# Fertility From a Couple Perspective: A Test of Competing Decision Rules on Proceptive Behaviour

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**Abstract:** Fertility decisions typically involve two persons. This raises the question of how individual desires or preferences for further children transform into joint action. Previous research has proposed different approaches to this question, emphasizing gender, joint utility, consensus, or bargaining power. We use data from the German Family Panel (pairfam) to test competing hypotheses found in the literature. Our results show symmetrical effects of both partners' desires and expected utilities for children on proceptive behaviour, indicating that neither women nor men dominate fertility decisions *per se*. Instead, it is joint utility that matters. One partner will exercise a 'veto' only if the expected loss of utility from a further child is very high. When partners have opposed desires, bargaining power due to advantageous partner market conditions can play a pivotal role for imposing one's will on the partner.

## Introduction

Household-related decisions with long-term consequences for more than one family member typically occur within the context of existing partnerships. Thus, analyses of fertility behaviour (as well as analyses of other household decisions, for instance the division of domestic work, migration, marriage, and divorce) require theoretical perspectives that include both partners in the decision-making process. The issue of how couples make joint decisions (here on fertility) has garnered much attention in sociology, demography, and behavioural economics, but previous research has so far not led to consensual conclusions regarding the mechanisms at work. This article depicts 'rules' for joint decisions couples might follow, as discussed in the literature, which allow for competing hypotheses. We can test those hypotheses empirically using very recent German survey data. Data from the German Family Panel Study (Panel Analysis of Intimate Relationships and Family Dynamics [pairfam]) provide us with innovative measures of expected utilities of children, childbearing desires, and information about contraceptive use and couples' tangible future plans. We analyse micro data from a low-fertility country where the use of

contraceptives is common and widely accepted (United Nations, 2010). We address the following research questions: *How do partners' individual desires or preferences for children affect (observable) joint action? And which 'decision rules' do partners apply in cases of diverging desires?*

This work broadens the traditional (women's) perspective in fertility research: we apply a strictly dyadic perspective, considering fertility decisions not (*a priori*) as a woman's but as a couple's decision. This implies that *both* partners' characteristics potentially influence fertility. Previous research has partially recognized this fact, which, in practice, had led to statistical models using both partners' attributes as explanatory variables. Those mainly comprise socioeconomic indicators, *e.g.* each partner's occupational status (*e.g.* Kurz, 2005; Gebel and Giesecke, 2009), education (Kreyenfeld, 2002; Wirth, 2007; Kreyenfeld and Konietzka, 2008; Bauer and Jacob, 2010) or religious denomination (Corijn *et al.*, 1996). It reveals that women's education has stronger effects than men's on birth probabilities in Germany (Bauer and Jacob, 2010), effects of employment uncertainties also differ by gender (Gebel and Giesecke, 2009), and that there are (country-specific) gender differences in the effect of religious commitment (Corijn *et al.*, 1996). Differences

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in spouses' characteristics may thus be sources of conflicting views regarding family planning. Those studies, however, did not directly test effects of opposed preferences. Instead of explicitly accounting for disagreement and how it translates into action, previous research successfully analysed how both partners' socio-economic characteristics influence fertility and has drawn a number of theoretically plausible conclusions on the economic rationale behind the decision (*e.g.* opportunity costs of childbirths, gains from specialization). But such approaches cannot compensate for the lack of a more direct modelling of the actual decision-making process, specifically what both partners actually want and how they arrive at joint action.

Besides these socio-economic approaches to fertility, a separate research line deals with the *desire* to have children. There are several studies on how desires/preferences for children emerge and how those mechanisms differ between men and women (Schneewind *et al.*, 1996; Schoen *et al.*, 1999; Klein, 2006; Ruckdeschel, 2007; Puur *et al.*, 2008) and how characteristics of the partnership itself matter (*e.g.* Eckard and Klein, 2006, 2007). Previous work also examined under which circumstances an existing desire for children is realized and a child is actually born (Westoff, 1990; Quesnel-Vallée and Morgan, 2003). Furthermore, there is some—though considerably less—research on how contradiction among desires influences fertility (Thomson *et al.*, 1990; Thomson, 1997; Thomson and Hoem, 1998; Jansen and Liefbroer, 2006). Such approaches allow us to contrast the behaviour of couples whose goals differ to that of couples with shared goals (Thomson, 1990). Finally, hardly any research has focused on characteristics that may give one partner more or less weight in the decision making and thus directly influence fertility outcomes.

Here, the two latter points are of particular interest as such studies necessarily regard childbirth as a joint decision (Beckman, 1984). Findings from American (Thomson, 1997) and Swedish survey data (Thomson and Hoem, 1998) suggest that both male and female partners' desires for children influence the probability of births. The impact of each spouses' desires is found to be approximately equal. Those analyses contradict older findings that came to the conclusion that women's desires for children had a stronger influence than their male partners' (*e.g.* Townes *et al.*, 1980; Beckman *et al.*, 1983; Thomson, 1997). In addition, disagreement leads to lower transition rates to parenthood, especially if parents can easily use contraception (Thomson and Hoem, 1998). Thomson, McDonald and Bumpass (1990) report that in cases of a divergent desired family size the actually realized number of children lies between the initial individual preferences. Again, the influence of

the male and the female partner is found to be equally strong. Jansen and Liefbroer (2006) confirm these results by also reporting that partners strive for consensus. Here, partners' attitudes towards parenthood were supposed to measure the expected utility of children. Those were found to codetermine fertility transitions with equal weights.

# Theories and Hypotheses

In previous research on effects of both partners' desires for children on fertility outcomes gender-specific expectations form the main basis for hypotheses on spouses' weights in decision making. Socio-structural models (*e.g.* effects of employment or education on family formation) argue on the basis of joint utility or opt for bargaining approaches. Bringing together these mechanisms, Thomson (1990), Corijn *et al.* (1996) as well as later Jansen and Liefbroer (2006) argue that disagreeing actors can make use of different rules in order to arrive at a joint decision. But while the tested hypotheses are in fact discriminating between the presented rules that could be used they do not allow us to identify the mechanisms at work. Decisions can, firstly, be made either by the woman or by the man, independently from other characteristics.

## Patriarchal Model

If only the man decides regarding the birth of a child, the couple follows a rule that can be characterized as patriarchal. In this case one would observe that it is only the man's desire for children that influences proceptive behaviour, while the woman's desire would not matter (Hypothesis 1). Jansen and Liefbroer (2006) argue that men could have greater influence because they typically have more bargaining power due to better access to resources. Accordingly, they term this 'power rule' but this term is in fact misleading (see an alternative conception of a power rule at the end of this section).

## Matriarchal Model

If, on the other hand, the woman makes the ultimate decision on family planning, Corijn *et al.* (1996) characterize this as 'sphere of interest rule'. This suggests that fertility decisions are generally part of the woman's interest sphere as childbearing affects them more than men, especially by giving birth, but also due to higher involvement in childcare. Although this argument may be true in most cases, we find this terminology misleading as it rests on the untested assumption that women are generally more strongly affected by family

formation than men and thus simply confounds interest with gender. A rule based on different interest should, at least conceptually, be gender-neutral. The same applies, accordingly, to the use of the power argument. We would thus rather call a decision rule according to which women dominate exclusively because of their gender *matriarchal*. If couples act according to the matriarchal rule, we would observe an effect of the woman's desire for children but not of the man's (Hypothesis 2).

## Joint Utility Model

If both partners have the same influence in the decision process, this can be characterized as an 'egalitarian rule' (Thomson *et al.*, 1990; Corijn *et al.*, 1996) or a 'Golden-Mean-Rule' (Jansen and Liefbroer, 2006). According to such a rule, partners negotiate their fertility behaviour in order to come to a compromise that is, in economic terms, Pareto efficient. Couples following an egalitarian rule can thus be modelled as playing a cooperative Nash bargaining game (*e.g.* Manser and Brown, 1980). The higher the expected utility of a child is for one partner, the higher is, everything else equal, the joint couple utility. If there is a positive effect on joint utility we should, according to classical family economic models, expect a positive fertility decision. The reason for this is that, by assumption, partners could transfer additional collective utility among each other so that both would be better off individually. From those considerations, we can deduce that both partners' desires for children should have an influence on proceptive behaviour and that the probability of proceptive behaviour rises with the utility each partner expects from having a (further) child (Hypothesis 3). Note that, conceptually, this rule also reflects the sphere of interest argument, if opportunity costs from other life domains (*e.g.* career perspectives) are taken into account.

However, such an economic model requires information: a precondition for a model of joint utility is that partners know the expected joint collective utility of a child and their partners' preferences. But if this presumption does not hold, how would couples decide in situations of uncertainty? On one hand, uncertainty refers to whether a child would indeed raise joint utility. On the other hand, uncertainty comprises the problem of redistribution of utility within the family, *i.e.* if utility transfers between spouses could make both better off with children than without.[1]

## Veto-Player Model

A veto rule provides us with an alternative decision rule as a joint utility model might be miss-specified in situations without perfect information. It can still be considered egalitarian because a veto is independent of gender as well as of resource ratios. Jansen and Liefbroer (2006) refer to a similar model as the 'social drift rule', arguing that discord results in maintaining the *status quo*. Based on egalitarian veto positions, we can deduce the hypothesis that proceptive behaviour requires both partners' approval (Hypothesis 4). Technically speaking, one would expect a positive interaction effect of the man's and woman's desire for children (or their expected utility, respectively).

## Power-Rule Model

Finally, a power rule deduces a partner's assertiveness from his or her relative bargaining power (Corijn *et al.*, 1996; Jansen and Liefbroer, 2006). If couples negotiate over children according to the power rule, we would expect that the bargaining power mediates the effect of the desire for children or the expected utility of a child (Hypothesis 5). This implies that the more powerful partner can impose his or her views against the other partner's. Ultimately, power is defined by the relative interests in maintaining the relationship (Waller, 1937, 1938; Sprecher *et al.*, 2006). Power-defining variables may typically comprise earning capacities (Loving *et al.*, 2004; Iyigun and Walsh, 2007) or the opportunity structures of the partner market (Guttentag and Secord, 1983; Chiappori *et al.*, 2002). The power rule might prove valid, if the partners have contrasting preferences concerning (further) children and an adequate utility redistribution is not possible. Then, in game theoretical terms, the bargaining is not a cooperative game anymore but rather a non-cooperative one. Thus, if one spouse believes the desire to have a child more important than partnership maintenance, this partner can enforce her/his child preferences against the interest of the partner—given that the partner believes maintaining the relationship is more important than his/her own fertility preferences.

# Data and Methods

We use very recent data from the first wave of the pairfam Survey to test the hypotheses derived above.[2] The data were collected between September 2008 and May 2009 based on a cohort stratified random sample (birth cohorts 1971–1973, 1981–1983, 1991–1993), and prove especially suitable for our analyses in many respects: first, they contain information on partners' current child preferences and couples' current proceptive behaviour. Focusing on proceptive behaviour rather than childbirths allowed us to analyse the association between

child preferences and fertility behaviour with cross-sectional data. While using longitudinal data—if available—would be an alternative, attrition may lead to a selection bias if the constellation of the partners' child preferences is correlated with relationship breakdown and this lowers the probability of further survey participation (which is likely the case). Second, it is particularly advantageous that we can observe the importance of children compared with competing life goals. This enables us to account for the (expected) opportunity costs of starting or enlarging a family in a parsimonious way. Third, the data contain variables on all theoretically important constructs for *both* partners.

The original sample size of the large-scale pairfam study is 12,402. Fifty-eight per cent of the respondents report to have a partner; additional partner interviews are available for 3,743 cases (partner response rate: 52 per cent). For the following analyses, data were limited to heterosexual, fertile couples with non-missing dyadic data. That leaves 3,140 cases (*i.e.* couples) for the analyses. Variables used in detail are as follows.

Proceptive Behaviour (Yes/No): the dichotomous depended variable takes the value 1 if couples do not engage in any form of contraception.[3] It is also coded to 1 if couples decidedly plan to become parents within the following 2 years.[4] Alternatively, the variable takes the value 0. The dependent variable thus captures fertility behaviour on the *couple level*.

Desire for Children (Yes/No): this variable takes the value 1 if the reported 'ideal number of children', all constraints aside, is above the number of children already realized. Yet, as this would also include persons planning to get a child much later in life, we limit positive desires to persons that consider it possible to become a mother or father within the next 2 years. This independent variable thus captures fertility *preferences* on the *individual level*.

Desire for Children (Strength): secondly, we also take into account the strength of the desire for children compared with other, competing, aims in life. For that, we use a measurement based on 'points of importance' that has been developed for the German Family Panel Study and has demonstrated its capacity in a validation study (Maul, 2008). The respondents were asked to allocate 15 tokens on five areas of life. Doing so, participants expressed the relative importance of these domains: education/career, leisure time activities, social contacts, relationship, and family formation/enlargement. This measurement accounts for the fact that fertility decisions are not independent from—and thus affected by—aims in other life domains (Blossfeld and Huinink, 1991). We consider the relative part of 'points of importance' the partner allocated to the area family

formation/enlargement. The resulting variable is continuous on the range of values from 0 to 1. It constitutes an attempt to parsimoniously measure the expected net utility of a child, individually for men and women.

Bargaining power: we use the age-specific sex ratio in the federal state the couple lives in as an indicator of bargaining power. This is based on the idea that the utility after terminating the partnership is considerably determined by the probability of quickly finding a new and adequate partner (Becker, 1981). The more favourable the sex ratio (*i.e.* the more adequate persons of the other sex), the easier it is to make a good match. In using local age-specific sex ratios, we take into account that potential partners are usually selected from non-random sample of the population characterized by, *e.g.*, spatial proximity and a certain age range (South and Lloyd, 1992; Klein, 1994). We therefore supplement the pairfam data with age- and state-specific sex ratios from the German National Statistical Institute. Although the availability of other partners may not be the optimal way of measuring bargaining power, it has the clear advantage that it is exogenous. That is, in contrast to other measures (*e.g.* income, employment status), the sex ratio is not itself affected by couple decision making.

Our models include a set of further control variables: each partner's age (in linear and squared form); each partners religiosity (as a dichotomous variable taking the value 1 for partners having a religious denomination and visiting church at least several times per year, alternatively the value 0); each partner's educational enrolment (as a dichotomous variable, taking the value 1 for partners currently being enrolled in education, alternatively the value 0); and the highest degree received from general schooling (coded as a categorical dummy variable with 'no degree' as reference category).

## Methods

The following analyses use logistic regression models as hypotheses refer to the likelihood of current proceptive behaviour. Note that such a model does not allow interpretation of stated interaction effects, neither such effects' strength nor their statistical significance (Ai and Norton, 2003). Thus, we show predicted conditional probabilities for selected models. In addition, we replicated all regressions as linear probability models (LPM) with robust SEs. This approach appears to be quite adequate as we are mainly interested in the direction and significance of the (average) interaction effects. Here, LPMs are easy to interpret and provide, in spite of associated problems (Mood, 2010), unbiased and consistent estimates for the average effects on P ($Y=1$) (Wooldridge, 2002). For the sake of brevity, we do not

show the LPM results in separate tables. Generally, they confirm the results from the logistic models. Only the interaction effects are reported in the text.

# Results

Before passing on to the analyses, we consider the association of both partners' desires. We have to assure that the desire to have children is an *individual* preference and not the result of spousal bargaining. If this were the case partners' desires should fully correspond, apart from measurement error, as they would simply represent two measurements of the same construct (*i.e.* the *collective* benefit of children). However, we can also expect a positive relation between the man's and the woman's desire in the case of individual preferences due to *assortative mating* on the partner market. Persons with a strong desire to have children prefer partners who have similar desires. The correspondence of both partners' desires is about 80 per cent, but this is largely due to the high expected correspondence given the marginal distribution (69 per cent of the couples do not desire a child, 11 per cent do so jointly, in 11 per cent only the wife desires a child, in 9 per cent only the husband). Although Cohen's $\kappa$ (1960), a measure for the inter-rater agreement, is significant with 0.41, it is well below the conventional threshold of 0.7. As expected, the partners' statements correlate—but they do not measure the same construct. Similarly, the strengths of each partner's desire to have children correlate but differ substantially $[r = 0.36 (P < 0.01)]$.

In the following, we refrain from reporting all covariates considered in the analyses, as they are only of minor interest. All variables that are statistically controlled in the following models but not explicitly mentioned are listed in Table 1. Columns 1 and 2 report Logit coefficients and SDs in the baseline model, which does not include spouses' desires to have children. Additionally, Column 3 informs about the $\chi^2$-statistics for the incremental contribution of variables to the model. On average, the probability of proceptive behaviour is 0.263. Generally speaking, our findings in Table 1 confirm well-known effects from previous fertility research for Germany. For example, women's level of education as well as being in education has a clearly negative effect on family formation or extension, respectively.

## His, Her, or Their Decision?

The first analysis investigates whether men and women have different influences on the realization of their fertility desires. If only the man as a patriarch decides, only his desire should substantially influence proceptive behaviour. In contrast, the woman's desire should barely have any effect. Table 2 shows the effect of the desire to have children (yes/no) for men and women. The first model illustrates that both partners' desires have a significant influence on proceptive behaviour. Without control variables, the results do not markedly differ (data not shown). Furthermore, the effects of the two partners' desires are equally strong ($\chi^2 = 0.001$, $P = 0.98$), indicating that gender is not a relevant source of bargaining power. Neither men nor women take up dominant positions due to sex and associated role behaviour.

The next column in Table 2 shows a similar model with effects of both partners' child preferences (Model 2). Instead of the dichotomous desire variable, it now applies the strength of fertility desires, which is measured by evaluating the importance of a (further) child in comparison to alternative aims in life. Using this operationalization, there again is a significant positive effect. It is of almost identical size for both partners ($\chi^2 = 0.090$, $P = 0.76$). This pattern is barely affected by control variables, as a simplified models leads to almost identical coefficients (data not shown). This result can serve as evidence for the joint utility model. According to that it is not simply the desire for or against a child that matters, but its strength. The theoretical foundation of bargaining implies that the partner who profits most from an allocation (here: a further child) prevails against the other partner if the allocation is efficient. The latter means that the sum of both partners' utilities is positive. Such a surplus provides scope for compensation payments in order to be able to bribe the partner to agreement.

In Model 3, we investigate the effects of (dichotomous) desires and subjectively expected utilizes simultaneously. Desires still matter for proceptive behaviour once the strength of child preferences is also taken into account. Hence, we cannot regard both as measurements of the same theoretical construct. Desires for children (yes/no) might reflect some unconditional motives as well as utility considerations. Taken together, the effects of desires/preferences do not depend on gender. The results rather support a joint utility model. They, therefore, contradict gender-dominated patriarchal or matriarchal decision rules.

## Veto

In order to test whether the partner without a desire to have children is able to take up a veto position (*i.e.* whether proceptive behaviour requires the agreement of both partners), the fourth model includes an

**Table 1** Control variables

| | $\beta$ | (SE) | $\chi^2$ |
|---|---|---|---|
| Age | | | 38.44*** |
| Man | | | 14.32*** |
|   Age | 0.042*** | (0.014) | |
|   Age$^2$ | −0.000 | (0.001) | |
| Woman | | | 2.39 |
|   Age | 0.024 | (0.016) | |
|   Age$^2$ | −0.002 | (0.002) | |
| Religiosity | | | 26.35** |
|   Man religious | −0.044 | (0.121) | |
|   Woman religious | 0.007 | (0.114) | |
| General education | | | 49.12*** |
|   Man (reference: no degree) | | | 6.04 |
|     Lower schooling (Hauptschule) | −0.130 | (0.307) | |
|     Middle schooling (Mittlere Reife) | −0.309 | (0.308) | |
|     Polytechnic schooling (8/9th grade) | −0.314 | (0.586) | |
|     Polytechnic schooling (10th grade) | −0.433 | (0.368) | |
|     College entrance qualification | −0.417 | (0.332) | |
|     University entrance qualification | −0.288 | (0.316) | |
|     Other degree | 0.576 | (0.687) | |
|   Woman (reference: no degree) | | | 26.12*** |
|     Lower schooling (Hauptschule) | 1.220* | (0.528) | |
|     Middle schooling (Mittlere Reife) | −0.111 | (0.359) | |
|     Polytechnic schooling (8/9th grade) | −0.489 | (0.352) | |
|     Polytechnic schooling (10th grade) | −0.151 | (0.622) | |
|     College entrance qualification | −0.842* | (0.414) | |
|     University entrance qualification | −0.396 | (0.375) | |
|     Other degree | −0.470 | (0.357) | |
| Educational enrolment | | | 53.65*** |
|   Man enrolled | −0.025 | (0.142) | |
|   Woman enrolled | −0.747*** | (0.155) | |
| Parity next common child (reference: first child) | | | 109.49*** |
|   Second child | 0.081 | (0.117) | |
|   Third child and more | −1.056*** | (0.130) | |
|   Cohabiting versus living apart | 1.138*** | (0.186) | |
|   Duration of relationship | −0.022* | (0.010) | |
|   Intercept | −2.714*** | (0.454) | |
| N | 3,140 | | |
| McFadden's Pseudo $R^2$ | 0.073 | | |

*SEs in parentheses. *P<.05, **P<.01, ***P<.001.*
*Note: All metric variables have been centred to avoid collinearity problems.*
*Source: pairfam, own calculations.*

interaction effect of the man's and woman's desire to have children. As the coefficient for the interaction term is hard to interpret, we look at the predicted conditional probabilities in Figure 1 as well as at the LPM-estimated interaction effect. The latter is negative ($\beta = -0.102$) and statistically significant ($t = -2.503$). This result seems to contradict the veto hypothesis. In contrast, it shows that a single partner's desire to have children increases the probability of proceptive behaviour. The other partner's additional desire then hardly contributes to an increase of the probability.

The probability plots provide a more detailed impression.[5] Figure 1 shows the probability of proceptive behaviour conditional on the desire to have children. On the left, the probability is plotted against the woman's desire to have a child—conditional on the man's desire. The right side refers to the effect of the man's desire to have children—conditional on the

**Table 2** Proceptive behaviour (Logits), all models include control of further background variables

| | Joint utility Desire for child (y/n) Model 1 | Strength of desire for child Model 2 | Desire + Strength Model 3 | Veto player Desire + Interaction Model 4 | Strength + Interaction Model 5 | Desire, Strength + Interaction Model 6 | Power rule Desire + Sex Ratio Model 7 | Strength + Sex Ratio Model 8 | Desire, Strength + Sex Ratio Model 9 |
|---|---|---|---|---|---|---|---|---|---|
| Desire/Man (y/n) | 0.912*** | | 0.560*** | 1.227*** | | 0.744*** | 0.918*** | | 0.736*** |
| | (0.114) | | (0.121) | (0.150) | | (0.161) | (0.115) | | (0.161) |
| Desire/Woman (y/n) | 0.916*** | | 0.534*** | 1.197*** | | 0.672*** | 0.936*** | | 0.681*** |
| | (0.112) | | (0.119) | (0.141) | | (0.154) | (0.112) | | (0.154) |
| Desire/M × Desire/W (y/n) | | | | −0.963** | | −0.373 | | | −0.356 |
| | | | | (0.216) | | (0.230) | | | (0.231) |
| Desire/Man (strength) | | 4.474*** | 3.862*** | | 4.163*** | 3.486*** | | 4.457*** | 3.474*** |
| | | (0.411) | (0.423) | | (0.429) | (0.443) | | (0.412) | (0.445) |
| Desire/Woman (strength) | | 4.294*** | 3.711*** | | 4.038*** | 3.418*** | | 4.315*** | 3.429*** |
| | | (0.374) | (0.385) | | (0.386) | (0.400) | | (0.374) | (0.401) |
| Desire/M × Desire/W (Strength) | | | | | 11.524*** | 10.997*** | | | 10.885*** |
| | | | | | (3.012) | (2.999) | | | (3.013) |
| Power (Surplus of Man) (Sex Ratio) | | | | | | | 0.888 | −0.522 | 1.059 |
| | | | | | | | (1.514) | (1.219) | (1.605) |
| Desire/M (y/n) × Power | | | | | | | −0.304 | | 0.472 |
| | | | | | | | (2.170) | | (2.325) |
| Desire/W (y/n) × Power | | | | | | | −5.663** | | −5.502* |
| | | | | | | | (2.147) | | (2.308) |
| Desire/M (strength) × Power | | | | | | | | −9.491 | −8.897 |
| | | | | | | | | (8.713) | (9.464) |
| Desire/W (strength) × Power | | | | | | | | 1.991 | 5.102 |
| | | | | | | | | (7.966) | (8.550) |
| Intercept | −3.656*** | −3.422*** | −3.878*** | −3.575*** | −3.439*** | −3.940*** | −3.620*** | −3.423*** | −3.904*** |
| | (0.471) | (0.478) | (0.487) | (0.474) | (0.478) | (0.488) | (0.473) | (0.478) | (0.489) |
| N | 3,125 | 3,125 | 3,125 | 3,125 | 3,125 | 3,125 | 3,125 | 3,125 | 3,125 |
| McFadden's Pseudo $R^2$ | 0.134 | 0.183 | 0.197 | 0.137 | 0.187 | 0.201 | 0.137 | 0.183 | 0.204 |

SEs in parentheses. *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.
*Note: All metric variables have been centred to avoid collinearity problems.*
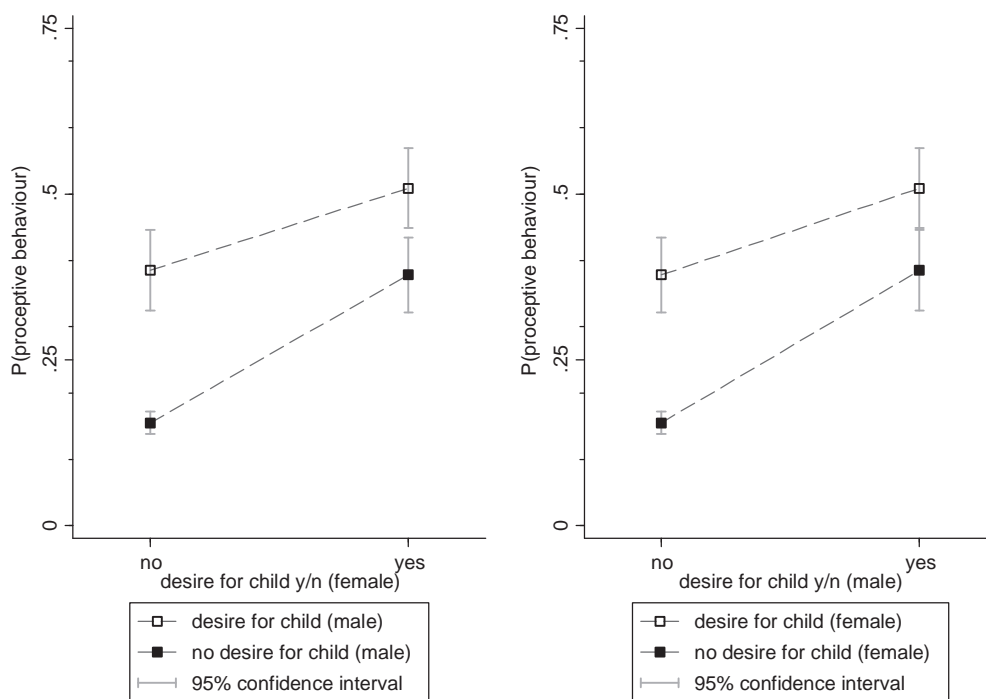*Source: pairfam, own calculations.*

**Figure 1** Proceptive behaviour and the effect of both partners' desires to have a (further) child. (Source: pairfam, own calculations).

woman's desire. First, we find that the effects of both partners' desires are apparently highly symmetric. Given a baseline probability of 18 per cent, the actual desire of any of the partners raises the probability of proceptive behaviour significantly. Although the other partner's desire does not raise the probability to the same extent, the increase is statistically significant. If both partners share desires to have children, the upper limit is about 50 per cent. This number appears rather low, probably, because some of the persons who report a desire to have children do not want to have them immediately but within the next 2 years. It is also possible that partners who both report a desire differ in this respect: while one partner desires a child immediately the other only desires it in future. This could also be a reason why the effects of the desire to have children do not simply add up.

In this analysis, we do not find a confirmation of the veto hypothesis. Nevertheless, one must consider that the strength of the desire to have children is not taken into account. Potentially, couples in which one partner has a strong desire for children and the other partner reports not to want a child might still have a comparably high probability of proceptive behaviour. This is because the latter partner might in fact be rather indifferent and not

having strong opposed desires, *e.g.* as a consequence of assortative mating.

Therefore, the following model considers partners' expected subjective utilities of (further) children. The interaction of both partners' preferences (Model 5) becomes significantly positive ($\beta = 2.543$, $t = 5.906$ in the LPM). Furthermore, the negative interaction of the dichotomous desire variables is not significant anymore ($\beta = -0.041$, $t = -1.057$ in the LPM), when controlling for preference strength (Model 6). This result provides evidence *for* the veto hypothesis and supports the assumption of the negative interaction effect in Model 4 resulting from not considering the strength of the desire.

Once again, the probability plot of the last model provides a more precise impression in order to evaluate the veto hypothesis (Figure 2). The abscissa indicates the strength of the desire of one partner to have children (on the left side women's, and on the right side men's desires). The axis ranges from the empirical minimum to the empirical maximum. The marked mean does not represent a natural zero point, which divides the scale into the categories rather for/rather against a child but displays the empirical mean. The closeness to the minimum reflects the skewing of the distribution.
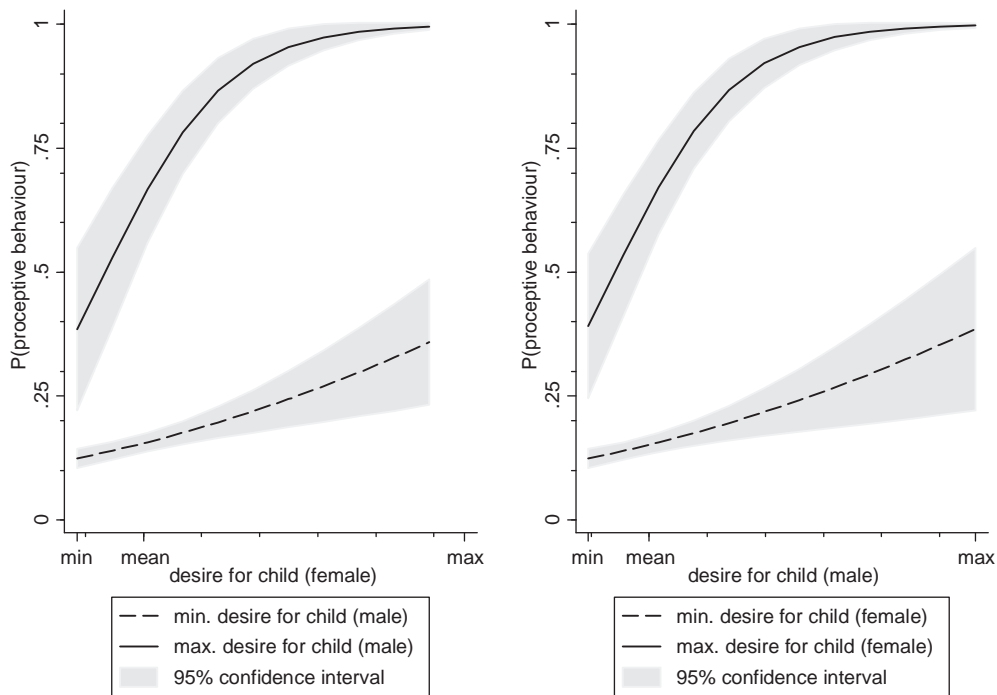
**Figure 2** Proceptive behaviour and the effect of the strength of both partners' desires to have a (further) child. (Source: pairfam, own calculations).

The curves represent the probability of proceptive behaviour if the partner has a minimal or a maximal desire to have children. Again, the symmetry of the effects, comparing between the sexes, is obvious. Furthermore, the probability of proceptive behaviour decreases if one partner has important alternative aims of life (=minimal desire to have children). This is true even if the desire of the other partner is very strong. This implies the relative low dashed line (minimal desire to have children) and the solid line falling to the left (maximal desire to have children). Without considering an interaction term explicitly, this curve proceeds lower. It is also obvious that if one partner has a low and the other partner has a strong fertility desire, it requires more to raise the probability of proceptive behaviour. But given a situation in which one partner rates all competing aims of life equal, the partner's strong desire is sufficient to result in proceptive action. Taken together, we find support for the joint utility and the veto rule. A partner is able to enforce a veto position if family formation or its extension is associated with high opportunity costs. The veto will work out only if it rests on strong contrary interests. This seems theoretically reasonable as the amount of utility which has to be redistributed to buy the agreement of the partner increases simultaneously with the individual costs of a (further) child. An efficient redistribution should become more and more unlikely with increasing transaction volume by given transaction costs.

## Bargaining Power

Although one partner does not have more power in family planning than the other due to gender, there could be other changeable factors causing different decision weights. According to the power rule argument, this might be asymmetric dependencies on the existing partnership given differential access to resources. We use the age-specific sex ratio on a regional level as an indicator of power due to relative interest in partnership maintenance. The coding is as follows: the value of the variables rises with increasing power of the man relative to that of the woman, *i.e.* men should benefit from partner market opportunities indicated by high sex ratios, whereas low sex ratios appear advantageous for women. In order to analyse the assertiveness of their own desire to have child depending on their own power, we model interactions of these two constructs (Models 7–9 in Table 2).
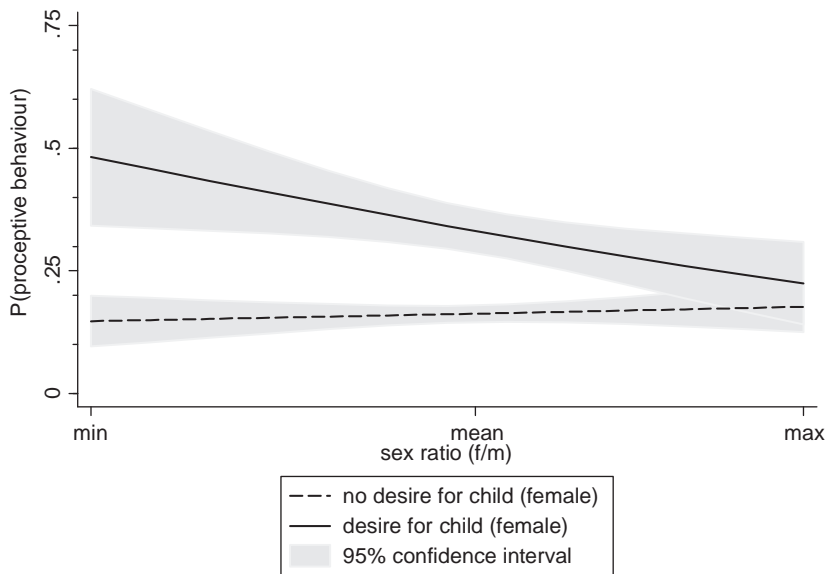
**Figure 3** Sex ratios and women's desires for children. (Source: pairfam, own calculations).

Model 7 shows positive effects of both partners' desires. The interaction between power and desire is insignificant for men but significantly negative for women [$\beta = -0.047$, $t = -0.121$ (man); $\beta = -1.138$, $t = -2.958$ (woman) in the LPM]. Figure 3 (based on Model 7) demonstrates the influence of the sex ratio on the ability of women to enforce their desires to have children against their partners' will: the sex ratio does not influence the constantly low probability of proceptive behaviour if both partners do not have a desire to get children (cf the insignificant main effects of power in Model 7). In contrast, the probability rises significantly if the woman wants to have a child and if the sex ratio is advantageous for her.

If we consider the interaction between power and preference strength (Model 8), all interaction effects are insignificant. Including measures of desires/preferences simultaneously (Model 9), we find that the power/desire interaction effect persists whereas the power/strength interaction still has no effect. While this finding is in contrast to a strict interpretation of the power hypothesis, it is well in line with the theoretical considerations above: we would expect rational partners not to use their bargaining power against their own interest, rather to agree to have a child if this raised the joint couple utility, and enforce a favourable utility distribution afterwards instead. If, however, this is not possible because the desire for or against children is 'unconditional', the more powerful partner would *rationally* enforce his position. Thus the results generally confirm the joint utility rule but at the same time they show its limitations.

## Summary and Discussion

In this article, we scrutinized the effects of both partners' desires on proceptive behaviour. The contribution of our analysis is an empirical test of various bargaining rules found in the literature. These finding should provide insights as to how partners come up with a (common) decision if their preferences diverge. At first, our results showed a symmetrical effect of both partners' desires and expected utilities, implying that neither women nor men dominate fertility decisions *per se*. This result accords with previous findings (Thomson, 1997; Thomson and Hoem, 1998) and contradicts strictly matriarchal or patriarchal bargaining rules.[6] Moreover, the observed symmetrical effects of both partners' preference strengths can be interpreted as strong evidence of a joint utility model.

Beyond that, we found a positive interaction effect between the expected utility of women and men. However, a 'veto' occurs only if the expected utility of one partner is very low. One possible explanation for this is uncertainty. Partners might not know whether they will individually profit from a child, even if the joint utility is positive. The veto position may then be the result of a risk-minimizing strategy, which partners find in the persistence of the *status quo*.

Finally, at least in cases in which partners do not both have strong, opposed preferences, bargaining power due to advantageous partner market conditions can play a pivotal role for imposing ones will on the other partner.

**Table 3** Bargaining hypotheses and empirical findings

| | Hypothesis | Findings |
|---|---|---|
| **Patriarchal model** | | |
| H1: | The man's desire for children has an effect on couple's proceptive behaviour, but the woman's does not. | Not supported |
| **Matriarchal model** | | |
| H2: | The woman's desire for children has an effect on couple's proceptive behaviour, but man's does not. | Not supported |
| **Joint utility model** | | |
| H3a: | Both partners' desires for children affect the couple's proceptive behaviour. | Supported |
| H3b: | The higher each partner's subjectively expected utility of an (additional) child, the higher the probability of a couple's proceptive behaviour. | Supported |
| **Veto-player model** | | |
| H4a: | Mutual desire for children is a necessary antecedent of proceptive behaviour. Statistically speaking, there is a positive interaction effect between the man's and the woman's desire for children. | Not supported |
| H4b: | If one partner strongly opposes to have a (further) child, proceptive behaviour becomes highly unlikely (positive interaction effect between man's and woman's strength of desire). | Supported |
| **Power-rule model** | | |
| H5a: | The partners' bargaining power moderates the effect of the desire for children: the impact of desire for children is stronger for the more powerful partner. | Supported |
| H5b: | The partners' bargaining power moderates the effect of utility expectations: the impact of expected utility is stronger for the more powerful partner. | Not supported |

Here, the found pattern differs somewhat for men and women: powerful women can easier persuade their partners to beget a child while powerful men tend to insist on the *status quo*. Our findings also suggest that power is only exercised to influence the bargaining if the motives for or against children are unconditional rather than based upon cost/utility considerations.

This paper has exploited a new innovative dataset that, most important for our analyses, provides data for both partners. Yet, survey participation of target persons' partners is far from complete. The resulting sample selection is probably non-random and may thus introduce bias into the analyses and threaten the external validity of our findings. To account for this, we checked for sample selection bias using Heckman's (1979) approach. According to this test our analyses do not suffer from selection bias.[7]

Future research should not only analyse proceptive behaviour as a result of bargaining but also realized births. Here, it is especially important to consider that there always is the possibility of separation and divorce—especially in the case of persistent differences regarding family size. As the pairfam Study continues, it may provide an interesting data base for tracking couples further regarding actual births, changes in contraceptive behaviour over time and stability of

relationships. As the time interval between waves is rather short, the constructs examined are rather stable across time, and births as well as separations are rather rare events this enterprise has to be postponed until multiple waves are available.

# Notes

1  This question addresses the applicability of the Coase-Theorem, which assumes symmetry of information and transferability of utility. In reality, though, there can be limits of such redistribution within partnerships, for instance, because of collective goods and transaction costs [see *e.g.* Kneip and Bauer, (2009) for a discussion of the applicability of the Coase Theorem within couple relationships].

2  The 'Panel Analysis of Intimate Relationships and Family Dynamics' (pairfam) is a representative, interdisciplinary longitudinal study for researching closed relationships and familial forms of life in Germany. These data are accessible for scientific use upon registration via http://www.pairfam.de [for documentation cf (Huinink *et al.*, 2010)].

3   In case of conflicting reports on contraception, we use the women's reports for reasons of information asymmetry (taking the pill regularly is less observable than using a condom). This results in a re-classification of less than 6 per cent of the cases.

4   'Decidedly' means that both partners consistently report to become parents within the next 2 years. The rationale for coding these plans as proceptive behaviour is to make them match the fertility desires that are also asked for this time span. Otherwise, couples may report to want a child but have not yet stopped their use of contraceptives, even though future life plans are already negotiated with the partner. We replicated all models presented using two alternative codings of the dependent variable. Once, we only considered the information on contraceptive behaviour, the other time we only incorporated information on plans to have children. No systematic differences were found in the results.

5   The probability plots always refer to a constellation of covariates in which all control variables equal their empirical mean.

6   Note that this finding also contradicts the model of a (male) altruistic dictator assumed in classical family economics (Becker, 1981), where the (husband's) own utility function incorporates the partner's preferences. In this case, the dictator's desire would represent the benefit which the family would gain from his decision for or against children.

7   The first stage of the used selection model includes the couple characteristics available for couples with a non responding partner (cohabitation status, parity, duration of relationship) as well as the interviewer's sex—a significant predictor of the partner's survey participation—as exclusion restriction. It turns out that only the effect of the cohabitation status is overestimated when sample selection is not taken into account, whereas all other coefficients are unaffected. Overall, null hypothesis of no selection bias cannot be rejected ($\lambda = -0.096$, $SE = 0.157$).

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