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The Impact of Perceived Costs and Rewards of Childbearing on Entry into Parenthood: Evidence from a Panel Study

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Abstract. The impact of perceived costs and rewards of having a child on the actual timing of entry into parenthood is examined among women and men. To this end, data are used from a five-wave panel survey among Dutch young adults spanning 13 years. Expected costs and rewards are found to influence the timing of parenthood among both women and men. Anticipated costs to one's career and to one's level of individual autonomy and an anticipated increase in one's sense of security affect the timing of entry into motherhood. Anticipated costs to one's career and spending power, and anticipated rewards in terms of one's sense of security and quality of the partner relationship affect the timing of entry into fatherhood.

Key words: fertility, value of children, panel data

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Résumé. Cet article s'intéresse à l'influence des coûts et des bénéfices attendus de la naissance d'un enfant sur la décision de créer une famille chez les hommes et chez les femmes. Pour ce faire, on s'appuie sur les résultats d'une enquête suivie à 5 passages menée auprès de jeunes adultes néerlandais sur une période de 13 ans. Les coûts et bénéfices attendus influencent le calendrier de la création de la famille aussi bien chez les hommes que chez les femmes. L'influence négative prévue sur la carrière et sur le niveau d'autonomie individuelle et l'augmentation attendue du sentiment de sécurité pèsent sur la décision de maternité chez les femmes. Chez les hommes, la crainte d'un effet négatif sur leur carrière et leur pouvoir d'achat et l'espoir d'un accroissement du sentiment de sécurité et d'une amélioration de la qualité de la relation de couple pèsent sur la décision de paternité.

Mots clés: Fécondité, valeur des enfants, données de panel

1. Introduction

The choice whether and when to have children is often assumed to be the outcome of a rational consideration of the pros and cons of having a child, in particular in low-fertility societies, where contraceptive use is widespread. It is therefore not surprising that, dating back at least to the work of Centers and Blumberg (1954), demographers have tried to examine whether childbearing is the outcome of a rational consideration of costs and rewards, and if so, which costs and rewards are important. However, given the cross-sectional nature of most studies conducted in this tradition (Hoffman and Hoffman, 1973; Beckman, 1979; Bulatao, 1981; Callan, 1986; Fawcett, 1988; Miller and Pasta, 1988, 1994), it is difficult to reach definitive conclusions about the influence of costs and rewards on the occurrence and timing of first childbirth. This inconclusiveness has probably contributed to the waning interest in this research tradition since the late 1980's. However, the growing availability of panel studies in recent years offers opportunities to revitalise this research tradition. Panel data in which perceived costs and rewards of children are measured before the actual behaviour occurs can be used to study the causal impact of costs and rewards on actual decisions on childbearing. This article seeks to contribute to this revitalisation by studying the impact of the cost and reward considerations of Dutch young adults on the subsequent timing of the birth of a first child. To that end, data from a five-wave panel survey spanning 13 years are used.

2. Previous research

Empirical research on the costs and rewards of children is rooted in studies that focus on the value of children to their parents. Several authors (Hoffman and Hoffman, 1973; Fawcett, 1978) have stressed that the wish to have children is related to the values they serve; having a child – or having a certain number of children – helps parents attain positively valued goods. In other words, there are rewards attached to having children. At the same time, however, having children may obstruct the attainment of other valued goals. Having children also entails costs. Therefore, the decision to have children is usually considered to be the result of weighing the costs and benefits. Hoffman and Hoffman (1973) were the first to discuss in detail the kind of rewards parenthood can bring to people. They distinguish nine different values of children, grouped into three larger sets of considerations. Firstly, rewards can be social in nature: having children conveys adult status, conforms to group norms and establishes a link to the larger community. Secondly, rewards can be emotional or psychological in nature: having children brings stimulation and fun, enhances one's feelings of competence, enables people to exercise power and influence and to benefit from the status

attainment of their children. Finally, rewards can be economic in nature: children can take care of parents in old age and can contribute to the welfare of the family. Fawcett (1978, 1988) discusses both rewards and costs at length and distinguishes five different categories of costs of children: direct economic costs, income-related opportunity costs, opportunity costs other than income, psychological costs and physical costs.

Starting from these early conceptualisations, a number of approaches have been developed to measure and analyse the rewards and costs of childbearing. One approach is to start from a large pool of items on the potential rewards and costs of children and to search for underlying dimensions by means of factor analysis or other data-reduction techniques (Beckman, 1979; Thomson, 1983; Callan, 1985, 1986; Seccombe, 1991; Miller and Pasta, 1993). A second approach is to start from a smaller set of items that more or less reflect the types of rewards and costs outlined by Hoffman and Hoffman and Fawcett (Fried and Udry, 1979; Bulatao, 1981; Miller and Pasta, 1994; Jacobs, 1995). A third approach is to focus on the overall costs and rewards of children. This is usually done by constructing either one overall score (Beckman, 1979; Den Bandt, 1980; Beckman et al., 1983; Miller and Pasta, 1994) or by calculating separate overall cost and reward scores (Miller and Pasta, 1988; Miller, 1992, 1995).

Another important distinction is related to the way costs and rewards are measured. The most common approach is to ask respondents how important they rate the possible consequences of having a (next) child (Beckman, 1979; Fried and Udry, 1979; Beckman et al., 1983; Thomson, 1983; Fawcett, 1988; Seccombe, 1991; Miller, 1992, 1994; Miller and Pasta, 1993; Jacobs, 1995). Other studies that focus on the importance of having a child for goal attainment are Bulatao (1981) – in which goals are rank-ordered rather than rated – and Hoffman and Manis (1979) – in which an open question on the advantages of having children is posed. An alternative approach is inspired by social–psychological models like the Subjective-Expected Utility (SEU) model (McClintock, 1972) or Fishbein and Ajzen's (1975) theory of reasoned behaviour (Den Bandt, 1980; Miller and Pasta, 1994). In this approach, costs and rewards are viewed as a multiplicative function of the importance attached to certain goals and the strength of the consequences of childbearing for goal attainment. If people attach much importance to a goal, but think that having children will have no consequences whatsoever for their attainment of that goal, this goal will not influence the fertility decision-making process. The same is true for goals whose attainment is strongly influenced by having a child, but which are rated as not important. Therefore, in studies inspired by SEU models questions are posed both on the strength or likelihood of certain consequences and on the importance of these consequences.

Research on the impact of the costs and rewards of childbearing on fertility decision-making has used a diverse set of outcome variables other

than behaviour, like child-number desires (Beckman, 1979; Miller and Pasta, 1988, 1993), child-timing desires (Miller and Pasta, 1988, 1994), child-number intentions (Den Bandt, 1980) and child-timing intentions (Beckman et al., 1983; Miller and Pasta, 1994; Miller, 1995). In addition, the motivations of people with different numbers of children have been compared (Bulatao, 1981; Callan, 1986; Fawcett, 1988). Fawcett (1988) summarises the results of much of this research and concludes that the most important rewards of having a child are psychological in nature. In addition, people expect that a child will enhance the quality of the relationship between spouses. No economic rewards are envisaged – at least not in societies in which the process of modernization is in a fairly advanced stage. The major costs of child-bearing are financial ones and opportunity costs related to giving up one's career, or the career of the spouse.

Most research that uses behaviour – such as becoming pregnant or having a child – as the dependent variable has focused on the effects of desires and/or intentions rather than on the effects of expected costs and rewards (Thomson et al., 1990; Miller and Pasta, 1995; Thomson, 1997; Thomson and Hoem, 1998). Only a limited number of studies have examined the impact of subjectively perceived costs and rewards on actual behaviour (Fried and Udry, 1979; Beckman et al., 1983; Miller, 1995). However, none of these studies pay any attention to the question, which specific costs and rewards influence fertility behaviour. Instead, the focus is on how overall indices of costs and rewards influence fertility behaviour.

3. Research questions

Given the state of affairs sketched above, the main goal of this article is to answer the question whether the decision to have a first child is influenced by the perceived costs and rewards of having a child, and if so, which perceived costs and rewards are important. Perceived costs and rewards are measured in SEU-like terms, by multiplying the perceived consequences of having a first child for the attainment of certain life goals and the value attached to these life goals. Therefore, the first two research questions are:

Q1: What are the perceived consequences of having a first child for the attainment of valued life goals among young adults without children? To what extent are these life goals valued by young adults?

Q2: Which perceived costs and rewards influence the decision to have a first child among young adults without children?

An important issue when answering these research questions is which perceived costs and rewards are taken into account. The strategy pursued in this article is to select a small set of costs and rewards that are clearly linked to existing theories on the determinants of fertility behaviour. These costs and rewards are specified in Section 4.1.

An important additional question is whether the impact of perceived costs and rewards is conditional on other factors. Differential effects for men and women is one issue that needs to be addressed. Some fertility theories focus on changes in the costs and benefits of childbearing to women (e.g. Becker, 1981). Therefore, it could be that some costs and rewards are more relevant to women whereas others are more relevant to men. The stage in the life course may be a conditioning factor as well. Young adults who do not have a steady partner, for instance, may reflect less on the issue of parenthood than partnered young adults. As a result, the latter may have clearer ideas of the costs and rewards of childbearing. If this is the case, the influence of these costs and rewards on the timing of parenthood may be stronger for partnered young adults than for young adults without a partner. Therefore, the third research question is:

Q3: Do the effects of perceived costs and rewards on the decision to have a first child among young adults vary by gender and by life course stage?

Section 4.2 discusses the arguments indicating that one may expect gender and life course stage differences in the impact of perceived costs and rewards.

4. Elaboration of central issues

4.1. SPECIFYING RELEVANT COSTS AND REWARDS

Existing research in this area has shown that the list of potential costs and rewards people take into account is almost endless (Hoffman and Hoffman, 1973; Fawcett, 1978). Rather than following a strategy to compile a full list of costs and rewards, I advocate an alternative strategy. In empirical research on fertility, researchers usually draw on a limited number of competing theoretical orientations to generate testable empirical hypotheses about the determinants of variation in both the timing and quantum of fertility (Van de Kaa, 1996; De Bruijn, 1999). Most of these theories include – either explicit or implicit – assumptions about the costs and rewards people take into account when deciding on their fertility behaviour. I will draw up a short list with potentially important costs and rewards, based on my understanding of the costs and rewards that are central to a number of important fertility theories. In drawing up this list, I restrict myself to a number of theories that are most often cited to explain changes in fertility behaviour in modern Western societies or to explain differences in fertility behaviour within or across Western societies. Specifically, I will focus on Becker's (1981) economic theory of fertility, Easterlin's (1980) economic aspirations theory, Friedman et al. (1994) theory of the value of children, and Second Demographic Transition theory as developed by Van de Kaa and Lesthaeghe (Van de Kaa, 1987; Lesthaeghe, 1995). Although the selected theories do not exhaust the full range of potential theories, they are among

the most important in explaining differences in the timing of parenthood in contemporary low-fertility societies and they cover a wide range of both tangible and intangible costs and rewards. In addition, their assumptions are often shared by other theoretical perspectives. For instance, theories that stress the importance of institutional arrangements in explaining changes in fertility levels (Gauthier and Hatzius, 1997) often start from the hypothesis that people will be more likely to have (additional) children if child allowances are higher or if better facilities for combining parenthood and labour force participation exist. Clearly, this explanation is underpinned by the same kind of assumptions about financial and career-related costs and rewards as some of the theories discussed below.

Becker's (1981) economic theory of fertility is probably the best known and most widely discussed rational choice approach to fertility. Becker suggests that the gains from marriage and having children have been reduced through women's increased educational attainment. Highly educated women have invested heavily in education, and they will lose much of their investment in human capital if they withdraw from the labour market after childbirth. This loss of human capital is lower for women with relatively little education. Stated differently, more highly educated women face higher opportunity costs than women with low educational attainment if they have to reduce their labour force participation or leave the labour market altogether when they have children. As a result, highly educated women are believed to be more reluctant to have children than women with little education. Cost considerations relating to career opportunities are therefore a key motivational force in Becker's framework.

Another by now 'classic' rational choice approach to fertility is provided by Easterlin's (1980) work on the effect of cohort size on the life chances of successive cohorts. He suggests that behaviour is motivated by economic aspirations that are largely based on the level of prosperity experienced during childhood and youth. If the economic conditions young adults face hamper the realisation of their economic aspirations, a delay in childbearing will be a likely reaction. In Easterlin's own words: "If the couple's potential earning power is high in relation to aspirations, they will have an optimistic outlook and will feel freer to marry and have children. If their outlook is poor relative to aspirations, the couple will feel pessimistic and, consequently, will be hesitant to marry and have children" (Easterlin, 1980, p. 39). Within this framework, costs related to people's earning power are the prime motivation driving fertility behaviour.

A third major rational choice fertility theory is Friedman et al.'s (1994) theory of the value of children. They base their theory on two motivational assumptions. The first is that people strive to reduce uncertainty in their lives. Uncertainty reduction is assumed to be important to all people, because people want to make rational decisions and this is hampered by uncertainty.

Two options are open to reduce uncertainty. The first is to constantly seek additional information that helps people make a better informed decision in each specific situation. The second option is for actors to "pursue global strategies designed to reduce uncertainty regarding whole strings of future courses of action" (Friedman et al., 1994, p. 382). If people choose this option, they structure their future by closing off many alternative pathways into the future. Having a child can be viewed as a highly effective example of this second option, not only because having a child is irreversible, but also because parenthood entails a host of formal and informal obligations and rights. Therefore, Friedman et al. suggest that parenthood will be used as a global strategy to reduce uncertainty, particularly by those who have few other options to reduce uncertainty in their lives. The second motivational assumption made by Friedman et al. is related to partner relationships. They view marriage as another example of a global strategy to limit uncertainty. However, the growing fragility of marriage undermines its usefulness as a global strategy. Spouses are therefore believed to strive towards marital solidarity enhancement to counteract the spread of uncertainty regarding their marriage. Having children can be functional in this regard because they are a form of marriage-specific capital, which will deter spouses from leaving the relationship. This strategy will again be used mainly by those spouses who have limited alternative means of reducing marital uncertainty.

In recent years, the main challenge to rational choice theories of fertility has come from Second Demographic Transition theory (Van de Kaa, 1987; Lesthaeghe and Surkyn, 1988). Although Lesthaeghe and Van de Kaa do not deny that economic factors are important determinants of fertility behaviour, they emphasise the contribution of cultural factors. Their Second Demographic Transition theory, like more general sociological theories (e.g. Buchmann, 1989; Giddens, 1992; Beck and Beck-Gernsheim, 2002), stresses the importance of individual autonomy for understanding family formation decisions. According to this theory, Western societies have witnessed parallel and interdependent processes of modernization, secularisation and individualization. These processes have diminished peoples' inclination to adhere to normative guidelines. Though opinions of family, friends and normative institutions like the church are not discounted completely, they have lost the normative force they once represented. Instead, the value attached to individual autonomy has increased. Having children is often viewed as impinging on one's individual autonomy. As Van de Kaa remarks: "The strong emphasis on individualism requires people to search constantly for guiding and stabilising orientations, for an individual life style and a personal identity. [...] In such circumstances, the choice for children will only be made if the responsibilities can be accepted and the decision is likely to contribute to the self – of the woman and/or her partner" (Van de Kaa, 1993, p. 111). Therefore, within the framework of the Second Demographic Transition

theory, the postponement of fertility decisions can be viewed as driven by the consideration that having children interferes too strongly with one's individual autonomy.

4.2. GENDER AND LIFE COURSE DIFFERENCES

The third research question is whether the impact of costs and rewards varies by gender and life course stage. A focus on gender differences is interesting for two reasons. Firstly, some theories, in particular those of Becker and Friedman et al., start their theorising by focusing on the position of women (Oppenheimer et al., 1997). Therefore, the costs and benefits that are central to these theories may show a stronger impact on the fertility behaviour of women than on that of men. A second, more practical reason for focusing on gender differences is that most empirical studies do not include men, because information on their fertility decisions is lacking. In this study, the fertility decisions of both men and women are examined.

A related issue, with both methodological and theoretical implications, is whether the impact of costs and rewards depends on when young adults are asked to consider the costs and benefits of parenthood. At least three timing issues seem relevant. Firstly, the time elapsed since evaluating the pros and cons of parenthood. Fishbein and Ajzen (1975) suggest that the predictive power of their model becomes weaker as the time between the measurement of intentions and actual behaviour increases, because intervening events may lead to a change in the original intentions. The same may be true for costs and benefits of parenthood. As time passes, unexpected events like the loss of a job or dissolution of a partner relationship may lead to a revaluation of costs and rewards. I will therefore examine, whether the effect of costs and rewards depends on the time elapsed since their measurement. Secondly, it could be that the age of young adults plays a role. Among young adults in their late teens or early twenties, parenthood may not yet be a major issue. If this is indeed the case, they will most likely not spend much time reflecting on the costs and rewards of parenthood. This may be quite different for young adults in their mid- or late twenties, as this is the age at which many of their age peers take decisions on this issue. They will have spent more time reflecting on the costs and benefits of parenthood. If the predictive power of cost and reward considerations increases with the amount of reflection given to these issues, one would expect the impact of such considerations on actual parenthood decisions to be stronger the older young adults are at the time costs and rewards are measured. This same argument can be applied to the partner status of young adults. Partnered young adults will have reflected more thoroughly on the issue of becoming a parent than young adults without a partner. If this is the case, the cost and reward considerations of the former may be more realistic and thus better predictors of actual behaviour.

5. Method

5.1. RESPONDENTS

The data for this study come from the Panel Study on Social Integration in the Netherlands (PSIN) (Liefbroer and Kalmijn, 1997). This panel study follows the process of social integration of young adults within the crucially important life domains of living arrangements and family formation, and education and occupation. The panel study consists of five waves of data collection among a sample of Dutch young adults of the 1961, 1965 and 1969 birth cohorts. Data were collected in 1987 (Wave 1), 1989 (Wave 2), 1991 (Wave 3), 1995 (Wave 4) and 1999/2000 (Wave 5). Respondents were aged around 18, 22, and 26 at the time of the first survey wave in 1987, and were around 30, 34, and 38 years in 1999, when the last survey wave was conducted. Waves 1, 3 and 4 consisted of a combination of a face-to-face interview and an additional self-administered questionnaire. Wave 2 consisted of a mail questionnaire. Wave 5 consisted of a combination of a computer-assisted telephone interview and an additional self-administered questionnaire.

In 1987, a random sample was drawn of Dutch men and women born in 1961, 1965 and 1969. The sample was stratified according to birth cohort and sex. Municipal population registers were chosen as the sampling frame as these registers offer an accurate registration of all inhabitants living in a municipality and allow the possibility of drawing a stratified sample. A total of 1775 interviews were conducted in the first wave. The response rate was 63.4%. In Wave 2, 1419 respondents participated (79.9% of the original sample), 1257 respondents participated in Wave 3 (70.9% of the original sample), 962 respondents participated in Wave 4 (54.2% of the original sample), and 840 respondents participated in Wave 5 (47% of the original sample). Multivariate sequential logistic regression models suggest that underprivileged young adults and the more mobile ones have a somewhat elevated risk of dropping out. See Liefbroer and Kalmijn (1997) for details on sampling procedures and panel attrition.

For this study, respondents were selected who had no children at the time of the first wave. To include as many respondents as possible, the analyses were based on information about all respondents who participated in at least two waves. I examined whether drop-out is related to the issue of childbearing by comparing the perceived costs and rewards of having a first child for respondents who participated in the first wave only and respondents who participated in multiple waves. No differences in perceived costs and rewards between these two categories of respondents were observed, suggesting that attrition was not selective with regard to the independent variables of interest to this study.

5.2. MEASURING COSTS AND REWARDS

In this study, the costs and rewards of having a first child were conceptualised following the SEU tradition in fertility research by assessing both the perceived consequences of having a child for the attainment of specific goals and the importance attached to attaining these goals. The perceived consequences of having a child were assessed by asking respondents what would happen with regard to a list of different goals if they were to have a child. Responses were given on a five-point scale ranging from 'will strongly decrease' (−2) to 'will strongly increase' (+2). A score of zero was attached to the answer 'will remain the same'. Five goals that were presented to the respondents have a direct bearing on the costs and rewards underlying the theories discussed above. These goals – and their wording – were:

- Career opportunities (Becker) – "the attention you can pay to your education or career";
- Spending power (Easterlin) – "your opportunity to spend money to your own liking";
- Sense of security (Friedman et al.) – "your sense of feeling secure";
- Relationship with partner (Friedman et al.) – "the relationship with your partner";
- Individual autonomy (Lesthaeghe and Van de Kaa) – "your freedom to do as you please".

Although this set of goals was not designed with the explicit intention of mirroring cost and reward assumptions underlying fertility theories, they clearly parallel the assumptions of the major theories in this field.

The value respondents attached to these goals was assessed by asking – much earlier during the interview: "We are interested in finding out to which things young people attach importance in their lives and which things they deem to be less important". An item set containing the goals listed above was then presented to them. Respondents were asked to indicate how important each of these goals was to them. Their responses were scored on a five-point scale ranging from 'not important' (1) to 'very important' (5).

The final score on each perceived cost and reward of having a first child was calculated by multiplying the score on the consequences item with that on the matching importance item. This score could range between −10 and +10. A positive score implies that having a first child will contribute to the attainment of a valued goal, whereas a negative score implies that having a first child will hamper the attainment of a valued goal. The more negative the score, the higher the cost, and the more positive the score, the higher the reward with regard to the goal under consideration.

A drawback of this approach to measure perceived costs and rewards is that only one item is used to measure each goal. One-item measures of subjective constructs are less reliable than multiple-item measures, making it

harder to observe statistically significant results. The results presented therefore constitute a conservative test of the impact of costs and rewards on fertility behaviour.

5.3. MEASUREMENT OF ADDITIONAL VARIABLES

5.3.1. *Timing of fertility behaviour*

Full birth histories containing both year and month of birth were obtained during the first wave and updated at all subsequent waves. The age at which the pregnancy leading up to first childbirth occurred was used as the indicator of the timing of the decision to have a first child (Fried and Udry, 1979). For respondents who already had a first child at one of the follow-up waves, this moment was located at 9 months before the actual birth. Respondents who did not yet have a child at their final interview were censored at 9 months before the final interview. In all, 488 first pregnancies were observed among the 1204 respondents who did not yet have a child at the start of the panel study and who participated in multiple waves.

5.3.2. *Additional independent variables*

Although the focus of interest is on the effects of motivations on the decision to have a first child, a number of additional variables that have been shown to be related to the decision to have a first child were included. The first to be included were variables on the family background of young adults. These variables pertain to the level of education of parents, their level of religiosity, the number of siblings of respondents and whether or not the parents had experienced a divorce. The highest level of education attained by both parents was measured in years needed to attain a certain level after completing primary school. Scores range from 0 to 12 years of additional education. The level of religiosity of the parents was measured by the question "How important did your parents consider issues related to religion and church to be?" Scores range from 1 ('very unimportant') to 5 ('very important'). A dummy variable was created indicating whether or not the parents of the respondent ever experienced a divorce before the first wave of the panel survey. Unfortunately, this question was added to the interview schedule after interviewing had begun. As a result, information on parental divorce is lacking for about 10% of the respondents. A second dummy was therefore created indicating whether or not information on parental divorce was lacking.

Secondly, information on characteristics of the respondents themselves at or before the time of the first wave was included. These variables pertain to gender, cohort, educational attainment, relationship status and employment status. Educational attainment was measured by a set of dummy variables indicating which level of education respondents were enrolled in at the age of

16. Educational level at age 16 was used rather than educational level at the first wave, because some respondents – in particular those born in 1961 and 1965 – had already completed their education at wave 1, whereas others – in particular those born in 1969 – were still enrolled in education. Using information on educational attainment at the time of the first wave could therefore lead to an overestimation of the real differences in educational 'potential' of respondents from different birth cohorts. Three levels were distinguished: low (lower vocational secondary education), medium (lower general secondary education) and high (higher vocational or general secondary education). Relationship status at the time of the first wave was measured by a set of dummy variables indicating whether the respondent had no partner, a steady dating partner, lived in a consensual union, or was married. Finally, employment status at the time of the first wave was measured by a set of dummy variables indicating whether the primary activity of a respondent was education, employment or unemployment.

Although the PSIN contains full information on the educational, occupational and partner histories of respondents between the first wave and the last wave in which they participated, it was deliberately decided not to include time-varying information on these variables in the analysis. The focus is on testing whether costs and rewards have an impact on entry into parenthood and not on testing the mechanisms by which they have an impact. If the latter had been the focus of interest, inclusion of time-varying information on educational attainment, work career and partner relationships would have been essential because it generates information on the extent to which the impact of costs and rewards is mediated by positions and changes in these parallel careers. However, since the focus is on the total effect of costs and rewards rather than on whether their effect is direct or indirect, inclusion of information on these partly endogenous parallel careers is both unnecessary and undesirable.

Descriptive information on all independent variables included in the analysis is presented in Table 1.

5.4. PROCEDURE

Firstly, attention will be paid to the perceived costs and rewards of having a first child. The perceived consequences of having a first child for other life goals, the importance attached to each of these goals and the resulting costs and rewards will all be discussed. In addition, it is tested whether men and women differ in their assessment of these aspects.

To examine the impact of costs and rewards on the timing of entry into parenthood, a series of continuous-time hazard rate models with the hazard of first pregnancy as the dependent variable was estimated. A hazard rate represents the risk that a person will experience an event, given that this

Table 1. Descriptive information on control variables used in the analysis ($N = 1204$)

Continuous variables	Mean	SD
Educational attainment father	4.68	3.56
Educational attainment mother	3.51	2.66
Religiosity parents	3.08	1.30
Number of siblings	2.28	1.81
Categorical variables	**Percentage**	
Parents not divorced	80	
Parents divorced	10	
Info on divorce missing	10	
Women	49	
Men	51	
Cohort 1961	26	
Cohort 1965	34	
Cohort 1969	40	
Low educational level	24	
Medium educational level	33	
High educational level	43	
No partner	43	
Steady dating	32	
In consensual union	13	
Married	12	
Enrolled in education	36	
Employed	58	
Unemployed	6	

person is still at risk (i.e. the event has not previously occurred). Duration (in months) between the first wave of the panel and the timing of pregnancy (or censoring) was used as the main time axis. Duration effects may vary by birth cohort, as men and women aged 26 at the beginning of the study are more likely to have their first child relatively soon than men and women aged 18 at the beginning of the study. For that reason, separate duration effects were measured for each birth cohort. The rate of first pregnancy was further assumed to be influenced by costs and rewards and additional control variables, in the following fashion:

$$\ln \lambda(t) = (b'_0 + b'_1 \text{ Duration})_{\text{Cohort}} + b'_2 \text{ Costs} + b'_3 \text{ Controls} \qquad (1)$$

In this model, b'_0 and b'_1 represent vectors of parameter effects of the intercept and the linear duration effect, estimated for each birth cohort separately. Because a major goal of this study is to examine to what extent costs and rewards have the same effects on the childbirth decisions of men and women, equation (1) was estimated separately for men and women.

Equation (1) assumes unconditional effects of motivations on the rate of having a first pregnancy. Earlier, it was argued that such an assumption may be unrealistic if motivations change over the life course. It was suggested that the impact of costs and rewards may vary by the time elapsed since their measurement in the first wave, by their age at that time and by their partner status at the time. To allow for these possibilities, in the second step of the analysis tests were performed for interactions between motivations on the one hand and duration since the first panel wave, cohort and partner status on the other. All interaction effects that proved to be statistically significant were retained in the final model.

All analyses were performed using the *aML* software package (Lillard and Panis, 2000). This software is eminently suited to estimate duration dependence of effects (see Brien et al., 1999). To facilitate interpretation of the parameters, they are presented in exponentiated form, i.e. as relative risks. For continuous variables, a relative risk indicates the extent to which the rate of first childbirth increases or decreases with a one-point increase in the independent variable. For categorical variables, a relative risk indicates how much lower or higher the rate of first childbirth is for that category compared with a reference category.

6. Results

6.1. PERCEIVED REWARDS AND COSTS OF HAVING A FIRST CHILD

The first research question relates to young adults' perceptions of the rewards and costs of having a first child. As discussed in the measurement section, the costs and rewards are the outcomes of two aspects: the perceived consequences of having a first child and the importance or value attached to these consequences. Firstly, information on young adults' perceptions and values is presented. Next, the resulting costs and rewards of having a first child are discussed. The mean scores of all consequences are presented in Table 2, separately for men and women.

The results for the perceived consequences of having children show that respondents feel that having a child will obstruct the attainment of several life goals. Having a child will clearly reduce their career opportunities, their spending power and their individual autonomy. The attainment of the two other goals, however, was thought to be facilitated by having a child.

Table 2. Perceived consequences, importance attached to these consequences, and costs and rewards of having a first child among young adults without children ($N = 1204$)

	Perceived Consequences[a]		Attached Importance[b]		Costs and Rewards[c]	
	Women	Men	Women	Men	Women	Men
Career opportunities	*−1.45*	*−0.74*	3.96	3.98	*−5.78*	*−2.97*
Spending power	−1.15	−1.13	*3.34*	*3.49*	−3.85	−3.97
Feeling of security	*0.26*	*0.39*	*3.99*	*3.52*	*1.13*	*1.44*
Relationship with partner	*0.59*	*0.84*	4.47	4.39	*2.64*	*3.71*
Individual autonomy	*−1.51*	*−1.38*	3.92	3.94	*−5.94*	*−5.44*

Scores in italics differ significantly between men and women at the $p < 0.05$ level.
[a]Scores range from −2 (will strongly decrease) to +2 (will strongly increase).
[b]Scores range from 1 (unimportant) to 5 (very important).
[c]Scores range from −10 to +10.

Respondents expected that the quality of their relationship with their partners would be enhanced. They also expected their feelings of security to increase as a result of having a child. The results also show that men and women differ markedly in their perception of the consequences of having a child. In general, women perceive bigger disadvantages and smaller advantages of having a child. Women expect a stronger reduction in their individual autonomy and in their career opportunities than men. At the same time, men expect a stronger increase than women do in the quality of their partner relationships and in their feelings of security. The only issue about which men and women were found to hold the same opinion, was the consequences of having a child for their spending power.

The extent to which the perceived consequences of having a first child will 'motivate' young adults to have children depends on the importance attached to these life goals. Mean scores of these evaluations are presented in the middle columns of Table 2. We see that, in general, young adults attach most importance to a good relationship with their partners. Almost equal importance is attached to individual autonomy, career opportunities and feelings of security. Much less importance is attached to spending power than to most of the other values. Table 2 also shows that men and women differ less in their valuation of the consequences of childbearing than in the magnitude of the consequences they perceive. Women attach more importance than men do to feelings of security, whereas men attach somewhat more importance than women to their spending power. No differences were found in the valuation of the other life goals.

The costs and rewards of having a first child were conceptualised as the multiplication of young adults' perceptions about the consequences of this

life event and the value they attach to the respective consequences. The resulting scores for women and men are presented in the two right-hand columns of Table 2. The results run parallel to those of the perceived consequences. Apparently, differences between young adults in the perceived consequences are more pronounced than differences in the importance they attach to these consequences. Having a child is expected to be particularly costly in terms of one's autonomy, career opportunities and spending power. Strong rewards of having a child are expected in terms of the quality of the relationship with one's partner, whereas small gains are expected in feelings of security. Gender differences in expected costs and rewards parallel those in the perceived consequences. Women perceive higher costs and lower rewards of having a child. Women expect higher costs in terms of a reduction in individual autonomy and career opportunities. Men expect higher rewards in terms of increased quality of their partner relationship and enhanced feelings of security. Finally, men and women expect the same rate of decrease in spending power following entry into parenthood.

6.2. EFFECTS OF COSTS AND REWARDS ON THE TIMING OF PARENTHOOD

Attention will now be paid to the issue whether these expected costs and rewards actually influence the timing of entry into parenthood. Do people who expect higher costs and/or less rewards delay entry into parenthood? In order to examine potential gender differences in the effects of specific costs and rewards, the analyses were performed separately for men and women. Results for women are presented in Table 3 and results for men in Table 4. For both genders, two models are presented. Model 1 only includes the main effects of perceived costs and rewards. It has been suggested in the above, however, that the effects of costs and rewards may depend on time elapsed since Wave 1, on age and on partnership status. To examine this issue, tests were performed for possible interactions between costs and rewards, and duration, birth cohort and partner status. Model 2 includes all statistically significant interactions.

Before concentrating on the impact of costs and rewards for women, the results for the control variables are briefly reviewed. The cohort pattern is as expected. The baseline rate is highest for the oldest cohort, followed by that for the middle cohort and the youngest cohort. This pattern reflects the fact that childbearing shortly after Wave 1 was more likely to occur among women aged about 26 years (cohort 1961) than among either of the younger cohorts. At the same time, we see a statistically significant interaction with duration since Wave 1 among the younger cohorts, suggesting that their rate of first pregnancy rapidly increased as they entered their mid-twenties.[1] Parental background variables did not exert a direct impact on the timing of

Table 3. Relative risk estimates for selected hazard models of first childbirth for women

Variable	Model 1	Model 2
Cohort 1961		
Baseline rate	0.006**	0.017**
Duration since wave 1	0.997	0.981**
Cohort 1965		
Baseline rate	0.003**	0.007**
Duration since wave 1	1.010**	0.997
Cohort 1969		
Baseline rate	0.001**	0.001**
Duration since wave 1	1.029**	1.016**
Educational attainment father	1.007	1.005
Educational attainment mother	0.953	0.948
Religiosity parents	0.975	0.984
Number of siblings	1.024	1.014
Parents divorced	0.584**	0.561**
Info on parental divorce missing	1.000	0.955
Medium educational level	0.840	0.822
High educational level	0.627**	0.650*
Steady dating	1.852**	1.864**
In consensual union	3.036**	3.268**
Married	3.713**	3.696**
Employed	1.297	1.371†
Unemployed	0.785	0.862
Career opportunities	1.015	1.106*
Spending power	1.027	1.034
Sense of security	1.040	1.099*
Relationship with partner	1.019	1.018
Individual autonomy	1.013	1.195**
Career opportunities * Duration		0.999**
Sense of security * Cohort 1969		0.849*
Individual autonomy * Duration (0–36 months)		0.995**
Individual autonomy * Duration (36+ months)		1.000
Number of respondents	593	593
Number of events	269	269
Log-likelihood	−1337.9	−1322.5

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$.

Table 4. Relative risk estimates for selected hazard models of first childbirth for men

Variable	Model 1	Model 2
Cohort 1961		
Baseline rate	0.002**	0.003**
Duration since wave 1	1.006*	1.004
Cohort 1965		
Baseline rate	0.001**	0.001**
Duration since wave 1	1.019**	1.015**
Cohort 1969		
Baseline rate	0.000**	0.000**
Duration since wave 1	1.030**	1.026**
Educational attainment father	0.970	0.963
Educational attainment mother	1.004	1.000
Religiosity parents	0.931	0.900†
Number of siblings	1.099*	1.094*
Parents divorced	1.078	1.065
Info on parental divorce missing	0.785	0.755
Medium educational level	1.141	1.153
High educational level	0.869	0.885
Steady dating	2.903**	3.053**
In consensual union	3.506**	3.878**
Married	9.550**	10.510**
Employed	1.185	1.131
Unemployed	1.236	1.206
Career opportunities	1.028	1.118*
Spending power	1.075*	1.081*
Sense of security	1.088**	1.095**
Relationship with partner	1.011	0.954**
Individual autonomy	0.962	0.966
Career opportunities * Duration		0.999*
Relationship with partner * Cohort 1961		0.116*
Number of respondents	611	611
Number of events	219	219
Log-likelihood	−1094.5	−1088.8

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$.

first pregnancy, with one exception. Women who had experienced a parental divorce were found to delay entry into parenthood. Women's educational level is another factor of importance. More highly educated women tend to delay entry into first childbirth compared with lower educated women. Finally, the impact of partner status at the time of the first wave is relevant. The further women have progressed in the union formation process, the higher their birth rate.

Model 1 suggests that there is no impact of perceived costs and rewards on the timing of first childbirth net of other characteristics, as none of the main effects shows a statistically significant effect. However, the results of Model 2 show that such a conclusion is premature. In Model 2, three aspects of women's cost/benefit analyses are found to be important. The first aspect is the consequences of having a child for women's career opportunities. The interaction between career opportunities and duration implies that women who perceive fewer costs in terms of their careers after childbearing progress more quickly to parenthood, but that this effect declines over time. Shortly after the first wave, a one-point increase in how positively women evaluate the costs of having a child in terms of their career opportunities leads to a 10.6% increase in the rate of first childbearing. However, the strength of this effect decreases at a rate of about 0.1% per month. The impact of the perceived consequences of childbearing for women's individual autonomy shows a slightly more complicated duration dependence. Shortly after the first wave, a one-point increase in how positively women evaluate the costs of having a child in terms of individual autonomy leads to a 19.5% increase in the rate of first childbearing. However, during the next 3 years, this effect diminishes by about 0.5% per month. As a result, the effect of individual autonomy has disappeared almost completely after 3 years. From 36 months onwards, no further changes in the effect of individual autonomy occur, implying that its effect remains close to zero from then on. Taken together, these three effects suggest that the perceived consequences of childbearing for women's individual autonomy have a clear impact shortly after the start of the study, but that this impact wears off within 3 years. Finally, a positive impact of feelings of security on the timing of first childbirth can be observed, with the exception of the youngest birth cohort. Among women aged 22 or 26 at the beginning of the study, progress to motherhood was quicker the larger the increase in their sense of security upon childbirth was expected to be. However, among women aged only 18 at the beginning of this study, no statistically significant effect of sense of security is observed. Finally, no statistically significant interactions are found between costs and rewards and partner status at the beginning of the study.

Table 4 presents the results of the same analysis among men. Again, I will briefly comment on the effects for other variables before turning to a description of the effects of perceived costs and rewards. The cohort patterns for men are roughly the same as those for women, with the exception of lower initial rates for male cohorts. This reflects the fact that men, on average, become parents a few years later than women. Whereas parental divorce has no impact on the transition to parenthood among men, another parental background variable – number of siblings – has. The more siblings' young men have, the higher their rate of entry into parenthood. In contrast to the results for women, educational level had no effect on entry into parenthood among Dutch men. Finally, the impact of partner status at the beginning of the study was found to be the same as for women. Married men have the highest rate of entry into fatherhood, followed by cohabitants, steady dating men and men without a partner.

Model 1 in Table 4 shows that, in a model that includes only main effects of costs and rewards, two perceived costs and rewards have an impact on entry into fatherhood. The more positively young men evaluate the consequences of having a child for their spending power and for their sense of security, the more quickly they progress to fatherhood. A one-point increase in the evaluation of the consequences of having a child for their spending power leads to a 7.5% increase in the rate of entry into fatherhood, whereas a one-point increase in the evaluation of the consequences of having a child for their sense of security leads to a 8.8% increase in the rate of entry into parenthood. Model 2, however, shows that two additional evaluations have an impact as well when interactions with duration and cohort are taken into account. The more positively young men evaluate the consequences of having a child for their career opportunities, the higher their rate of entry into parenthood will be. However, this effect diminishes with time elapsed since the beginning of the study. At the beginning of the study, a one-point increase in the evaluation of the consequences of having a child in terms of career opportunities leads to a 11.8% increase in the rate of entry into fatherhood. After 3 years, this effect has dropped to 7.9% and after 6 years the effect is only 4.1%. Finally, a statistically significant interaction is observed between the consequences of having a child for one's partner relationship and birth cohort. Among men born in 1969 and 1965, who were 18 and 22 years at the beginning of the study, no effect was found. The effect for men born in 1961 (26 years old at the beginning of the study) is significantly stronger, however (and significantly different from 0 at the $p < 0.10$ level as well). Among men aged 26, a one-point increase in the perceived consequences of having a child for their partner relationship leads to a 6.7% increase in the rate of entry into fatherhood. As was the case among women, no statistically significant interactions between evaluations and partner status were observed.

7. Discussion

The 'value of children' tradition in research on childbearing assumes that decisions on the timing and number of children people want to have is based on the expected costs and rewards of having children. This article tests this assumption by examining the impact of a number of potentially important costs and rewards on the timing of the birth of a first child. Selection of the costs and rewards included in this study was based on their presumed resemblance to the major behavioural mechanisms underlying a number of influential fertility theories.

As expected, both men and women distinguish clear costs and rewards of entry into parenthood. Among women, a strong decline in their career opportunities and in their individual autonomy is expected, as well as a slight decline in their spending power. On the other hand, women also expect some rewards, like an increase in their sense of security and in the quality of their partner relationship, although these anticipated rewards are relatively small compared with the expected costs. Men generally expect lower costs of having a first child and greater rewards than women. The gender gap is particularly large in terms of career opportunities and partner relationship. It is not surprising that women expect having a child will entail much higher costs to their careers since Dutch women still assume primary responsibility for bringing up their children. It is less clear why men expect higher rewards for their partner relationship than women.

The most important finding of this study is that expected costs and rewards exert a clear impact on the timing of having a first child, among both women and men. This is true for all selected costs and rewards. Firstly, in line with Becker's (1981) economic theory, career opportunities are important. The higher the perceived costs of childbearing for people's careers, the longer first childbirth is postponed. Surprisingly, this is not only true for women, but also for men. This probably reflects the fact that the gendered division of labour has become less clear-cut than it was in the 1970's, when Becker formulated his theory. He assumed that men were hardly affected by having a child because the wife would take care of childrearing. This assumption no longer holds for all Dutch men. Although in general they contribute far less to childrearing than women, some of them make a non-negligible contribution (Kluwer et al., 2002). A minority of men who feel that having a child would interfere with their careers are likely to act upon this perception by postponing entry into fatherhood.

Financial considerations, stressed by Easterlin (1980) for instance, are also found to be important when deciding on entry into parenthood, but only for men. The larger the perceived consequences for men's spending power, the more childbearing is postponed. This may reflect the fact that, although the division of labour between spouses is changing, it is usually still the man who

is the main breadwinner within the family. As a result, family formation will be postponed as long as his financial aspirations remain unfulfilled.

Friedman et al. (1994) state that people want to feel secure and that they will opt for children if other pathways to enhance their sense of security are blocked. The empirical results show that this is a powerful motivation for having a first child. The more people feel that having a child will contribute to their sense of security, the sooner they will become parents. In addition, Friedman and her colleagues posited a second motivation, namely the wish to enhance the quality of the partner relationship. In this study, this did not prove to be an important motivation for childbearing, except among males who were in their mid-twenties at the beginning of the study.

Finally, cultural theories, like the Second Demographic Transition theory formulated by Lesthaeghe (1995) and Van de Kaa (1987), stress the importance of individual autonomy in making family formation decisions. The results of the analysis show that this motivation is influential in actual decision-making on entry into parenthood. Its impact is limited to women, however. The more having children is expected to interfere with women's individual autonomy, the more women are inclined to postpone childbearing. The reason why this motivation is more important for women than for men might be that women still spend more time raising their children than men do, and it is this responsibility for taking care of the children that restricts people's autonomy.

In general, this study shows that the costs and rewards emphasised in different fertility theories are important in decision making on entry into parenthood. This underlines the need to combine insights from different theories rather than rely on just one of them. Lesthaeghe (1998) suggests three promising ways of doing so. One could try to merge alternative theories into one new overarching multi-causal theory, theories can co-exist without being mutually exclusive, or one could try to merge theories into a new multi-causal theory with strong contextual variation. In this third approach, fertility theories are thought to describe behavioural mechanisms that operate in different population segments. The results of this study seem to support this third strategy proposed by Lesthaeghe. Some costs and rewards are more important for men, whereas others are more important for women, suggesting that we need to pay more attention to the possible path-dependency of our theories. We need to specify more carefully under which circumstances a theory will have the predicted impact and under which circumstances it will not have the predicted impact (e.g. Liefbroer and Corijn, 1999).

From a methodological point of view, this study clearly shows that panel studies can be fruitfully used in studying the impact of perceived costs and rewards on actual childbearing behaviour. However, some caveats need to be mentioned. Firstly, the impact of several costs and rewards became smaller and eventually statistically insignificant as more time had elapsed since the

costs and rewards were measured. This reflects the contingent nature of some of young adults' expected costs and benefits: as circumstances change, young adults adjust their expected costs and benefits to fit their new conditions. Secondly, the age at which costs and benefits are measured is important. The predictive power of an increase in the sense of security and in the quality of the partner relationship is smaller among young adults in their late teens or early twenties than among young adults in their mid-twenties. This may reflect the fact that some young adults may still be too young to make a reliable assessment of the less tangible rewards that play a role in the ultimate decision to have children. Despite these limitations, focusing on costs and rewards sheds new light on the determinants of the timing of entry into parenthood.

Note

[1] Tables 3 and 4 present a model with a linear duration trend for the baseline hazard. This linear trend is allowed to vary by cohort, as respondents born in 1961, 1965 and 1969 are at very different stages of their family formation careers at the beginning of the study. Models with non-linear duration dependence were estimated as well. The results of these estimations showed that allowing for non-linear duration dependence led to a slight improvement in the overall fit of the model. However, these models did not change the estimates of the variables of key interest in this study. In order not to complicate the presentation and discussion of the results any further, I decided to present the results for the model with linear duration dependence only.

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