of education and Higher Secondary		d observation period Short Tertiary		: Long Tertiary				
Years since second child (in 1991, time-varying)													
Linear	0.80	***	0.94		0.95		1.01		1.24	*			
Quadratic	1.00		0.99	**	0.99	***	0.98	***	0.95	***			
Age at second child													
Linear	0.67	***	0.69	***	0.59	***	0.60	***	0.70				
Quadratic	1.01	**	1.01	**	1.02	***	1.02	***	1.01				
Years since graduation	(in 1991, ti	me-const	ant)										
Linear	0.87		0.74	**	0.81	**	0.99		0.90				
Quadratic	1.00		1.01	*	1.00		0.99	*	1.00				
Marital status (in 1991	, time-consta	ant)											
Cohabiting	-		-		-		-		-				
Married	0.50	***	0.50	***	0.53	***	0.86		1.30				
Activity Status of wom	nen (in 1991	, time-coi	nstant)										
Part-time	- 1 10		-		- 1 1 2	*	- 1 20	***	-	***			
Unamployed	1.10		0.98		1.12	*	1.20		1.20				
Onemployeu	1.33	***	1.12		1.31	***	1.54	***	1.31	**			
Activity Status of man	(in 1991, tir	ne-consta	unt)										
Employed	-		-		-		-		-				
Unemployed	1.25	*	1.60	**	1.52	**	0.81		0.62				
Educational level of pa	urtner (in 199	91, time-c	constant)										
Low	0.96		0.89		0.98		0.98		0.74	*			
Medium	-		-		-		-		-				
High	1.47	**	1.39	**	1.49	***	1.47	***	1.27	*			
Sigma_u	0.78		1.45		0.73		0.03		0.01				
N Events	1677		1683		3950		4155		1561				
N Person-periods	49150		48363		100744		61080		12144				
Deviance (-2LL)	-7049		-7045		-15964		-14436		-4409				

Table 14: Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on third birth hazards between in 1992-1994, Women with cohabiting male partner