

# Determinants of Mother's Age at First Birth in Amsterdam: Beyond Human Capital

by

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This study analyses unique, recent and representative data on the timing of first child in Amsterdam, a city in which more than half of the new born have at least one migrant parent. In addition to education and labour market hours choices among couples, this study includes the effects of migration background by distinguishing all possible combinations of own country of birth, partner's country of birth and women's parents' country of birth. First, the study shows that women in couples with similar labour market hours choices and strong investments in paid work (either fulltime, or both long part-time) time their 1<sup>st</sup> child later in life. Secondly, immigration effects on the timing of motherhood have to be separated from specific country of origin effects. Controlling for countries of birth (such as Turkey and Morocco) which represent the countries that provided cheap labour to the Dutch labour market in the 1960s and 1970s, we find an independent effect of earlier timing of the first birth for import bride grooms. This effect is stronger than the effect of ethnically endogamous couples on the timing of the first child. Furthermore, controlled for migration background and for specific country of birth such as former cheap labour providing countries, all other women originating abroad time their 1<sup>st</sup> birth later in life than Dutch women. Women who are born in "forerunner countries as regards the demographic transition" time their first child the latest, followed by women from follower countries, followed by women from trailer countries. Since all women from outside Europe face similar immigration regulations, this seems an indication of importing the "timing of fertility behaviour" of forerunner, follower and trailer countries.

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## 1 Introduction

The mean age of the mother at first birth in European countries shows a U-shaped pattern over time with the bottom in 1970 or 1975, i.e. the lowest age of the mother at giving birth to her first child occurs in all these countries around 1970 or 1975 (Gustafsson, Wetzels and Kenjoh 2002a). In the Netherlands, the mothers' age at their first birth averaged 26.5 years, in 1970 it decreased to 24.7 years. However, in 1991 it increased to 27.7 years of age and in 1997 the mean age of the mother at first birth was as high as 29 years of age where it remains in 2004 (Statistics Netherlands 2005).<sup>1</sup>

Like most other European cities the proportion of people with a recent migration background is higher in a major city like Amsterdam than in the rest of the country. As of January 2002, one third of the total “non-Dutch” population lives in the four major cities in the Netherlands, whereas only one eighth of the total population in the Netherlands lives in the four major cities (Hartog and Zorlu 2004). According to the statistical department of the administration of Amsterdam 54.5 per cent of all birth in Amsterdam in 2003 were “non-Dutch”. The pattern of timing the first child later in life is also found among female migrants in the Netherlands although the average age at giving birth to the first child is lower among most immigrant groups (Alders 2000). *Appendix Figure 1* shows that also in the city of Amsterdam postponement of giving birth in a woman's life occurred comparing the year 1993 with the year 2003.

This study aims at filling two gaps in the literature: First, it includes parents' matching on labour market hours before the birth of the first child in the analyses of women's timing of the birth of the first child. Secondly, it includes the effect of migration on the timing of first birth in a woman's life, by distinguishing effects of eight types of migration background of the parents to be, specific effects of country of birth of the parents to be and some cultural indicators of assimilation to the host country.

Within the economic approach the optimal woman's age at first birth is the outcome of a plan for investments in human capital and a labour market career (Cigno and Ermisch (1989), Cigno (1991 chapter 8), Gustafson and Wetzels (2000), Gustafsson (2001)). Seeing this decision from a traditional point of view, a man's career planning and ability to provide financially for a family would not give different results for optimal timing of the first child of his wife. However, for his wife who in most cases has to carry most of the time costs of children, the career planning motive can lead her to postpone first birth beyond the point that would suit a husband who is two years older and more financially secure. For a woman it may be optimal to delay motherhood until her opportunity costs of child care in terms of her career have decreased, leading her to first complete her education and establish herself on the job

market. Formally the woman's timing of first birth depends on the opportunity costs of time plus the human capital cost. The opportunity cost of time consists of wage multiplied by periods not worked in the labour market due to child care requirements. The capital cost consists of human capital investments forgone multiplied by the forgone returns to human capital investments due to child's presence. The optimal timing then maximizes lifetime earnings or equivalently minimizes the opportunity cost plus the capital cost (Cigno 1991).<sup>2</sup>

In this study, we analyse the effect of matching on investment in labour market hours of the parents to be<sup>3</sup> on the woman's age at giving birth to the first child. This is particularly interesting in the Dutch setting of 2005. The Netherlands is considered a part time economy, since the percentage of the paid labour force working part-time<sup>4</sup> is 36.14 in 2004, for female workers it is 66.87 in 2004, for male workers it is 16.01 in 2004.<sup>5</sup> There is also a structural demand for part-timers in general and especially at higher job levels in the Netherlands, which is greater than in other European countries. Moreover, in the Netherlands employers consider part-time workers to be as committed as full-time workers (Kalleberg and Reynolds 2003). However, a recent study revealed that part-time workers are less likely to be promoted (Russo and Hassink 2005). During the 1990s public policies on families were aimed at women and men to take parental leave and work long part time in order to share unpaid care and paid work more equally in the household and keep both parents in the labour markets when children are young.<sup>6</sup> We expect that the timing of the first birth in a woman's life for women who wish their partner to contribute to the production of the public household good "welfare of children" equally in financial inputs as well as time inputs, to arrange for equal shares of labour market hours in the household before the birth of the first child. Since, this arrangement may take time (a legal option needs to become a feasible option<sup>7</sup>), we expect women in these couples to time their 1<sup>st</sup> child later. In contrast, the couples who invest unequally in employment hours will time their first birth earlier, unless the woman is the bread winner *ceteris paribus*.

The second aim of this study is to analyze the outcomes of matching on migration background on the timing of the first birth in a woman's life in Amsterdam.<sup>8</sup> First, we analyse the effects of migration on the timing of first birth independent of country of origin by gender, generation and whether the couple is endogamous or exogamous as regards migration background. We define migration background by country of birth of the woman (Dutch/non-Dutch), her partner (Dutch/non-Dutch) and her parents (Dutch/non-Dutch) in comparison with the Dutch couple with Dutch born parents.

Secondly, we analyse effects of the specific country of origin. We expect two independent effects of specific country of origin on the timing of first birth in a woman's life. The first effect is that migration from non-European countries leads to more time consuming migration

regulations than migration from EU-countries, which may then lead to a later age at giving birth to the first child in Amsterdam *ceteris paribus*<sup>9</sup>; To capture the first effect we distinguish between persons migrating from Europe and persons from outside Europe. If immigration laws are gender neutral and practiced as neutral there is no gender effect to be expected from the first effect of specific country of origin. The second independent effect comes from norms towards the age at entering motherhood in the specific country of origin. A Dutch born woman with Dutch born parents and a Dutch born partner have most likely the norm towards the oldest mothers at first birth<sup>10</sup>. To capture the second effect we categorise countries of origin by the timing of their demographic transition (Reher 2004).

In addition, for some countries of origin there is a longer history of migration initiated by pull factors of migration such as for labour immigrants from Morocco, Turkey and Dutch citizens from former Dutch territories over seas, Surinam, which leads us to expect an effect from generation of migration for persons who originate from these countries,<sup>11</sup> since quite a number of studies have described and analysed the differences between the population migrating from these countries (e.g. Lievens 1999, Reniers 1999). Finally we include some variables which may in addition to education, matching on labour market hours and migration background give an indication of the effects of assimilation to the host country.

The results of this study will be useful to better understand postponement of the first birth in a woman's life. This will hopefully contribute to 1) the prediction of fertility trends<sup>12</sup>, 2) the analysis of the characteristics of women living in city arrangements; 3) the design of public policies that make it less costly for people to form families if ageing of the population is of concern, and 4) the analysis of the labour market effects on the timing of the first child.

The outline of the paper is as follows. Section 2 presents theoretical considerations on the timing of first birth. In section 3 we explain our empirical model of the hypothesised effects on the timing of first birth. Our research purposes require a rich representative data set with detailed information on a large number of observations. The Survey on Amsterdam Born Children and their Development (ABCD-study) in 2003/2004 meets our requirements excellently. Section 4 presents these data. Section 5 presents and discusses the results. Section 6 concludes by summarizing the main findings.

## **2 Theoretical Considerations, Earlier Work and This Study**

### *2.1 Education and Labour market Investments*

In spite of the pioneering work on decisions about family size (Becker, 1973, Willis, 1973) and later developments in dynamic modelling of these decisions there has been little economic research on birth timing. While Cigno (1991) spends a whole chapter on this issue a

more recent textbook, Ermisch (2003) ignores timing of maternity altogether in spite of the fact that he made an early contribution himself (Cigno and Ermisch, 1989). The chapter in Cigno (1991) however does not specifically deal with age at first birth, it focuses is on the timing of all births during lifetime.<sup>13</sup> In the Handbook of Population and Family Economics, Hotz, Klerman and Willis (1997) devote one and a half pages to the timing of first birth and give two motives for the timing of first birth: the consumption smoothing motive and the woman's career planning motive. The consumption-smoothing motive implies that children should be had at a point of time when household income is at its highest so that other consumption needs can also be fitted into the budget. For the consumption smoothing motive, therefore, traditionally, husband's income profile matters<sup>14</sup> and since income profiles are typically increasing with age, rationality calls for the later timing of parenthood. Generally, the career-planning motive also calls for a postponement of birth. If a woman aspires to a labour market career, she will have to finish education and become established in a job before she starts a family which also leads to postponement of first birth.<sup>15</sup>

Empirical work along these theoretical lines, mostly analysing US data (Kasarda et al 1986, Rindfuss et al 1980, Bloom & Trussell 1984, Blackburn et al 1993, Marini 1984, Teachman & Polonko 1988, Butz & Ward 1979), Canada (De Wit & Rajulton 1991), and some European countries was reviewed in Kravdal (1994). Gustafsson and Kalwij (2005) and Gustafsson and Kenjoh (2005) review more recent studies. *Table 1* summarizes European based studies All reviewed studies find a positive effect of women's education level on the timing of the birth of her first child. Furthermore, the positive effect of education level on the timing of the first child was found to be the strongest in the Netherlands and the U.K. in a four country comparative study using household panel data from Britain, Germany, the Netherlands and Sweden (Gustafsson, Kenjoh and Wetzels 2002a).<sup>16</sup>

Insert Table 1 here

Other studies found that the labour market attachment is a determinant of marriage and that giving birth to children follows soon after. Ahn and Mira (2001) find that the most important variable to determine marriage among Spanish men is that they had a job the previous year. Once they marry fatherhood follows very quickly. De la Rica and Iza (2004) find that the widespread use of fixed-term employment contracts is one of the explanations for the low fertility rate in Spain. They also find that married women are less likely to have a child next year if they have a fixed-term job contract in comparison to if they have a regular open-ended job contract. Amuedo-Dorantes and Kimmel (2004) ask whether it pays to postpone maternity. They find, that college educated women who had their first child after they turned 30, earn more than similarly educated women, who had their first child before they were 30.

Whereas previous research has analysed explanations for matching on characteristics within couples we analyse the outcome of matching as a determinant of first birth timing in a woman's life in this study. Following and building on the reasoning developed in previous research returns from marriage can result at least partially from the joint consumption of household public goods (Lam 1988), therefore it is optimal for couples to sort in the marriage market according to their similar demands for these goods. Previous literature assumes that preferences for household public goods are related to people's education levels. For example, education is related to preferences over how to spend leisure time together and political views. Because joint vacations and political conversations can be considered household public goods, it is also efficient for couples to sort in the marriage market according to their demands for these public goods and, consequently, to sort by education level. There is strong evidence of positive assortative matching on education (Mare 1991<sup>17</sup>, Blossfeld and Timm 2003).

Furthermore, Becker (1973) predicts that there would be negative assortative matching on wages, because a woman who spends much time in market work earns a higher wage because of on the job investment in human capital, but this time use limits her use in household production and investing in household human capital. The production of the household public good<sup>18</sup> (such as the welfare of the joint children, a comfortable and beautiful home, pleasant vacation trips, and enjoying a good meal together) tends therefore to negative assortative matching because of a possible return to division of work.

Lam (1988) introduces utility from a household public good as well as the production of the household public good into this model and shows that the utility from the public good tends to lead to positive assortative matching on wages because persons with similar incomes share similar preferences in consumption. In this way there are two opposing effects and if the consumption outweighs the returns to division of work there will be positive assortative matching on wages. Furthermore, gains to division of work decrease if good market substitutes can be found like buying home cleaning services, catering and restaurant meals and childcare.

We argue in this paper that a similar reasoning may apply to labour market investments of parents to be in the Netherlands, and that the timing of birth in a woman's life depends on this. Positive assortative matching on working hours indicating joint career paths may lead to later first birth timing in the woman's life since human capital investment early in life pay off, child care facilities have to be organised and are in international comparison expensive, reduction of working hours for both parents to be have to be negotiated/implemented in organisations where parents to be work; negative assortative matching indicating specialisation towards paid market work and unpaid care work may lead to earlier birth if the husband is the primary earner. On the other hand, if the woman is the primary earner she may

still delay the birth of the first child, because her career, being pregnant, maybe change working hours has to be negotiated with the employer and the perception of career damage may lead to time investments in careful manoeuvring having a child and a career. There is no study known to us that takes this perspective.

## *2.2 Immigration background*

The second aim of this study is to analyze the effects of migration background of a woman and her partner on the timing of the first child in her life. Andersson and Scott (2004) has analyzed the effect of labour attachment and the timing of first birth in both immigrant women's and native women's life in Sweden. Andersson and Scott (2004) find that practically all country groups of women exhibit a first birth pattern where women who are not established in the labour market also have a reduced propensity to become a mother. For those who are established they find a positive relation between the level of annual earned income and the propensity to have a child. They also find that foreign born women appear reluctant to become mothers when they are dependent on social welfare, while no such inhibiting effect is evident for Swedish born population. This interesting study uses a very rich dataset, but the data did not provide any information on partner's characteristics. Furthermore, the Swedish social democratic welfare state differs considerable for the Dutch Christian democratic welfare state.<sup>19</sup> Dutch mothers do not have the same financial incentives to become established in a high earning job before giving birth to the first child since many jobs only provide the EU minimum of 16 weeks pregnancy leave which is regarded as sick leave and 100% paid, whereas Swedish women receive up to 15 months of paid leave of which 12 months 75% of their earnings. Furthermore, Dutch women and men have opportunities to work part-time but they have to arrange for childcare when the child is three months old onwards.

There is not a single paper known to us that has analysed the matching on migration background on the timing of first birth in a woman's life. Previous literature examines matching on migration background and the trade-off between matching on migration background and matching on education. Because so many goods jointly consumed in the household are related to migration background, it is efficient for immigrants to marry someone of the same migration background. Language, cuisine, holiday celebrations, and other family traditions are some examples of household public goods related to migration background. Theoretical and empirical studies have analysed specific groups such as second generation immigrants (Furtado 2004), marriage migration (Çelikaksoy et al 2003). Furtado (2004) develops a theoretical framework building on models developed by Becker (1981) and

Lam (1988) to describe interethnic marriage decisions and to specifically analyze the effect of education on these decisions.<sup>20</sup> In her study second generation immigrants do exhibit marked preferences for marrying within their migration background, but these preferences are not related to education.<sup>21</sup> Other studies that analyse the issue of educational homogamy in the case of interethnic marriages find support for positive assortative matching by education (Lievens, 1999, Qian, 1999, Qian et al., 2001, Kalmijn, 1993). Qian (1999) investigates whether interethnic marriage in the US may be explained by immigrants exchanging high education for a white spouse, and he rejects this hypothesis. Çelikaksoy et al (2003) addressed matching on migration background by analysing marriage migration in Denmark<sup>22</sup>

Çelikaksoy et al. (2003) shows that, for men, importing a partner reduces the probability of obtaining a well-educated spouse, which is interpreted as support to the exchange hypothesis, which would be consistent with a situation where traditional, unspoiled norms of the imported woman is traded against education.<sup>23</sup> Bergstrom and Bagnoli (1993) argue that, especially in traditional societies where males are the main breadwinners, males' economic capabilities are revealed only gradually after some time in the workforce. Following the same line of reason, we may expect immigrants, who expect to do well in the labour market and in the marriage market, to marry at a later age when they reveal their potential labour market success, such as high education. On the other hand, it may be the case that some immigrants, from early ages, expect to marry a marriage migrant. Those may not have an incentive to invest in themselves to catch a good spouse as, living in The Netherlands or being a Dutch citizen may be a sufficient characteristic to attract a spouse from the country of origin. We may expect these immigrants to marry at a relatively early age and have children early. In the case of females who marry marriage migrants, we expect a specialization of tasks by gender, where the females take on household responsibilities, which in turn give them less incentives and less time to invest in their career. Whereas, in the case of males, we expect them to drop out of the educational system to support their new coming wives who have very low chances and incentives for finding employment in the Dutch labour market. However, the matching on marriage markets of different cultures require new modelling compared to the standard search and matching modeling (Çelikaksoy et al 2003).

### *2.2.1 Migration Background in this study*

In this study we take the outcome of the matching on migration background function as exogenous in the analysis of the timing of the first birth and independent of education and labor market status. We first consider for simplicity three possible outcomes of matching on the marriage market: Dutch-Non Dutch mixed couples, Dutch endogamous couples and Non-Dutch endogamous couples. Search costs related to migration, such as time consuming immigration procedures, are higher for mixed and non-Dutch endogamous couples than for

Dutch couples and may therefore *ceteris paribus* affect the timing of the birth of the first child to be later. In addition, gender and generation may affect the women's timing of the first birth.

For those women/couples with a migration background (the woman and or her partner is born in another country than the Netherlands, the parent(s) of the person is born abroad), we expect a specific country of origin effect. First, migration from outside Europe is more time consuming. Secondly, since cultural norms regarding the age at first birth differ between countries of origin we include the effects of the specific country of origin by using the typology of the timing of demographic transition by Reher (2004). Reher (2004) uses a database by the United Nations that includes 145 countries which he organised into the following categories: The *forerunners* are those countries where the onset of fertility decline began before 1935. For the *followers* it began between 1950 and 1964, for the *trailers* it took place between 1965 and 1979, and for the *latecomers* fertility decline only began after 1980. The gap between fertility and mortality decline is short for the *forerunners* (5-10 years), considerably longer for *followers* and *trailers* (30 years), and longest for *latecomers* (45 years). Once the decline in vital rates sets in, it appears to be much faster for those countries experiencing demographic transition more recently and considerably slower for the *forerunners*.

Reher (2004) shows that age specific fertility rates declined at older age categories. However, women in forerunner countries have never been so old in history when giving birth to the first child. It may be so, that once the taste for family size is quite low and mortality is low, women start to think more about when to have the children controlling for education and labour market participation, following this reasoning women originating from forerunner countries have a taste for the oldest age at giving birth to the first child and women from countries that are followers, trailers, and latecomers have a taste for earlier birth in descending order *ceteris paribus*.

Furthermore, most women originating from Morocco and Turkey came to the Netherlands, because members of their family or their region came to the Netherlands as a migrant worker in the 1960s and 1970s. The effect of age norms coincides here with the effect of generation of migration. Similarly but as regards a different pull factor, being part of the Dutch colonial territory, this reasoning applies for Surinamese women.

This analysis aims to distinguish between these effects of immigration *sec* (is there any effect of a background in immigration within the couple), migration costs, age norms as regards giving birth to the first child by groups of countries that represent different histories of demographic transition) and generation of migration for guest workers and descendents of

colonized people by the Dutch for the purpose of understanding postponement of the first birth.

### 2.3 Other Cultural Values

A woman's decision to participate in paid work during pregnancy may also be affected by a focus on motherhood, which may be partly expressed by the intended breastfeeding period. If this period matches with the Dutch pregnancy leave and maternity leave period which is the agreed minimum as indicated in the EC directive in 1996, then participation in the labour force may be more feasible.<sup>24</sup> Nevertheless, we analyse women's labour supply before giving birth and therefore we expect that rational women choose to remain working at least until pregnancy leave.

The sociological literature on (immigrant) families show that the mother has an important say in daughter's choices in life (Ewen 1985, Orsi 1985). We therefore include the importance of the mother's opinion to the woman in the woman's first birth hazard, which we interpret as an indicator for the woman's individual decision making. Furthermore, we expect that a father of the baby which is related to the mother to be an indicator of a culture which induces early child bearing.

A woman's language skills may be seen as an indicator for assimilation. Speaking Dutch fluently may be an indicator of assimilation which could lead to assimilate to the Dutch timing of fertility behaviour.

## 3 Methodology

Analyzing timing decisions most commonly uses a hazard analysis approach.<sup>25</sup> We use a parametric duration model (see Kiefer 1988). Analysis time in our model is a woman's age, with the earliest observed entry time being 15, which is the earliest age at first birth in the sample. Suppose that the random variable of the duration until entering motherhood since age 15,  $T$  has a continuous probability distribution  $f(t)$ , where  $t$  is a realisation of  $T$ . Then the

corresponding cumulative distribution function is  $F(t) = \int_0^t f(x)dx = \Pr(T \leq t)$  and the

survivor function  $S(t)$  can be defined by  $S(t) = 1 - F(t)$ . The hazard (or hazard rate), or the probability of entering maternity at time  $t$ , given that the woman has not entered maternity until time  $t$  since age 15 is defined by:

$$h(t) = \lim_{dt \rightarrow 0} \frac{\Pr(t \leq T < t + dt \mid T \geq t)}{dt} = \lim_{dt \rightarrow 0} \frac{F(t + dt) - F(t)}{dt S(t)} = f(t) / S(t).$$

Since

$h(t) = f(t)/S(t) = [dF(t)/dt]/S(t) = [-dS(t)/dt]/S(t) = -d \ln S(t)/dt$ , we can obtain

the survivor function:  $S(t) = \exp[-\int_0^t h(x)dx]$ .

We estimate the proportional hazard function, in which the hazard depends on a vector of (time-invariant) explanatory variables or covariates,  $\underline{x} = \{x_1, x_2, \dots, x_k\}$  with unknown coefficients  $\underline{\beta} = \{\beta_1, \beta_2, \dots, \beta_k\}$  and  $h_0: h(t, \underline{x}, \underline{\beta}, h_0) = \mathbf{f}(\underline{x}, \underline{\beta})h_0(t)$ . The function  $h_0(t)$  is a ‘baseline’ hazard corresponding to  $\mathbf{f}(\cdot) = 1$ . The  $h(\cdot)$  has an interpretation as the hazard function for the mean individual in the sample, which gives the shape of the hazard function for any individual. The term  $\mathbf{f}(\underline{x}, \underline{\beta})$  indicates the difference in the level of the hazard across individuals. We specify this  $\mathbf{f}(\underline{x}, \underline{\beta}) = \exp(\underline{x}', \underline{\beta})$ , following the popular specification. We assume the baseline hazard function as  $h_0(t) = pt^{p-1}$ , with  $p > 0$ . In this case the probability function is the Weibull distribution. The parameter  $p$  indicates ‘duration dependency’. That is, the hazard of giving birth to the first child after age 15 increases or decreases monotonically over time, if  $p > 1$  or  $p < 1$ . For  $p = 1$ , the hazard is time-independent, which brings us to the exponential distribution. The probability of a women to become pregnant with the first child from age 15 in the Netherlands, given that it has not happened yet, is likely to increase sharply with age. We therefore adopt a Weibull distribution, which allows for such a shape. Since we only observe women who experience the event of becoming pregnant with the first child<sup>26</sup>, our coefficients are interpreted as durations and are not contaminated by the probability of experiencing the event.<sup>27</sup>

We estimate parameters  $\underline{\beta}$  and  $p$ , using maximum likelihood. Since all women in our sample are pregnant and will give to their first birth or to a subsequent child we do not have The positive coefficient estimates of  $\underline{\beta}$  indicate that higher levels of the variable increase the hazard of entering maternity, or equivalently, that the waiting time until starting a family is shorter. The negative coefficient estimates have the opposite effect. The hazard ratios, which are estimates of  $\exp(\underline{\beta})$ , indicate the effects of a one-unit change in the corresponding variable. For example, if the hazard ratio of  $x_1$  is 1.10, it means a 1 unit increase in  $x_1$  raises the hazard rate by 10 per cent. If the hazard is smaller than 1, it indicates a negative effect of  $x_1$  on the hazard rate. The proportional hazard model assumes that the ratio of the hazards of any two individuals is constant over time.

Our first group of covariates  $\underline{x}$  result from the economic theoretical literature on women’s age at first birth by an indicator for women’s career aspirations (women’s education). A second

group of variables concerns a woman's and partner's matching on the investments in labour market hours. A third group of variables concerns eight types of migration background compared to the Dutch born couples with her parents also being Dutch born. A fourth group captures age norms that may contribute to shape different limits to fertility by differences in groups of countries of origin. Fifthly, we specifically control for the country of origin for which we find more than one generation of migration in the Netherlands. Finally, we control for other cultural factors affecting the timing of first birth by such as language skills, the language spoken at home, whether the father of the new born child is a relative, the importance of opinion regarding breastfeeding or milk of the partner and of the woman's own mother.

## **4 The Data**

### *4.1 Data source*

Data was obtained from a survey on Amsterdam Born Children and their Development carried out by the Amsterdam Medical Center in collaboration with primary care takers midwives and health care institutions. This prospective community-based study examined the relationship between various lifestyles and emotional problems during pregnancy, and the health of the child at birth and in later life. Between January 2003 and March 2004 12,381 Amsterdam women who attended antenatal care for their first check-up (normally performed at 12 weeks of gestation) were approached to participate in the study. For all invited women the obstetric care provider completed a registration form with personal data such as name, address and birth date. Based on this information within two weeks a questionnaire on socio demographic characteristics, obstetric history, lifestyles and emotional problems was sent to the pregnant women to be filled out at home and returned to the Municipal Health Service by prepaid mail. To enhance the response among ethnic minorities an English, Turkish or Moroccan-Arabic copy, depending on the woman's country of birth, accompanied the Dutch questionnaires. Registration form and questionnaires were linked using an unique serial number. Overall, 8,267 women participated in the study. After exclusion of woman who did not respond to one or more relevant questions, the sample of all parity pregnancies consisted of 8,105 women.

The response rate was 67.8%. The questionnaire poses 82 questions. We describe the questions we selected for our analysis below. In our sample we include women who are not longer than 34 weeks pregnant. The 34 weeks limit is related to the pregnancy leave period in the Netherlands, which according to law has to start between 6 and 4 weeks before expected delivery. Our analysis addresses the timing of the first child and the matching on labour

market hours and migration background. Therefore, we include women pregnant with their first child in the period of survey from January 2003 till March 2004.<sup>28</sup> Our sample includes 4,527 observations.

## 4.2 Variables

Our dependent variable is time since age 15 till first pregnancy. We use the answer to the question: “what is your age?, and subtract 15 years.<sup>29</sup> As shown in Appendix *Table A.1* (for the total sample) women’s mean age at giving first birth was 29.6 years.

The independent variables are the following. The survey poses the question: “how many (full-time years) years have you been in education after leaving primary school?”, with the possibility to indicate that a person only passed primary school. As shown in *Table A.2* (by education level<sup>30</sup>), highly educated women have a higher than the mean age at first birth than lower educated women (women with the highest investments in education are on average 32.3 years when they are pregnant of their first child, whereas women with primary school plus four years of education which is lower vocational or general training are on average 25 years when they are pregnant of their first child). The 7.3 years difference in the average age at having the first child for the lowest educated and the highest educated shows the highest difference between the lowest education level and the second lowest education level.

We control the analysis for the situation that the partner is not living in the same home as the pregnant woman. Our variable takes the value 1 if the woman has no partner or if the partner is not living in the same home. Appendix *Table A.1* Out of 4510 observations, 118 are single and 556 women do have a partner but he is not living in the same households.

### 4.2.1 Women’s and Partner’s Employment

The proportion of pregnant women in employment is 78% (Appendix *Table A.1*), which is in line with the employment rates of women pregnant of their first child in other research (Gustafsson et al 1996, Wetzels 2001, Gustafsson et al 2002b). The questions are posed to the woman as follows “Are you in paid work? Answers: A No; B. Yes”, for how many hours per week?. Is your partner in paid work? Answers: A. No; B. Yes, how many hours per week?; C. I do not know; D. Not applicable. We follow the definition by the International Labour Organization and define full-time work as working more than 35 hours per week. We define long-part time work as working between 32 and 35 hours per week; short part time work is defined as working between 1-32 hours per week, and unemployment is defined as not in paid work. The proportion of partners in full-time employment is 70%, 15% of the partners is not engaged in paid work, and 15% of the partners is in part time work.

### 4.2.2 Outcomes of assortative matching on employment

Our definition of types of matching on labour market hours distinguishes between not in paid work, in short part time work, in long part-time work and in full-time work, which defines 16 types of matching on employment. Table A.1 shows that about one quarter of couples are both in full-time jobs, 3% of couples both are engaged in long part-time jobs, 1% of the couples both work short part-time and 6% are both not in paid work. The proportion of couples in which the woman is in long part-time employment and her partner in a full-time job is a quarter. In 3% of the couples the woman works full-time and the partner is not in paid work. The proportion of couples where the woman works in a short time job or is unemployed is 35%. This group is the base category in our analyses.

Table 2 shows the average age at birth according to matching on employment. In Table 2 we present all types of employment and the proportions of our sample that are observed, if the matching type includes more than 1% of observations. A clear pattern emerges. Women who are not in paid work give birth to their first child at an earlier age than women in paid work regardless of their partner's employment status. Furthermore, there is a three years gap in the average age at giving birth to the first child between women who are not in paid work and women who are employed. The oldest women at giving birth to their first child are in couples where both spouses work long part time. In every match where one of the spouses works long part time there is also a slightly older age of the woman when she gives birth to the first child compared with the category where the woman is in full time work. This seems in line with the hypothesis that if both partners wish a career and a child they postpone the first child in the Dutch environment compared to couples who opt for more specialised tasks in paid work and unpaid care work. Pregnant women in couples where both spouses work long part time are also higher educated (2<sup>nd</sup> column in Table 2). In order to understand the effects of education and matching by employment on the timing of the first birth we will conduct a multi variate analysis in the next section of this study.

Insert Table 2 here

Table 2 also shows totals for couples in similar labour market hours (regardless of the number of hours), and in different employment types, both for the woman working relatively longer hours and likewise for men working relatively longer hours. These totals do not show a different age at first birth, and also education levels are not very different. In our analyses we include the more specific matching types.

#### *4.2.3 Outcomes of assortative matching on ethnic background, gender and generation*

The questions that we use to analyze the effects of immigration background on the timing of the first birth in a woman's life are the following: In which country were you born, and in which country was your husband/ partner born? Answers (both for the woman and her

partner): A. the Netherlands; B. Suriname; 3. Antillean Isles/Aruba; 4. Turkey; 5. Morocco; 6. Ghana; 7. Other country, which country? A similar question was asked about the woman's own mother and own father, with similar multiple choice answers. The question on partner's and parents' country of birth provided an additional option to choose "not applicable".

Making use of the information on a woman's and her parents' ethnic country of birth, and her partner's country of birth we define 16 types of immigrant background.<sup>31</sup> We define migration background as born in the Netherlands or not. Appendix Table A.3 gives all possible combinations and shows the number of observations for each possible type of migration background. Table 3 presents the categories of migration background for which we have more than 1 per cent of our observations. These eight effects of migration will be analysed in comparison with the Dutch born couples and her parents born in the Netherlands.

Appendix Table A.1 shows that the proportion of children to be with at least one parents with an migration background as defined by combinations of own country of birth, partner's country of birth and her parents' country of birth is 55%. The proportion of pregnant women who are not born in the Netherlands is 33%. The proportion of Dutch born women with a partner who is born abroad is 13%. The proportion of Dutch born couples with her parents born abroad is 9%. The proportion of couples who are born abroad is 22%.

Table 3 shows the average women's age at first birth and the average women's years of education by our definitions of migration background. The pattern is clear. In general, women with an immigration background give birth to their first child earlier (except for import brides with Dutch born parents). The average age at giving birth to the first child is the earliest for women with an import groom and parents born abroad (23.47 years). This average age is two years younger than for similar women with a Dutch born partner. The average age of both partners not born in the Netherlands is with 26.85 years considerably higher. Also, the ranking of the average age at first birth by migration background does not follow the ranking of women's investments in education. A woman in an import couples has an average education that is lower than a woman matched with an import groom and her parents with an immigration background, although the difference is not large. If we rank the average age at giving first birth in ascending order, then the average education level of second generation immigrant women with a Dutch born partner is fourth in ranking but the average age at giving birth is in a second place. This seems a first indication that there are separate effects of education and migration background.

The lower rows in Table 3 present women's age and education at first birth for endogamous and mixed couples. Comparing endogamous and mixed couples we find that the average age of the woman at first birth is more than one year older than for women in mixed couples. If

we exclude native Dutch then we still find a slightly older average age for women in endogamous couples. Comparing the average age for women in mixed couples by gender shows that women with import grooms are almost two years younger than import brides are when giving birth to the first child in Amsterdam.

Insert Table 3 here

#### 4.2.4 *Immigration background: specific country of origin*

In order to analyse more specific effects of countries of origin we distinguish countries that are forerunners, followers, trailers, or latecomers regarding the demographic transition as defined in Reher (2004). According to Appendix Table A.1. the proportion of women that are born in a trailer country is the highest 13% of which 5% is born in Morocco, followed by women that are born in a forerunner country (excluding the Netherlands) which is 7%, then follower countries with 4% (including Turkey 3% ) and Suriname.

Table 4 gives the average age at first birth by category of country of birth. The ranking follows the pattern as expected. Women migrating from forerunner countries are the oldest (with an average age at giving first birth: 31.24 years) followed by women migrating from countries that are followers (29.16 years), trailers (28.43 years), and latecomers (27.15 years). The ranking of the woman's education follows this pattern.

Furthermore, we include separate dichotomous variables indicating the countries with a second generation living in the Netherlands and distinguishing between the generations of migration of these countries. The proportions of women whose mother is born in Morocco or Suriname are higher (7%) than the proportions of women born themselves in these countries. In line with results from statistics Netherlands (Alders 2000). Turkish women are the youngest when giving birth to their first child, followed by Moroccan and Surinamese women. A similar ranking in education by these migrant groups is observed in Table 4.

Insert Table 4 here

#### 4.2.5 *Other Cultural indicators*

The country of birth effect or immigration background effect may weaken or strengthen by cultural assimilation which may lead to more similar behaviour of timing the age at giving birth to the first child all else equal. The questions we use in our analysis are: First, Do you have a rudimentary knowledge of Dutch which enables you to communicate? Possible answers are: A. No, I do not speak Dutch; B. yes, but with a lot of difficulty; C. yes but with some difficulty; D. yes, I speak Dutch well. Secondly, How important to you is your husband's/partner's opinion on the choice between breastfeeding or industrial milk? A. Very important; B. Not very important; C. Not important; D. Not applicable. A similar question is

posed on mother's opinion as regards this choice. Thirdly, a question on whether the father of the baby is genetically related to the mother is posed as follows: Is the father of the unborn child your cousin, uncle or half brother? The answer is categorized as follows: A. no; B. yes, a cousin; C. yes, an uncle; D. yes, a half brother. Since the number of observations by category of family member is quite small we recoded this variable into a dichotomous variables which is 1 if the father is family and zero otherwise.

A last indicator of "cultural" environment that we include is the income per earner in the neighbourhood where the woman lives at the time of the survey. We merge our data on the neighbourhood where the woman lives with data from the Bureau of Statistics of the administration of Amsterdam which give information on income per earner in the neighbourhood. We use the information on direct neighbourhood of the woman.<sup>32</sup>

These patterns could well indicate an association between education, joint employment status, migration background and the timing of first birth, or they could simply be due to the fact that differences in educational and other characteristics among women in different situations of matching on employment or with different migration backgrounds account for their differences in age at first birth. We leave it to the multivariate analysis to show how education, joint employment decisions and migration background affect the timing of first birth in a woman's life.

## **5 Results**

We use multivariate analyses to assess how education, matching on labour market hours, effects of migration background and specific country of birth determine the age at which a woman in Amsterdam is pregnant with her first child. Table 5 shows multivariate analyses estimates of the determinants of age at first birth using parametric duration models with Weibull distribution. In Table 5 we start with the specification that is mostly used in socio-economic analyses of women's timing of first birth, namely explaining the timing of first age pattern by education in Model (1). As expected, education has an enormous impact. The hazard ration decreases by 13% for each year of extra education after primary school. This effect remains when we control for other variables in columns (2) to (5) in Table 5. The effect of education squared is not significant which means that education has a linear effect and does not become smaller after a certain level of education is obtained. [Effects are also found if we include dichotomous variables for education levels]. Model (1) controls for a partner living in the household where the woman lives, for the number of weeks that the woman is pregnant at the survey. These variables however, are not significant.

Insert Table 5 here

We include in Model (2) the variables defined to measure the effects of matching on labour market hours on the timing of first birth (see Table 2). Our base category is a group of “other matches on labour market hours” in which the woman is not in paid work and her partner is. The matches with equal investments in labour market hours reveal a significant effect for couples who are both engaged in full time work, and couples who are both engaged in long part time work. In both cases, they delay the timing of first birth compared to the base category. Interestingly, this delaying effect is the strongest among couples who both work long part time hours. These couples even delay slightly longer than couples in which the woman works fulltime and the partner is not engaged in paid work. This indicates that, all else being equal, couples who wish to produce the quality of the children in the household by equal input of care and paid work by each parent, and therefore work less than full-time give birth to their first child when the woman is older. The other matches with unequal investments in labour market hours reveal delaying the first pregnancy compared to the base category. A woman who works long part time and a husband who works short part time delay the most. These couples delay the pregnancy in the woman’s life more than a woman who is working full time while her partner is not in paid work, and also more than a woman who works long part time while her husband works fulltime. Model (2) also shows that the effect of education decreases from 13% to 8% per year of additional education but remains significant although less strong. Moreover, all categories show that if a woman is employed she delays the first birth compared to a woman who is not in paid work with a partner who is employed.

Model (3) adds a group of variables that captures the effects of immigration background as described in Table 3. Our base category are Dutch couples with the woman’s parents also Dutch born. Compared to this group we find that only three out of eight defined effects of migration background have a significant effect on the timing of the first child in a woman’s life at a 1% level and one migration background has a significance level at 5%. We find strong significant effects of having the first child at an earlier age 1) for a Dutch couple with her parents born abroad (2 times more likely to give birth earlier compared with the base category and all else equal); 2) for Dutch born women with a foreign born partner and with an own father or both own parents born abroad compared to the base category, all else being equal (more than 4 times more likely to give first birth earlier); and 3) for couples born abroad compared to the base category (0.3 times more likely to give birth to the first child earlier). We do not find a significant effect for import brides (the female partner born abroad with a Dutch born male partner) on the age at giving birth to the first child. We also find a effect, but at 5% significance level less significant of the woman being older of an import groom if the woman’s parents are Dutch born. Furthermore, we do not find a significant effect of giving

birth earlier or later than the base category if the woman is born in the Netherlands and one of her parents is born abroad.

Model (4) in Table 5 excludes the variables on matching on labour market hours. In model (4) the significant effects of migration background on the timing of the first child become stronger, but the general picture does not change. This indicates that the significant effects of migration background seem largely independent of the labour market effects of matching on employment type. However, comparing Model (4) to Model (3) we find that including immigration background in the model does take away the significance of the effects of matching on investments in labour market hours of women who work short parttime whose partner works full-time or long parttime. All other significant effects remain although the significance of the effect of both spouses working full-time on the timing of the first child in the woman's life reduces after controlling for migration background.

Finally, in model (5) we control for specific country of origin on the timing of the first birth in a woman's life, by including the information on whether the woman is born in a country which has been categorized as forerunner, follower, trailer or latecomer with regards to phases of demographic transition. This information is also included for the partner's country of birth. We only find significant effects for forerunner countries. The base category are Dutch born with Dutch born parents and a small non-categorized group (see appendix Table XX). As expected (since immigration takes time and also European women are likely to time their first child late as many Dutch women do) we find that the effect of a woman being born in a forerunner country is that of giving birth to the first child later all else being equal. A similar and significant result is found for the partner being born in a forerunner country. However, including this information makes the effect of education insignificant, and makes the effect of the woman working full-time and the partner working long part-time insignificant. Furthermore, it shows that a Dutch woman with Dutch born parents who imports a groom postpones her birth significantly stronger compared to the base category of migration background comparing model (6) to (5) the effect on the timing of first birth disappears. Moreover, the imported couple gives birth to her first child significantly earlier than the base category of migration background. All other significant effects remain, although the women with parents born abroad and a partner born abroad are 3.3 times more likely to give birth to the first child in model (6) instead of 4.6 times (as in Model (5))

The next models are extensions which include more specific information on specific country of origin and cultural indicators for assimilation. In model (6) we aim to analyse the effect of the specific countries with which the Netherlands has a longer post-WWII migration history.

We therefore include information on whether the woman is born in Surinam, Morocco or in Turkey and whether the partner is born in Surinam, Morocco or in Turkey. We find that when controlling for all other factors described above in Model (5), only women born in Turkey, and women with a partner who originates in Morocco are significantly more likely to give birth earlier all else equal. We cannot explain why this is the case. All other effects that we described in Model (5) remain.

Model (7) adds additional cultural indicators such as (1) whether the opinion of the partner towards breastfeeding or industrial milk is important to the woman (2) in the pregnant mother's opinion whether she has difficulties speaking Dutch and (3) whether the father of this first child is related to the woman genetically. The additional information aims to reveal whether independent of immigration background or specific country of birth there are cultural influences that determine the timing of the first child in the woman's life. In addition we include the average income per earner in the neighbourhood where the woman lives.

Including this information shows that the opinion of the partner towards breastfeeding is not important but the woman's mother's opinion towards breastfeeding induces earlier timing of first birth. This seems in line with the sociological literature on (immigrant) families that show that the mother has an important say in daughter's choices in life (Ewen 1985, Orsi 1985). If the father of the child is related to the mother we find that the woman is younger at first birth all else equal. If the woman lives in a neighbourhood in which the earnings per person are higher, she gives birth at a slightly later age all else equal. A woman's language skills which may be seen as an indicator for assimilation does not show any independent effects (after all our control variables). By including this information all previously described effects remain, except that two effects become insignificant: 1) the effect of the woman having her first child later if she works full-time and her partner is unemployed, and 2) the effect of the woman having her first child earlier if she is part of an import couple.

In the next models we present an alternative approach to measuring the effect of migration background. We extend model (3) with information on specific region or country of origin and migration background. In Model (8) we include 15 dichotomous variables on specific migration background of the couple. These dichotomous variables are included since they are expected to show different culture and gender effects within cultures. Since model (3) already specified the migration background as defined in Table 3, the specific dummies should capture the regional or country effect. By including this additional information, the effects on migration background (as shown in model 3) do not become less significant. However, as a result, the magnitude of the effect of migration background on the timing of the first child decreases in significance. Of the fifteen dichotomous variables only five show a significant effect of the timing of the mother's age at first birth: If both spouses originate from Europe

they time their first child significantly later, as is also shown for both spouses originating from the Middle East. Second generation Moroccan, Turkish and Surinamese women with a spouse from the same country are respectively 3.5, 3.0, and 2.9 times more likely to give birth earlier than women in Dutch couples with her parents born in the Netherlands.. In this model we do not find significant effects for first generation Moroccan and Turkish women, or for a Dutch born woman having a partner from Morocco, Turkey or Suriname.

Model (9) shows the same specification, but now without measuring the effect of migration background as defined in Table 3. The effects of second generation migrants from all three countries remain similarly significant but the likelihood of giving birth earlier increases considerably. In addition the effect of first generation migrants from Morocco and Turkey becomes significant, and they are likely to time their first child earlier than the Dutch majority and show a similar effect to women in couples originating from Egypt, but their timing of first birth is much later than the timing of second generation migrants from Morocco and Turkey. Furthermore, we find that the effect of a partner born in Suriname results in having a first child earlier.

## **6 Conclusion**

This study contributes to filling two gaps in the literature on the timing of the first birth. In the analysis of the timing of first birth in a woman's life it includes both the outcomes of matching on labour market hours and of matching on migration background. In order to analyse these additional dimensions, we utilize unique, recent and representative survey data on the timing of first child collected in Amsterdam. From January 2003 till March 2004 all women contained in the sample were pregnant with their first child at the time of the survey. In fifty five percent of the cases at least one parent of the unborn child was a migrant; thirty two percent of the pregnant women were not born in the Netherlands; fourteen percent of the women were Dutch born and had a partner who was not born in the Netherlands, and nine percent were Dutch born couples with her parents not being born in the Netherlands. We analyse the timing of first birth from age 15 till first pregnancy by using a standard parametric duration model. When we interpret the results of our hazard analysis, we want to stress that the estimated relative risks of entry to motherhood by labour-market activity need not necessarily be taken as firm proof of causal effects of such activity on childbearing behaviour. We also need to be aware of possible 'endogeneity' of the two types of careers: i.e. those of the family and the labour market. Such endogeneity could, for example, be reflected in a change in labour-market activity during pregnancy. However, since the pregnancy leave regulations assume that the woman continues working up until 4-6 weeks prior the expected date of delivery, and our sample only includes women prior to the pregnancy leave period

(between 12 and 14 weeks pregnant), at least from the government's perspective there should not be any endogeneity. Our results give very clear indications of what types of matching on employment and what types of matching on migration background tend to be compatible with early childbearing, in addition to other activities that are less strongly connected with relatively young or old entry into motherhood. What is important is that the patterns we observe make perfect sense in the light of the opportunities and constraints that are provided in the context of Dutch society, and that such institutional factors thus appear to affect individual behaviour. In a society where prior to 1990, the institutional constraints tended to support a male bread-winner system of family life, one might rather find elevated first-birth risks for women who are non-participants in the labour market, just like Kreyenfeld (2004) does for West Germany. In our study, we found an effect of specialisation in paid work and unpaid care work only if we exclude the matching on migration background. We clearly found that women in couples with equal and high investments in labour market hours time their first child later, especially if both or one partner is employed in a long part time job. Working long part time has been promoted by the Dutch government from the mid 1990s to increase more equality in paid work and unpaid care work in households with young children. In principle, total work hours can be reduced in all jobs, however perception of the expected detrimental career effects regarding, for example promotion, may limit the choice for these jobs to the "really" equal spouses who both share career aspirations as well as care for their children. Most probably these are the couples with the highest hourly wages.

Secondly, our exploration and analysis of the effects of migration by distinguishing all possible combinations of own country of birth, partner's country of birth and women's parents' country of birth on the timing of the first child reveals separate immigration effects and specific country of origin effects on the timing of first birth. Controlling for country of birth (such as Turkey and Morocco) an independent effect of earlier timing of the first birth in a woman's life is found for import bride grooms. This effect is stronger than the effect of ethnically endogamous couples on the timing of the first child. An earlier timing of first birth is only found for import brides if we control for specific country of origin, and then this effect is considerably less in magnitude than the effect of import bride grooms on the woman's timing of her first child.

The analyses of country of origin controlled for the migration effects, show that women from "forerunner countries in the demographic transition" time their first birth later in life than Dutch women and women who originate from other countries. This is not related to migration regulations.

There exists much scope for further research. Focusing on specific characteristics related to human capital, age and employment, future research will be conducted analysing the timing

of first birth according to education level. A second extension will be to analyse determinants of matching on labour market hours and matching on immigration background.

Another future extension to this research would involve merging the current dataset with a dataset including all women in Amsterdam, in order to incorporate the right censoring in the parametric duration model. It would also be interesting to compare women's behaviour towards timing of the first birth in Amsterdam to another Dutch city such as Maastricht, where similar health data has been collected in the same year as our Amsterdam data set. Finally, in order to compare the effects of institutional context on woman's timing of first birth, it would be useful to compare the results for Amsterdam with data from another country

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<sup>1</sup> In the US the mean age for a woman to give birth to the first child was 24.3 in 2000.

<sup>2</sup> Two other possible explanations have been considered to affect the timing of the first birth in a woman's life: 1) the sex ratio of a population and 2) women's child mindedness. 1) There is a literature on the marriage market that has focused on the availability of marriageable men (Angrist 2002). The study of Angrist (2002) is not trying to explain timing of marriage and motherhood but he uses a static model to explain frequency of marriage and motherhood. Although there may be an effect on the timing of the first birth of the availability of men, we leave this out of our analysis. 2) Some economists suggest that women differ in 'child mindedness', so that women who are relatively child minded choose to marry and have children early. They voluntarily trade off career ambitions for children. Other women are in this view 'career minded' and they voluntarily forego marriage and children. One interesting recent result is Holmlund (2005), who shows that not only teenage mothers have less education than other women but also the sisters of the teenage mothers have less education than other women. This suggests that length of education is determined by socio-economic conditions, ability to study and career ambitions rather than child mindedness. Also Del Bono (2004) analysing premarital fertility finds local male unemployment is a positive determinant of single motherhood in Britain, whereas individual earnings opportunities are negatively related to pre-marital fertility.

<sup>3</sup> In this study I treat parents to be as partners. Unmarried cohabitation and marriage are assumed to be synonym. Although the search on the marriage market and the final decision to marry or to find a father precedes in most cases the conception of the first child, I can not analyse this search process itself. I analyse the effects of the outcomes of the search process on the marriage market on the timing of first birth decision. The basic idea is that a woman will accept a marriage offer rather than continue searching if her expected utility of marrying that particular man is larger than her expected utility of continuing search and perhaps finding a more attractive man. This search process includes a perception on what is a good match (Becker 1973, Becker, Landes and Michael 1977, Cigno 1991, Ermisch 2003, Grossbard-Shechtman 2003). None of these studies analysed the timing of marriage or the timing of first birth. When a woman, searching on the marriage market, thinks about what characteristics she will wish from her future husband, these characteristics will be either complementary to her own or will substitute for characteristics that she lacks. Complementary characteristics will lead to positive assortative matching, that is, the more the woman has of that characteristic the more she will want that the man will have of the same characteristic. The result is that "likes marry likes". Although the sequence of events in the Netherlands is marriage before having a child (Matsuo 2003) in Amsterdam in 2004, only for Moroccan and Turkish women the mean age at marriage is lower than the age at giving birth to the first child (O+S 2004).

<sup>4</sup> Statistics Netherlands 2005. The definition of worker by Statistics Netherlands excludes workers who are in paid work of 1-11 hours per week. This figure also includes self employed which are 8.55 per cent of total female working population and 13.5 per cent of the total male working population.

<sup>5</sup> In spite of the increase in Dutch labour force participation, the volume of full-time regular jobs in 1996 was the same as in 1970—about 3.7 million people—and the steady job growth in the early 1990s consisted entirely of part-time jobs, which amounted to 1.8 million in 1996 and flexible jobs amounted

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to 0.7 million in 1996 (Hartog 1998). This increase in part-time work can be explained by several factors: In the tight labour market of the 1990s, fear of labour shortages encouraged employers who otherwise were reluctant to accept part-time workers (Tijdens 1998). The right to shorten or lengthen work hours was first accepted in the Netherlands, and the Netherlands has gone much farther than demanding that employers should “give consideration” to employees who wish to transfer between full-time and part-time work, as stated in the 1997 European Directive on Part time Work status. The 1997 European Union Directive on Part-time Work states: “Member states and social partners should identify and review obstacles which may limit the opportunities for part-time work” (EU 1997). Furthermore, “employers should give consideration to requests by workers to transfer from full-time to part-time work and the reverse when such work becomes available.” The Dutch employer should, in principle, agree to the request and is obliged to indicate any reason for disagreement.

Usually, in the Netherlands when a law is accepted, it codifies an already existing practice, which is included in most Collective Labour Agreements at the time the act passes. As of 1993, the advisory council on Dutch Labour Market Issues had proposed that collective bargaining agreements give “social partners”—representatives of employers and employees—the right to arrange part-time work.

Since the mid 1980s, unions in the Netherlands have been raising demands for part-time work and equalizing the employment conditions between full-time workers and part-time workers. Skilled women increasingly want to combine part-time work with family responsibilities. In addition, women’s increasing skills made the costs of replacing these employees higher. Also, with a situation of high unemployment, women’s incomes were needed to supplement the family’s income.

<sup>6</sup> The first Childcare Act in the Netherlands dates from 1990. Fifteen years after the first Child Care has passed market child care is available but relatively expensive for low income couples, but also in international comparison for all Dutch parents (Wetzels 2005). Although only 14% of mothers work more than 32 hours per week; 23% of mothers work more than 28 hours per week (Wetzels 2001).

<sup>7</sup> The legal option has to become a feasible option in people’s careers and in people’s minds.

<sup>8</sup> If family formation (matching) is the motive for migration then the duration of the bargaining process and the regulations regarding migration will likely affect the timing of the first birth. From 1994 a renewed law on immigration in the Netherlands and a new law on prohibiting of marriages of convenience also in 1994 (Hooghiemstra 2001) which restricted immigration by marriage formation. The number of marriages with immigrants has decreased in the Netherlands since 1994 (van Huis and Steenhof 2004).

<sup>9</sup> In the Netherlands in recent years almost half of all immigrants are women (e.g. 48% in 2001, stat line Statistics Netherlands 2003)). For female immigrants it may however be more difficult and therefore take longer to get an immigrant status as a refugee (Spijkerboer, 2002). For males it may be more difficult to enter the Netherlands as a bride’s groom, since studies on immigration cases reveals the import bridegrooms are regarded with more suspicion than import brides. For both men and women living in the Netherlands who wish to import a partner it is difficult to have a stable labour market position and income since discrimination against migrants exists among both genders and all immigrant groups (Bovenkerk 1997)

<sup>10</sup> Dutch women were the oldest at giving birth to the first child at the end of the 20<sup>th</sup> century of all countries where data are available.

<sup>11</sup> There are three main ethnic minority groups in the Dutch and especially in the Amsterdam labour market: 1) former “guest workers’ families”, mostly from Morocco and Turkey, in which men were recruited for unskilled jobs in the 1960s. 2) after the decolonisation of Suriname in 1975, a large portion of Surinamese immigrants have chosen to settle in the Netherlands and especially in its capital. 3) in the 1980s and 1990s, immigrant population have grown steadily driven mainly by family re-unification and formation as well as inflow of other new groups of immigrants like refugees and employees of international companies.

<sup>12</sup> As Bongaarts and Feeney (1998) and Bongaarts (1999) have pointed out, postponement of maternity leads to falling fertility rates even if there were no decrease in the cohort completed rate.

<sup>13</sup> Cigno further points out that for the analyses of timing of births a dynamic model is necessary and that accounting for the effects of uncertainty unavoidable (Cigno 1991: 117). Uncertainty takes two

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forms: one, which Cigno terms technological uncertainty, arises from the fact that a couple cannot control the timing of births with any degree of accuracy, the other is market uncertainty arising from a lack of complete information about the state of the economic environment at various future dates. Constructing a formal model of rational behaviour that takes both these forms of uncertainty into account is, however, extremely difficult in the present context (Cigno 1991: 127). The relatively few attempts at constructing such a model are based on drastic simplifications that remove much of the economic content. Furthermore, these models tell us nothing about how the actual or the expected birth profile is affected by differences in personal characteristics or by changes in the economic environment. It seems, therefore, that all we have to go by, at this stage, is the kind of deterministic theory, where parents are assumed to behave, on average, as if they operated in a world of complete certainty (p 127-128).

<sup>14</sup> also because husbands are in general a few years older than their wife

<sup>15</sup> The career planning motive refers to the need for making time free for child bearing and caring. We know from economic theory (Mincer, 1974) that with a finite lifetime, investments in human capital made early in life imply a longer period on which returns to such investments can be collected. The profile of investments in human capital is therefore concave towards the origin. If returns to human capital are a constant fraction of actual wages, then the concave shape of an age earnings curve depicts the profile of investment in human capital. Since the 1990s institutional child care has been growing in the Netherlands to meet the needs of working mothers and families, making it possible to combine paid work and motherhood.

<sup>16</sup> A few studies on the timing of the first child in a woman's life included partner's characteristics such as education. Symeonidou and Mitsopoulpos (2003) include husband's education level into their estimation of the woman's timing since age 15 till the first birth, and find a negative effect on first birth, that is the longer the education of the husband the older is the wife at having their first child. Gustafsson and Worku (2005) analyse the effect of matching on education on the timing of first birth in the U.K. and Sweden. Gustafsson and Worku find that 59 per cent of couples who were living together and have at least one child together are educationally homogenous.

<sup>17</sup> Mare (1991) finds that there has been five decades of educational assortative matching.

<sup>18</sup> A household public good is defined as giving utility to the husband without decreasing its utility to the wife.

<sup>19</sup> See Wetzels (2001) for a comparison of welfare state typologies in the Netherlands and Sweden.

<sup>20</sup> For simplicity, the process is set up as a one-sided game in which the man proposes marriage to a woman if it is in his best interest and the woman always accepts the marriage proposal. Furtado assumes that there are only two relevant types of women: Ethnic (women of the man's ethnicity) and Americans (women of a different ethnicity). Each man lives for two periods. In the first period, the man randomly meets an Ethnic with probability  $X$  and an American with probability  $1-X$ . One can think of these probabilities as the proportion of the population that is of his own ethnicity within close geographic proximity. The woman he meets has a level of education,  $A$ , drawn from the distribution if she is Ethnic and  $B$  if she is American. After observing the ethnicity and level of education of the woman with whom he is matched in the first period, the man decides whether to marry her or remain single until the second period. In the second period, the game is repeated but then he must choose either to marry the woman he is matched with or remain single for the remainder of his life. For simplicity, Furtado (2004) initially assumes that everyone prefers marriage to anyone above being a life-long bachelor. Thus, the only decision made in this game is whether or not to marry in the first period. The man will choose to marry in the first period if his utility from the first period match is greater than his expected utility in the second period. Furtado assumes that although he does not know exactly with whom he will be matched in the second period, he does know the distributions of education in both populations and the probability of getting a draw from each population.

<sup>21</sup> In Furtado's model there are two important components to a wife's utility from marriage: her preferences for marrying within her ethnicity and within a similar education level. Furtado (2004) presents three avenues through which education affects the likelihood of interethnic marriage. First, the cultural adaptability effect suggests that educated people are better able to adapt to different customs and cultures. Since immigrants with more human capital have a better 'technology' for adapting to the host society, they are more likely to marry natives. Secondly, the enclave effect suggests that educated

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immigrants are more likely to move out of their ethnic enclaves because, for example, they have larger geographic labor markets. They are, therefore, less likely to meet possible spouses of their own ethnicity and so, naturally, less likely to marry them. Lastly, the assortative matching effect posits that marriage surplus increases when education levels of husband and wife are similar. This implies that given a costly search process, educated immigrants may be willing to substitute similarities in ethnicity for similarities in education. Using U.S. Census data on second generation immigrants, Furtado (2004) finds that the effect of education differs by ethnicity suggesting that assortative matching is the most important avenue through which education affects the probability of interethnic marriage. In fact, although there is some evidence of the enclave effect, after accounting for the assortative matching effect, the cultural adaptability theory has no support from the data. Robustness checks of the implications of the model lend further support for the assortative matching model. There is no empirical evidence on how Furtado's model works for first generation immigrants.

<sup>22</sup> Two other studies have analysed the relationship between marriage type and economic assimilation. Kantarevic (2004) finds, for the US case, that immigrants who are married to native-born spouses assimilate faster than comparable immigrants married to foreign born spouses. However, when she accounts for selection, this effect vanishes and she concludes that immigrants who are married to native born spouses are a favourably selected sub-sample from the population of all married immigrants, which mainly supports the sociological literature arguing that more assimilated immigrants marry natives rather than the spouse type having an effect on the assimilation outcomes of the immigrants. Whereas Meng and Gregory (2005) argue that intermarriage is an important input into the economic and social assimilation of immigrants in the host country. They find that there is a marriage premium after accounting for human capital differences among individuals, which is not a reward to unobservable characteristics specifically associated with intermarried individuals.

<sup>23</sup> This exchange of favourable living conditions against, for instance, a high bride price or a high education (Gitmez and Wilpert, 1987; Böcker, 1994, 1995; Van Amersfoort, 1995), is a special case of the exchange hypothesis as posed by Davis (1941) and Merton (1941). The later studies hypothesize that two spouses exchange resources, e.g. higher status for good looks or money, by their marriage. In Becker's terminology, this would be consistent with negative or non-positive assortative matching on education since the educations of the two spouses would be substitutes.

<sup>24</sup> In the Netherlands, leave indemnification is to be negotiated with the employer. For example, in the public sector, parental leave beneficiaries receive 75% of their wages (NIDI, 2003). However, in the private sector, only few collective agreements (6% in 2000) include payment of the parental leave (replacement rate up to 30%). Only 40% of entitled mothers actually make use of their right to take parental leave, compared to 9% of the entitled fathers. (Eiro, 1999). Longer periods of breastfeeding might not be easy to reconcile with paid work, although employers are obliged to offer facilities for breastfeeding.

<sup>25</sup> Hotz et al (1997) point to three problems of the hazard analysis approach 1) It gives little insight into how to summarize the information in past and future covariates; 2) It does not solve the dynamic selection problem. That is, to be in the sample of individuals on which we estimate the time between the first and the second birth, one must have had a first birth; 3) It has the unfortunate characteristic of mixing the parameters for the speed with which the event occurs with the parameters for whether or not the event occurs. (Hotz et al 1997). However we address some of these problems through the careful choice and specification of explanatory variables. We believe that decomposing the timing of fertility into sub-problems like the timing of first birth can also supply important information. Particularly the study of first birth transitions occurs before transitions of higher parity and should not have the biases warned for by Heckman and Walker (1990). However, also the concern that unobserved heterogeneity may go in opposite directions for transitions of different parities will be a reason to treat the first birth transition independently.

<sup>26</sup> A similar approach was used in Gustafsson et al (1996), Wetzels(2001), Gustafsson, Kenjoh and Wetzels (2002a)

<sup>27</sup> Individual differences in the hazard functions are characterized partly by the observed explanatory variables  $X_i$  and in part by the unobserved characteristics of the individual. If unobservable characteristics are correlated with the observables then not including an estimate of unobservables will lead to incorrect inference regarding the impact of observables on the timing of events and to problems of identification. There are a number of ways of extending duration models to account for unobserved

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heterogeneity. A direct approach is to model heterogeneity in the parametric models by defining the survival function conditional on the individual fixed effects, adding to this model a term for the unobserved heterogeneity. We intend to use in a next paper a Gamma distribution for the unobserved heterogeneity, where  $\theta$  is a parameter for unobserved heterogeneity with  $\theta = 1$  being the case of no unobserved heterogeneity. There is also always the source of omitted variable bias.

<sup>28</sup> The data provide information on previous births but not on the employment status and migration background before the previous births.

<sup>29</sup> We take as age at first birth the age at survey. We do not have the exact birth month which would make it possible to take age at conception, since the number of weeks that the woman is pregnant is known.

<sup>30</sup> In this study we have categorized the years of education into six levels of education that are commonly used by Statistics Netherlands and in international comparisons (Wetzels, 2001)

<sup>31</sup> Unfortunately our data do not provide information on the year in which a migrant entered the Netherlands. Therefore, we do not know how long a woman who is not born in the Netherlands has lived in the Netherlands, she might have entered as a child or as a bride, or as both.

<sup>32</sup> The administration of the city of Amsterdam is divided in 15 city parts (stadsdelen) The information on income per earner in the neighbourhood is available by parts of the city and neighbourhoods. We use the latter since this information more directly influences behavior than part of the city.

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## Tables

*Table 1 Review of empirical economic studies on women's age at first birth*

Independent variable	Study	country/region	Effect on timing of maternity
Education	Blossfeld & Huinink (1991)	G	-
	Gustafsson et al (2002b)	GB,G,S &NL	-
	Wetzels(2001)	GB,G,S &NL	-
	Symeonidou and Mitsopoulpos (2003)	Greece	-
	Gustafsson et al (2002a)	GB,G,S &NL	-
In education	Gustafsson et al (2002a)	GB,G,S &NL	-
Experience	Cigno and Ermisch (1989)	UK	Argue –; No significant effect
	Hoem & Hoem (1987)	S	+
	Blossfeld & Huinink (1991)	G	-
	Martin (1992)	E	-
	Kravdal (1994)	N	+
	Wetzels (2001)	NL	+
women's wage	Butz & Ward (1979)		
	Cooman et al (1987)	England & Wales	-
	Heckman & Walker (1990)	S	-
	Groot & Pott-Buter (1992)	NL	-
husband's income	Cooman et al (1987)	England & Wales	+
Housing prices	Cigno and Ermish (1989)	UK	
Women's unemployment	Rindfuss et al (1980)	US	No effect
Men's unemployment	Impens (1989)	Flanders	-
Men's education	Rindfuss et al (1980)	Us	-
	Symeonidou and Mitsopoulpos (2003)	Greece	
Immigrant women's participation in work	Anderson and Scott (2003)	Sweden	

-:later timing; + earlier timing of first birth all else equal; GB Great Britain; G Germany, S Sweden, NL Netherlands, U.K.United Kingdom, E Spain, N Norway.

*Table 2 Women's Age and Education at First Birth by Type of Matching on Employment in our analyses*

Women's labor force status- Her partner's labor force status (R age;R edu)	N	Women's Age at first birth		Women's education at first birth	
		mean	St.dev.	mean	St.dev
<i>Ft-ft (9;9)</i>	1153	30.74	4.10	18.11	2.98
<i>Ft-spt (8;7)</i>	58	30.02	4.88	17.58	2.87
<i>Ft-unemp (5;3)</i>	135	29.56	5.81	15.99	3.71
<i>Lpt-Ft (10;10)</i>	1169	30.99	4.21	18.14	3.01
<i>Lpt-lpt (12;12)</i>	128	31.87	4.17	19.27	2.60
<i>Lpt-spt (11;11)</i>	98	31.35	4.74	18.38	3.38
<i>Lpt-unemp (6;5)</i>	160	29.83	5.74	16.50	3.76
<i>Spt-ft (7;8)</i>	291	29.97	4.80	17.78	3.56
<i>Spt-spt (4;6)</i>	67	29.39	5.39	16.99	3.48
<i>Spt-unemp (2;4)</i>	69	26.30	6.09	16.32	3.93
<i>Unemp-ft (3;2)</i>	391	26.71	5.75	14.77	4.35
<i>Unemp-unemp (1;1)</i>	256	24.86	6.28	13.37	3.64
Total					
Similar employment type	1604	29.84	5.09	17.41	3.57
She works longer hours than he	561	29.72	5.65	16.97	3.67
He works longer hours than she	1928	29.80	5.05	17.29	3.71

*ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling Ranking in ascending order of age; R edu Ranking ascending order of education) including primary school (8 years). Ft=full time job (>35 hours per week); lpt=long part-time job (32-35 hours per week); spt=short part time job (1-32 hours per week); unemp=not in paid work.*

*Table 3 Women's Age and education by All Possible Combinations of Migration Background in Our Analysis*

Migration Background (R age; R educ)	Born in NL=1				% of Total	n	Women's Age at first birth		Women's education at 1st birth	
	Not born in NL=0						mean	St.dv	mean	St.dv
	W	P	M	F						
0 No:Dutch ethnic endogamous (7;8)	1	1	1	1	44.51	2,055	31.22	4.04	18.50	2.85
1 Her parents (2;4)	1	1	0	0	3.53	163	25.85	5.77	16.41	3.39
2 One of her parents (8;7)	1	1	0	1	2.32	228	31.32	4.62	18.30	3.15
	1	1	1	0	2.62					
3 Mix1=her partner (6;6)	1	0	1	1	7.95	367	31.03	5.19	17.48	3.18
4 Mix1+her parents (1;2)	1	0	0	0	4.64	214	23.47	4.03	15.01	2.77
5 Mix1+one of her parents (4;3)	1	0	1	0	1.13	52	28.83	6.33	16.21	3.43
6 Mix2=she (9;9)	0	1	1	1	1.23	57	32.31	3.37	19.25	2.40
7 Mix2 +her parents (5;5)	0	1	0	0	8.58	396	29.82	5.55	16.67	3.93
8 Non-Dutch ethnic endogamous (3;1)	0	0	0	0	21.55	995	26.85	5.55	14.28	4.13
Not categorized					1.94					
Total						4,527	29.67	5.28	17.06	3.75
Endogamous Dutch couple						2436	30.87	4.43	18.34	2.96
Mixed Dutch-non-Dutch couple						1081	29.58	5.83	16.76	3.52
Endogamous Dutch couples excl category 0						392	29.07	5.77	17.53	3.38
Mixed: he non-Dutch						625	28.29	6.05	16.58	3.24
Mixed: she non-Dutch						456	30.16	5.33	17.00	3.86

*ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). W=:woman; P:her partner M: the woman's mother; F:the woman's father;*

*Ranking in ascending order of age; R edu Ranking ascending order of education)*

*Table 4 Women's Age and Education at First Birth by Specific country of birth and other cultural indicators*

	n	Women's Age at first birth		Women's education at first birth ed	
		mean	St.dev	mean	St.dev
<b>Classification of Country*</b>					
<i>Women's country of birth:</i>					
Forerunner (excluding the Netherlands)	305	31.24	4.66	17.77	3.44
Follower (excluding Turkey)	68	29.16	4.72	16.20	4.01
Trailer (excluding Morocco and Surinam)	165	28.43	5.60	15.27	4.25
Latecomer	181	27.15	5.39	13.53	4.30
<i>Partner's country of birth</i>					
Partner born in Forerunner (excluding the Netherlands)					
Partner born in Follower (excluding Turkey)					
Partner born in Trailer (excluding Morocco and Surinam)					
Partner born in Latecomer					
Mother is born in Morocco==1	336	24.88	4.38	13.74	3.64
Mother is born in Turkey==1	188	23.29	4.60	13.31	3.49
Mother is born in Surinam==1	306	25.90	5.91	15.27	3.20
Woman is born in Morocco==1					
Woman is born in Turkey==1					
Woman is born in Surinam==1					
Partner is born in Morocco==1					
Partner is born in Turkey==1					
Partner is born in Surinam==1					
Opinion of the partner is important==1					
Opinion of the mother is important==1	962	26.35	5.55	14.97	3.88
Father of the child is a family member==1	91	23.89	4.59	13.22	3.56

\* ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). See Reher (2004) and Appendix Table A.3 for specific countries included in the categories.

*Table 5 Determinants of Age at First Birth. Estimates from Parametric Duration Model of Age at First Birth since age 15(Weibull Distribution). First birth in 2003/2004*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Education	0.868 (0.034)**	0.916 (0.036)*	0.920 (0.038)*	0.899 (0.038)*	0.917 (0.039)*	0.933 (0.040)	0.932 (0.040)
Education sq.	1.002 (0.001)	1.001 (0.001)	1.001 (0.001)	1.001 (0.001)	1.001 (0.001)	1.000 (0.001)	1.000 (0.001)
Partner not in household	0.981 (0.051)	0.944 (0.053)	0.946 (0.052)	0.970 (0.050)	0.959 (0.049)	0.953 (0.052)	0.954 (0.052)
	1.006 (0.004)	1.004 (0.004)	1.000 (0.004)	1.001 (0.004)	1.000 (0.004)	0.999 (0.005)	0.999 (0.005)
W-ft; P-ft		0.746 (0.039)**	0.782 (0.045)**			0.797 (0.047)**	0.799 (0.047)**
W-long pt;P-lpt		0.658 (0.051)**	0.688 (0.058)**			0.687 (0.059)**	0.688 (0.059)**
W-short pt;P-spt		0.746 (0.110)*	0.774 (0.121)			0.791 (0.130)	0.792 (0.130)
W-not employed; P-not empl.		1.099 (0.137)	1.054 (0.132)			1.034 (0.133)	1.039 (0.134)
W-ft; P-lpt		0.671 (0.097)**	0.725 (0.117)*			0.755 (0.116)	0.758 (0.114)
W-lpt; P-ft		0.700 (0.036)**	0.743 (0.042)**			0.748 (0.043)**	0.750 (0.043)**
W-ft; P-spt		0.758 (0.098)*	0.803 (0.100)			0.814 (0.100)	0.819 (0.100)
W-spt; P-ft		0.770 (0.055)**	0.817 (0.059)**			0.824 (0.061)**	0.824 (0.061)**
W-lpt;P-spt		0.639 (0.063)**	0.662 (0.063)**			0.664 (0.062)**	0.665 (0.062)**
W-spt;P-lpt		0.736 (0.102)*	0.802 (0.118)			0.804 (0.121)	0.806 (0.122)
W-ft;P-not in Paid work		0.679 (0.076)**	0.695 (0.081)**			0.689 (0.082)**	0.689 (0.082)**
W-lpt;P-not in Paid work		0.704 (0.062)**	0.708 (0.064)**			0.705 (0.065)**	0.709 (0.065)**
W-spt;P-not in Paid work		1.250 (0.215)	1.169 (0.215)			1.209 (0.213)	1.217 (0.214)
W-NI; P-NI; M-not; F- Not			2.069 (0.200)**	2.101 (0.205)**	2.109 (0.207)**	2.079 (0.201)**	2.080 (0.201)**
W-NI; P-NI; (M-not; F- NI/M NI; F-not)- W-NI; P-not; M-NL; F-NI			0.917 (0.052)	0.922 (0.054)	0.925 (0.053)	0.919 (0.052)	0.920 (0.052)
W-NI; P-not; M-not; F- Not			4.332 (0.049)*	4.495 (0.047)*	4.610 (0.055)	3.477 (0.055)**	3.258 (0.087)**
W-NI; P-not; (M- not; F- NL/M-NI; F-not)			1.151 (0.510)**	1.106 (0.499)**	1.167 (0.509)**	0.969 (0.494)**	0.896 (0.553)**
W-not; P-NL; M- NL; F-NL			0.881 (0.150)	0.906 (0.149)	1.020 (0.161)	1.013 (0.139)	1.037 (0.164)
W-not; P-NL; M- not; F- Not			0.942 (0.087)	0.995 (0.084)	1.104 (0.105)	1.078 (0.125)	1.104 (0.131)
W-not; P-not; M-			1.246 (0.056)	1.381 (0.058)	1.505 (0.077)	1.123 (0.100)	1.074 (0.105)

not; F-							
Not			(0.066)**	(0.069)**	(0.083)**	(0.126)	(0.161)
Forerunner						0.774	0.869
						(0.077)*	(0.104)
Follower						1.109	1.090
						(0.185)	(0.182)
Trailer						0.935	0.911
						(0.106)	(0.104)
Latecomer						0.872	0.848
						(0.148)	(0.145)
P-forerun						0.877	0.826
						(0.093)	(0.108)
P-follow						1.199	1.201
						(0.179)	(0.181)
P-trail						1.151	1.164
						(0.121)	(0.124)
P-latecome						1.035	1.051
						(0.169)	(0.172)
Europe					0.746		0.834
					(0.057)**		(0.093)
P_Europe					0.850		1.100
					(0.068)*		(0.138)
Observations							
	4463	4463	4463	4463	4463	4463	4463

*Robust standard errors in parentheses ; significant at 5%; \*\* significant at 1%*  
*ABCD-data 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). Robust standard errors in parentheses significant at 5%; \*\* significant at 1%.*  
*Estimates for theta to be added plus log likelihood etc.*

Table 5 continued

	(8)	(9)	(10)	(11)
Education	0.988 (0.044)	0.981 (0.043)	0.977 (0.044)	0.975 (0.045)
Education sq.	0.999 (0.001)	0.999 (0.001)	0.999 (0.001)	0.999 (0.001)
Partner not in Household	0.962 (0.056)	0.952 (0.055)	0.967 (0.055)	0.960 (0.055)
Weeks pregnant	0.999 (0.005)	0.999 (0.005)	0.999 (0.005)	0.998 (0.005)
W-ft; P-ft	0.783 (0.045)**	0.777 (0.044)**	0.818 (0.047)**	0.831 (0.050)**
W-long pt;P-lpt	0.678 (0.058)**	0.676 (0.057)**	0.682 (0.058)**	0.696 (0.060)**
W-short pt;P-spt	0.769 (0.122)	0.742 (0.125)	0.769 (0.124)	0.770 (0.127)
W-not employed; P-not empl.	0.954 (0.124)	0.977 (0.127)	0.945 (0.121)	0.945 (0.127)
W-ft; P-lpt	0.761 (0.104)*	0.758 (0.103)*	0.803 (0.105)	0.806 (0.109)
W-lpt; P-ft	0.734 (0.042)**	0.727 (0.041)**	0.752 (0.044)**	0.765 (0.046)**
W-ft; P-spt	0.783 (0.094)*	0.776 (0.092)*	0.786 (0.099)	0.798 (0.104)
W-spt; P-ft	0.800 (0.059)**	0.794 (0.058)**	0.824 (0.062)**	0.829 (0.062)*
W-lpt;P-spt	0.645 (0.060)**	0.635 (0.059)**	0.639 (0.063)**	0.652 (0.065)**
W-spt;P-lpt	0.777 (0.119)	0.773 (0.118)	0.800 (0.122)	0.812 (0.124)
W-ft;P-not in Paid work	0.670 (0.085)**	0.670 (0.081)**	0.688 (0.087)**	0.684 (0.091)**
W-lpt;P-not in Paid work	0.672 (0.063)**	0.669 (0.061)**	0.674 (0.063)**	0.687 (0.065)**
W-spt;P-not in Paid work	1.210 (0.217)	1.229 (0.216)	1.205 (0.215)	1.225 (0.220)
W-NI; P-NI; M-not; F-Not	2.089 (0.204)**	2.031 (0.196)**	2.052 (0.196)**	2.026 (0.195)**
W-NI; P-NI; (M-not; F-NI/M NI; F-not)-	0.923 (0.052)	0.922 (0.052)	0.946 (0.053)	0.945 (0.054)
W-NI; P-not; M-NL; F-NI	0.717 (0.090)**	0.714 (0.090)**	0.726 (0.094)*	0.728 (0.093)*
W-NI; P-not; M-not; F-Not	3.206 (0.565)**	2.807 (0.515)**	2.968 (0.530)**	2.968 (0.523)**
W-NI; P-not; (M-not; F-NL/M-NI; F-not)	0.895 (0.170)	0.898 (0.171)	0.895 (0.172)	0.891 (0.170)
W-not; P-NL; M-NL; F-NL	1.074 (0.139)	1.067 (0.138)	1.094 (0.138)	1.100 (0.139)
W-not; P-NL; M-not; F-Not	1.145 (0.107)	1.129 (0.105)	1.100 (0.110)	1.097 (0.109)
W-not; P-not; M-not; F-Not	1.063 (0.161)	1.051 (0.160)	1.000 (0.169)	1.018 (0.162)
Forerunner	0.855 (0.102)	0.860 (0.103)	0.893 (0.106)	0.889 (0.106)
Follower	0.830 (0.149)	0.841 (0.152)	0.784 (0.147)	0.796 (0.157)
Trailer	0.847 (0.117)	0.858 (0.119)	0.798 (0.111)	0.818 (0.114)
Latecomer	0.888 (0.149)	0.886 (0.150)	0.766 (0.129)	0.782 (0.132)

P-forerun	0.808 (0.108)	0.796 (0.106)	0.806 (0.110)	0.801 (0.109)
P-follow	1.029 (0.199)	0.997 (0.195)	1.019 (0.203)	1.014 (0.215)
P-trail	0.913 (0.131)	0.887 (0.128)	0.860 (0.124)	0.856 (0.124)
P-latecome	1.054 (0.170)	1.040 (0.169)	1.009 (0.160)	1.008 (0.160)
Europe	0.839 (0.093)	0.839 (0.094)	0.844 (0.092)	0.848 (0.092)
P_Europe	1.107 (0.142)	1.116 (0.143)	1.105 (0.145)	1.097 (0.143)
Woman is born in Surinam	0.981 (0.171)	0.958 (0.168)	0.992 (0.182)	0.958 (0.173)
Woman is born in Morocco	1.337 (0.236)	1.129 (0.205)	1.172 (0.214)	1.087 (0.203)
Woman is born in Turkey	1.817 (0.498)*	1.689 (0.470)	1.955 (0.530)*	1.945 (0.546)*
Partner originates in Suriname	1.263 (0.220)	1.326 (0.231)	1.296 (0.224)	1.261 (0.219)
Partner originates in Morocco	1.428 (0.232)*	1.425 (0.238)*	1.406 (0.230)*	1.410 (0.236)*
Partner originates in Turkey	1.210 (0.299)	1.129 (0.284)	1.084 (0.274)	1.058 (0.280)
Opinion of the partner Is important			1.026 (0.041)	1.029 (0.041)
Average income per earner in Neighborhood			0.970 (0.004)**	0.970 (0.004)**
Woman says it is difficult to speak Dutch			1.007 (0.100)	0.962 (0.094)
Father of the baby is related to the woman			1.826 (0.309)**	1.797 (0.304)**
Opinion of the mother Is important to the woman			1.337 (0.078)**	1.352 (0.079)**
Works less because of pregnancy				1.093 (0.059)
Planned breastfeeding period in accordance with pregnancy leave				1.033 (0.036)
Q13			1.013 (0.082)	
Born abroad cultural group =Dutch		1.511 (0.202)**		
observations	4463	4463	4450	4394

*Robust standard errors in parentheses ; significant at 5%; \*\* significant at 1%*  
*ABCD-data 2003/2004:women pregnant with the first child in 2003.Education in years of schooling including primary school (8 years). Robust standard errors in parentheses significant at 5%; \*\* significant at 1%.*  
*Estimates for theta to be added plus log likelihood etc.gn1c is both born abroad; gn1b only partner born abroad; gn2-second generation*

*Appendix Table A.0 Summary of hypotheses of the impact of education, immigration background on the first birth timing in a woman's life.*

Factors affecting timing of first birth		Odds of first birth
Education	Higher	later
Investments by spouses in labour market hours	Equal and high	Later
	Unequal: she high; he low	Later
	Unequal: she low; he high	Earlier
	Both low	later
Migration background		
Endogamous	No bargain on ethnic differences	Earlier
Mixed/exogamous	Bargain on ethnic differences	Later
Endogamous born abroad	Migration regulations	Later
Mixed/exogamous	Migration regulations	Later
Mixed: she is migrant	Migration easier	Earlier
Mixed: she is migrant	If bargain on characteristics: she higher educated	later
Mixed: she is migrant	If bargain on characteristics: she more traditional	Earlier
Mixed: he is migrant	If bargain: she is picky on his qualifications: he first has to show ability to study and be successful in the labor market	Later
Mixed: he is migrant	If bargain: she wishes to be independent and postpone marital life	Later
Mixed: he is migrant	Migration regulations: more difficult for him to enter as husband. Suspicion of marriage of convenience and she has to earn an income to allow him to enter	Later
Both migrants	Migration as refugees. Time consuming immigration regulations; no opportunity to earn a living in the Netherlands	Later
Both partners Dutch born; women's parents born abroad	Dependent on attitudes towards human capital in the family and family ties Human capital valued as low; family ties strong	Earlier
Both partners Dutch born; women's parents born abroad	Dependent on attitudes towards human capital in the family and family ties Human capital valued as low; family ties weak	In between
Both partners Dutch born; women's parents born abroad	Dependent on attitudes towards human capital in the family and family ties Human capital valued as high; family ties strong	later
Both partners Dutch born; women's parents born abroad	Dependent on attitudes towards human capital in the family and family ties Human capital valued as high; family ties weak	later

*Appendix Table A.1 Statistics of Variables Used in the Analyses, Women less than 34 weeks pregnant of the first child in 2003 (means and standard deviations)*

Variable name	Description	mean	St.dv
	Age at giving birth to the first child	29.56	5.306
	Education in years including primary school (8yrs)	17.09	3.740
	Low education level	0.13	0.336
	High education level	0.53	0.499
	Missing information on education	0.01	0.090
	W-employed	0.78	0.416
	P-full time employed	0.70	0.460
	P-not employed	0.15	0.361
	W-ft; P-ft	0.26	0.436
	W-long part-time; P-long part-time	0.03	0.166
	W-short part-time; P-short part-time	0.01	0.121
	W-not employed; P-not employed	0.06	0.231
	W-full-time; P-not employed	0.03	0.170
	W-long part-time; P-full-time	0.26	0.438
	W-NI; P-NI; M-not; F-not	0.04	0.187
	W-NI; P-NI; (M-not; F-NI/M-NI; F-not)	0.05	0.219
	W-NI; P-not; M-NL; F-NI	0.08	0.272
	W-NI; P-not; M-not; F-not	0.05	0.212
	W-NI; P-not; (M-not; F-NL/M-NI; F-not)	0.01	0.107
	W-not; P-NL; M-NL; F-NL	0.01	0.112
	W-not; P-NL; M-not; F-not	0.09	0.284
	W-not; P-not; M-not; F-not	0.22	0.414
	Forerunner	0.07	0.251
	Follower	0.04	0.204
	Trailer	0.13	0.337
	Latecomer	0.04	0.196
	b_mrc	0.05	0.225
	b_trk	0.03	0.166
	b_sur	0.04	0.198
	b_ghn	0.02	0.128
	m_b_mrc	0.07	0.263
	m_b_trk	0.04	0.200
	m_b_sur	0.07	0.251
	average income per earner neighbourhood	16.82	3.021
	% inactive neighbourhood	22.20	7.614
	Total	4514	

ABCD 2003/2004: women pregnant with the first child in 2003

*Appendix Table A.2 Statistics of Variables Used in the Analyses, Women less than 34 weeks pregnant of the first child in 2003 (means and standard deviations, by education level)*

	Ed2		Ed3		Ed4		Ed5		Ed6	
	mean	St.dv	mean	St.dv	mean	St.dv	mean	St.dv	mean	St.dv
age1sted	24.97	5.828	27.38	5.987	29.47	5.139	31.25	3.665	32.27	3.455
	10.43	1.692	14.11	0.787	16.44	0.497	19.11	0.855	22.01	1.076
W-employed	0.42	0.494	0.67	0.469	0.81	0.393	0.90	0.305	0.90	0.296
P-full time employed	0.49	0.500	0.62	0.485	0.72	0.449	0.78	0.416	0.75	0.435
P-not employed	0.36	0.479	0.22	0.417	0.14	0.346	0.08	0.266	0.09	0.288
W-ft; P-ft	0.10	0.297	0.21	0.406	0.26	0.437	0.32	0.467	0.29	0.456
W-long part-time; P-long part-time	0.01	0.082	0.01	0.101	0.01	0.106	0.04	0.201	0.05	0.219
W-short part-time; P-short part-time	0.01	0.116	0.01	0.121	0.01	0.120	0.02	0.128	0.01	0.112
W-not employed; :P-not employed	0.18	0.387	0.09	0.289	0.05	0.212	0.01	0.121	0.01	0.118
W-full-time; P-not employed	0.05	0.217	0.04	0.203	0.03	0.164	0.02	0.141	0.02	0.148
W-long part-time; P-full-time	0.10	0.294	0.21	0.407	0.28	0.452	0.32	0.465	0.30	0.460
W-NI; P-NI; M-not; F-not	0.03	0.158	0.06	0.246	0.05	0.218	0.02	0.149	0.03	0.169
W-NI; P-NI; (M-not; F-NI/M-NI; F-not)	0.02	0.130	0.04	0.198	0.05	0.218	0.06	0.241	0.07	0.248
W-NI; P-not; M-NL; F-NI	0.05	0.217	0.08	0.276	0.08	0.278	0.09	0.289	0.07	0.263
W-NI; P-not; M-not; F-not	0.07	0.256	0.10	0.294	0.08	0.270	0.02	0.130	0.01	0.099
W-NI; P-not; (M-not; F-NL/M-NI; F-not)	0.02	0.123	0.01	0.121	0.02	0.138	0.01	0.084	0.01	0.091
W-not; P-NL; M-NL; F-NL	0.00	0.000	0.00	0.058	0.01	0.113	0.02	0.132	0.02	0.148
W-not; P-NL; M-not; F-not	0.10	0.306	0.10	0.294	0.10	0.296	0.07	0.263	0.09	0.286
W-not; P-not; M-not; F-not	0.58	0.493	0.29	0.455	0.20	0.403	0.11	0.307	0.10	0.296
forerunner	0.04	0.199	0.06	0.236	0.07	0.255	0.07	0.258	0.09	0.284
follower	0.12	0.325	0.07	0.248	0.04	0.193	0.02	0.126	0.02	0.139
trailer	0.33	0.471	0.18	0.381	0.14	0.351	0.06	0.241	0.05	0.219
latecomer	0.13	0.333	0.05	0.227	0.02	0.149	0.02	0.126	0.01	0.118
b_mrc	0.18	0.381	0.07	0.252	0.07	0.249	0.02	0.130	0.01	0.075
b_trk	0.10	0.304	0.05	0.215	0.01	0.120	0.01	0.084	0.00	0.065
b_sur	0.08	0.277	0.05	0.222	0.06	0.243	0.02	0.135	0.02	0.139
m_b_mrc	0.20	0.402	0.11	0.309	0.11	0.309	0.03	0.162	0.01	0.099
m_b_trk	0.12	0.327	0.09	0.281	0.03	0.177	0.01	0.094	0.01	0.084
m_b_sur	0.12	0.325	0.11	0.314	0.11	0.307	0.03	0.167	0.03	0.169
average income per earner										
neighbourhood	15.43	2.200	16.05	2.528	16.54	2.692	17.46	3.180	17.68	3.366
% inactive neighbourhood	26.75	6.642	24.22	7.426	22.80	7.638	20.21	7.173	20.00	7.198
Total	585		882		618		1680		712	

*ABCD 2003/2004: women pregnant with the first child in 2003.*

*Appendix Table A.3: Women's Age and Education at First Birth by Type of Matching on Employment*

Women's labor force status-Her partner's labor force status	n	Women's Age at first birth		Women's education at first birth	
		mean	St.dev	mean	St.dev
Ft-ft	1153	30.74	4.10	18.11	2.98
Ft-lpt	41	31.32	4.61	18.93	2.66
Ft-spt	58	30.02	4.88	17.58	2.87
Ft-unemp	135	29.56	5.81	15.99	3.71
Lpt-lpt	128	31.87	4.17	19.27	2.60
Lpt-Ft	1169	30.99	4.21	18.14	3.01
Lpt-spt	98	31.35	4.74	18.38	3.38
Lpt-unemp	160	29.83	5.74	16.50	3.76
Spt-spt	67	29.39	5.39	16.99	3.48
Spt-ft	291	29.97	4.80	17.78	3.56
Spt-lpt	33	30.30	5.43	18.42	3.00
Spt-unemp	69	26.30	6.09	16.32	3.93
Unemp-unemp	256	24.86	6.28	13.37	3.64
Unemp-ft	391	26.71	5.75	14.77	4.35
Unemp-lpt	29	26.03	5.41	14.55	4.26
Unemp-spt	35	25.26	5.15	13.94	3.69

*ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). Ft=full time job (>35 hours per week); lpt=long part-time job (32-35 hours per week); spt=short part time job (1-32 hours per week); unemp=not in paid work.*

*Appendix Table A.4: Women's Age by All Possible Combinations of Migration Background*

Born in the Netherlands: yes=1 no=0	W	P	M	F	% of Total	N	Age at first birth mean	St.dev.
1	1	1	1	1	44.51	2,055	31.22	
2	1	1	0	0	3.53	163	25.85	
3	1	1	0	1	2.32	107	31.56	
4	1	1	1	0	2.62	121	31.11	
5	1	0	1	1	7.95	367	31.03	
6	1	0	0	0	4.64	214	23.45	
7	1	0	0	1	0.67	31	31.06	
8	1	0	1	0	1.13	52	28.83	
9	0	1	1	1	1.23	57	32.21	
10	0	1	0	0	8.58	396	29.82	
11	0	1	0	1	0.28	13	31.31	
12	0	1	1	0	0.50	23	32.00	
13	0	0	1	1	0.26	12	31.58	
14	0	0	0	0	21.55	995	26.86	
15	0	0	0	1	0.06	3	22.67	
16	0	0	1	0	0.17	8	31.88	
N						4,617		

*ABCD 2003/2004: women pregnant with the first child in 2003. W=:woman; P:her partner M: the woman's mother; F:the woman's father;*

*Appendix Table A.5: All Types of Matching on Employment in couples expecting the first child*

Women's labor force status - Her partner's labor force status	n	Women's Age at first birth		Women's education at first birth	
		mean	St.dev.	mean	St.dev
Unemp-unemp	256	24.86	6.28	13.37	3.64
Unemp-spt	35	25.26	5.15	13.94	3.69
Unemp-lpt	29	26.03	5.41	14.55	4.26
Spt-unemp	69	26.30	6.09	16.32	3.93
<i>Unemp-ft</i>	391	26.71	5.75	14.77	4.35
Spt-spt	67	29.39	5.39	16.99	3.48
<i>Ft-unemp</i>	135	29.56	5.81	15.99	3.71
<i>Lpt-unemp</i>	160	29.83	5.74	16.50	3.76
Spt-ft	291	29.97	4.80	17.78	3.56
Ft-spt	58	30.02	4.88	17.58	2.87
Spt-lpt	33	30.30	5.43	18.42	3.00
<i>Fft</i>	1153	30.74	4.10	18.11	2.98
<i>Lpt-Ft</i>	1169	30.99	4.21	18.14	3.01
Ft-lpt	41	31.32	4.61	18.93	2.66
<i>Lpt-spt</i>	98	31.35	4.74	18.38	3.38
Lptlpt	128	31.87	4.17	19.27	2.60

*ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). Ft=full time job (>35 hours per week); lpt=long part-time job (32-35 hours per week); spt=short part time job (1-32 hours per week); unemp=not in paid work.*

Appendix Table A.6: Women's Country of origin (excluding the Netherlands, Morocco, Turkey and Suriname)

Category (defined by Reher 2004)	Specific country name	% of observation	
Forerunner	Argentina	1.2	
	Austria	2.4	
	Belgium	5.41	
	Bulgaria	3	
	Canada	1.8	
	Denmark	2.4	
	Finland	1.2	
	France	10.21	
	Germany	21.02	
	Hungary	1.8	
	Italy	4.2	
	Portugal	2.4	
	Romania	2.4	
	Spain	6.31	
	Sweden	3.6	
	Switzerland	2.1	
	United Kingdom	17.42	
	United States	11.11	
	-----	-----	-----
		Total	100
	N=333 (40.31% of total)		
Follower	Chile	5.56	
	India	20.83	
	Israel	9.72	
	Japan	11.11	
	Palestine	1.39	
	Philippines	25	
	Singapore	9.72	
	South-Korea	9.72	
	Sri Lanka	6.94	
	-----	-----	-----
		Total	
	N=72 (8.72% of total)		
Trailer	Albania	0.57	
	Algeria	0.57	
	Armenia	0.57	
	Azerbaijan	0.57	
	Bahamas	0.57	
	Brazil	10.29	
	China	5.71	
	Colombia	8.57	
	Dominican Republic	5.71	
	Ecuador	1.71	
	Egypt	12.57	
	French Guiana	1.14	
	Georgia	0.57	
	Guiana	1.71	
	Indonesia	12.00	
	Iraq	12.00	
	Jordan	0.57	
	Kuwait	0.57	
	Lebanon	2.86	
	Mexico	1.71	

	Peru	2.29
	South Africa	5.14
	Tanzania	1.14
	Thailand	4.57
	Trinidad and Tobago	0.57
	Tunisia	2.86
	Venezuela	1.71
	Zimbabwe	0.57
	-----	-----
	total	100
	N=175 (21.19% of total)	
Latecomer		
	Afghanistan	16.19
	Angola	3.81
	Burundi	0.95
	Cameroon	0.95
	Chad	0.95
	Congo	1.9
	Eritrea	4.76
	Ethiopia	6.67
	Gabon	0.95
	Gambia	0.95
	Guinea	1.9
	Iran	13.33
	Ivory Coast	1.9
	Lesotho	0.95
	Liberia	0.95
	Libya	1.9
	Malawi	1.9
	Mali	0.95
	Nepal	1.9
	Nicaragua	0.95
	Nigeria	8.57
	Rwanda	0.95
	Senegal	0.95
	Sierra Leone	4.76
	Somalia	2.86
	Sudan	9.52
	Togo	1.9
	Uganda	0.95
	Vietnam	1.9
	Yemen	0.95
	Zambia	1.9
	-----	-----
	Total	100
	N=105 (12.71% of total)	
Non categorized		
	Aruba	0.71
	Australia	9.93
	Bangladesh	3.55
	Bosnia-Hercegovina	6.38
	Burkina-Faso	0.71
	Byelorussia (White Russia)	1.42
	Channel Islands	0.71
	Croatia	3.55
	Czech Republic	4.26
	Estonia	0.71
	Greece	4.26
	Hong Kong	4.96
	Iceland	0.71

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	Ireland	7.8
	Kazakhstan	0.71
	Latvia	0.71
	Lithuania	1.42
	Luxemburg	0.71
	Mayotte	0.71
	Missing	3.55
	Monaco	0.71
	Netherlands Antilles	0.71
	New Zealand	3.55
	Pakistan	7.09
	Papua	0.71
	Poland	9.22
	Russia	9.22
	Slovakia	2.13
	Ukraine	2.84
	Yugoslavia	6.38
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	Total	100
	N=141 (17.07% of total)	
Total	N=826	

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*ABCD 2003/2004: women pregnant with the first child in 2003*

*Appendix Table A. 7 Cumulative percentage of women giving birth to the first child in 2003 by education level and age*

Education level	Primary school Only	Primary school+4 years at maximum	Primary school+7 years at a maximum	Primary school +9 years at a maximum	Primary school +12 years at a maximum	Primary school +at least 12 years
		Lower level vocational training	Pre-university education	Medium level vocational training	Higher vocational training	University degree
Age						
16	0.74	2.29	0.13			
17	2.94	7.43	1.05			
18	10.29	13.43	3.82		0.06	
19	17.65	18.86	6.84	0.89	0.13	0.3
20	27.94	27.71	13.16	2.86	0.19	0.44
21	33.82	34.57	18.29	6.07	0.38	0.59
22	37.50	41.43	24.47	9.11	0.75	0.74
23	48.53	48.00	30.79	14.29	2.13	0.89
24	51.47	52.00	37.76	19.64	3.76	1.33
25	57.35	58.00	41.58	25.71	6.45	2.51
26	61.03	62.57	46.05	30.89	9.15	4.87
27	66.91	66.29	50.79	35.36	13.41	7.83
28	72.79	71.14	55.26	43.04	19.80	11.96
29	79.41	75.14	61.71	50.89	29.32	19.05
30	83.82	79.71	65.79	56.96	42.98	27.77
31	86.76	83.71	71.97	66.43	55.83	39.00
32	88.97	88.29	76.84	72.50	68.61	54.21
33	92.65	90.29	81.58	77.68	76.94	66.62
34	94.12	91.43	86.71	83.21	84.34	77.99
35	96.32	94.57	90.13	88.21	89.35	84.93
36	98.53	95.14	92.37	92.32	93.17	90.25
37	99.26	97.14	94.08	95.00	95.93	93.35
38	100	98.29	96.45	97.14	97.68	96.60
39		99.14	97.11	98.21	98.50	98.23
40		99.71	98.03	99.11	99.12	99.26
41		100	98.82	99.64	99.69	100
42			99.21	99.82	99.87	
43			99.87	100	99.94	
44			100		100	
Number observations						

ABCD 2003/2004: women pregnant with the first child in 2003. Total number of observations N=XX+38 missing observations

Appendix Table A. 8 Proportion of women having first birth in 2003 by time passed since age 15 according to education and migration background

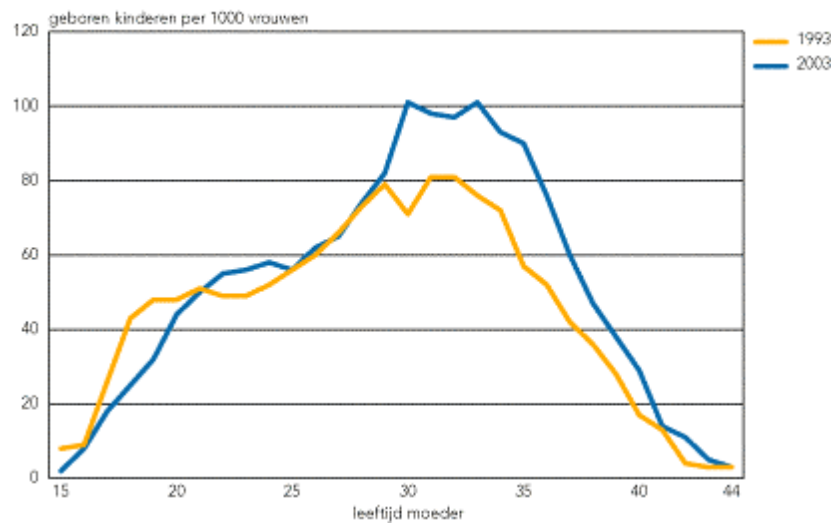
Ethnic effect*	Educ	Number at risk	Incidence rate	Number of women	25%	50%	75%
<b>Dutch</b>							
1	2	948	0.082279	78	7	11	17
1	3	4025	0.06882	277	10	15	18
1	4	4015	0.062267	250	13	16	19
1	5	16890	0.060272	1018	15	16	19
1	6	7458	0.057924	432	15	17	19
<b>Her parents</b>							
2	1	2	0.5	1	.	.	.
2	2	81	0.17284	14	2	5	9
2	3	472	0.122881	58	4	6	11
2	4	322	0.096273	31	7	9	13
2	5	562	0.067616	38	12	15	18
2	6	321	0.065421	21	12	15	19
<b>One of her parents</b>							
3	1	20	0.05	1	.	.	.
3	2	143	0.062937	9	11	17	20
3	3	513	0.070175	36	9	16	19
3	4	455	0.068132	31	10	16	18
3	5	1724	0.060325	104	15	17	19
3	6	858	0.054779	47	16	19	20
<b>Mix1</b>							
4	1	11	0.181818	2	5	5	6
4	2	405	0.071605	29	11	15	17
4	3	1088	0.068015	74	8	15	21
4	4	824	0.06432	53	11	16	20
4	5	2584	0.060372	156	14	16	19
4	6	962	0.055094	53	17	18	20
<b>Mix1+her parents</b>							
5	1	15	0.2	3	3	5	7
5	2	220	0.177273	39	4	5	8
5	3	645	0.131783	85	5	7	9
5	4	461	0.106291	49	7	9	11
5	5	376	0.082447	31	9	12	16
5	6	98	0.071429	7	11	12	19
<b>Mix 1+one of her parents</b>							
6	1	5	0.2	1	.	.	.
6	2	72	0.111111	8	1	5	14
6	3	143	0.090909	13	6	11	15
6	4	193	0.062176	12	9	16	21
6	5	198	0.060606	12	14	16	20
6	6	108	0.055556	6	17	17	19
<b>Mix2</b>							
7	3	60	0.05	3	18	20	22
7	4	146	0.054795	8	15	19	21
7	5	480	0.0625	30	15	17	18
7	6	295	0.054237	16	17	18	20

<b>Mix2+her parents</b>							
8	1	143	0.111888	16	5	9	14
8	2	519	0.088632	46	6	10	15
8	3	1127	0.074534	84	9	14	17
8	4	868	0.069124	60	11	15	18
8	5	2065	0.061017	126	14	16	19
8	6	1147	0.055798	64	15	18	21
<b>Interethnic</b>							
9	1	1515	0.09505	144	6	10	14
9	2	1874	0.110993	208	5	8	12
9	3	2968	0.088612	263	7	10	15
9	4	1726	0.074739	129	10	13	17
9	5	2651	0.067899	180	12	14	18
9	6	1119	0.06345	71	12	16	19
total	al	65920	0.068674	4527	11	15	18

*ABCD 2003/2004: women pregnant with the first child in 2003. Education in years of schooling including primary school (8 years). \* ethnic effect see Tables 3a and b for definition.*

## Figure

**Figure 1** Number of Births per 1000 Women by age of the mother in Amsterdam, 1993 en 2003



X-Age of the mother

Y-Number of children born per 1,000 women

Source: o+s

Statistical department municipality of Amsterdam