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When Mothers Work and Fathers Care.

Joint Household Fertility Decisions in Denmark and Spain

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Abstract

We analyze second birth decisions within the theoretical framework of joint household decision making, comparing two countries that represent the international extremes in terms of women's career behaviour, Denmark and Spain. Using all 8 ECHP panels we apply discrete time estimations of the likelihood of a second birth and show that in Spain, fertility behaviour continues to conform to the classic 'Becker model' while in Denmark we identify a radically new behavioral pattern according to which career-women's fertility is conditional on their partners' contribution to care for the children.

Keywords

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Introduction

Almost all studies of fertility and female labour supply pay very little attention to male partner attributes. Since theory has assumed that his primary relevance is to concentrate on market work, research has focused narrowly on his breadwinner capacity. And even if most studies address theories of joint household decision making, they inadvertently end up individualizing the decision process.

The assumption that men matter primarily in terms of their breadwinner status is probably realistic when women's attachment to employment and careers is weak. But as women increasingly value economic independence and embark on lifelong careers, the nature of partners' decision making should change. A commitment to lifelong employment implies that the opportunity cost of motherhood will rise and, in turn, this would imply that the household's reliance on the male's breadwinner status weakens. And to the extent that motherhood is conditional on women's career pursuit, the joint household bargaining process is likely to center on how to reconcile employment and child care. We would under such conditions expect that husbands' contribution to home production activities will gain in importance. Put differently, the relevance of males will shift from the breadwinner role to their contribution to home production and child care.

Sampling only couples, we exploit the European Community Household Panel's (ECHP) full eight waves and apply event-history techniques to estimate the probability of second births. The focus on second births is motivated by two factors. One, it is widely recognized that the difficulty of reconciling motherhood and careers is far greater with two (small) children than with only one. The vast majority of women, regardless of education and career aspirations, do end up having one child. It is with respect to second and higher order births that we see large variations, both across countries and across types of women. Two, since our study is explicitly focused on the father's potential contribution to child care, this can only be empirically established by examining his care participation where one small child is already present.

We adopt a discrete-time framework with logit estimations and include three main co-variate vectors related to female, male, and joint household attributes, respectively: the standard menu of variables (like level of education, age, etc), as well as variables that tap incompatibilities of motherhood and employment (such job security, job status, and sector of employment) Considering the greater opportunity costs of childbearing for women dedicated to careers, a central issue in this study is how couples manage the reconciliation problem. The penalty of motherhood can be reduced under two conditions. One, the couple has access to affordable child care. Two, the father contributes to the care of children. In either, or both, cases the caring burden on the mother is relaxed and this should reduce the potential child penalty.

While this argumentation is perfectly consistent with theoretical models of joint decisionmaking, there is a large void of empirical research. Granted, there is substantial evidence that access to day care is key to fertility (Del Boca et.al., 2003; Neyer, 2003). Among the exceedingly few who focus on the paternal role, Del Boca

(2002) and Duvander and Andersson (2003) show that fathers' contribution to domestic work influences fertility positively. In Sweden, women are more likely to have a second child if the male partner took parental leave following the birth of the first (Olah, 1998).[1]

Our study examines two countries, Denmark and Spain, that proto-typically represent the European variation in fertility behaviour and women's employment. Spain combines internationally low levels of female labor force participation with a traditional fertility pattern, according to which fertility is negatively correlated with women's level of education. It is, furthermore, a country in which the reconciliation of motherhood and paid employment is unusually difficult, both because of widespread job precariousness and because of unusually underdeveloped mother-friendly policy: paid maternity leave is limited to 4 months, there exists no parental leave, and access to day care for the under-3s is very scarce and, being predominantly private, is also relatively expensive. Spain is a core example of the emerging 'low fertility equilibrium' with fertility rates hovering between 1.1 and 1.2. Denmark represents the emerging new 'Nordic' reality with practically universal female employment and with fertility now being *positively* correlated with women's educational level. Denmark stands out for its very comprehensive and generous family policies: 18 weeks paid maternity leave plus another 10 weeks of parental leave (that can be extended another 26 weeks), and subsidized day care is now virtually universal (Gornick and Meyers, 2003). [2] And Denmark's fertility rate lies at the high end within Europe. As recent Danish research has shown, when controlling for other observed characteristics, Danish women do not suffer any significant income loss due to children (Datta Gupta and Smith, 2002).

Explanations of Fertility Behaviour

Research on fertility in advanced countries emphasizes two sets of causal mechanisms. Some demographers, notably van deKaa (1998), see the long-run decline of births as part of the 'second demographic transition', a correlate of modernization and post-materialist value change. The argument is that people place greater priority on individual self-fullfillment and, thereby, seek to limit fertility. This theory may help explain the overall trend, but seems less useful in accounting for historical variability and cross-national variance among nations presumably equally post-materialistic.

As to the former, the sudden leap in fertility during the baby-boom decades seems a bit inconsistent with a value-driven explanation since fertility began to decline long before the war, experienced a resurgence for some decades, and then returned to a steadily declining trend. Were the postwar decades an interim pause for post-materialist

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[1] Sundstrom and Duvander (2002) show that, in Sweden, high educated and higher earning fathers are more likely to take extended father leave. They contribute, similarly, far more hours to domestic work. This directly contradicts standard economic theory of the family.

[2] Danish legislation has changed and the description above refers to the years covered in this study (1994-2002). Formally, the parental leave system includes a father-leave but in practice the take-up is very low (Pylkkanen and Smith, 2003).

values? As to the latter, we observe substantial cross-national variance, with total fertility rates in North America around 2.0, in Northern Europe around 1.8, and in Southern Europe a low of 1.2-1.3.[3] Regional differences are even greater, as evidenced by sub-1.0 rates in Asturias, Galicia, Veneto and Liguria.

Survey data suggest that citizens have not lost their taste for children. With minimal variation, adults in all EU countries express a preference for 2.2 – 2.4 children on average (Bien, 2000; Hank and Kohler, 2000; Sleebos, 2003). Failure to attain anything even close to the desired number seems to require different explanations.

A second set of explanations derive from microeconomic theory, emphasising the opportunity cost associated with women's rising level of education and their improved earnings prospects (Becker, 1991; Willis, 1973; Mincer, 1985; Hotz et.al., 1997). Cross-nationally, this would imply that rates of female employment and fertility should be negatively correlated. At the micro-level, fertility should be inversely related to a woman's educational attainment and labour supply. Theory would predict that fertility declines especially when female earnings rise relative to males' – as has occurred in the U.S. during the past decades.

Also in this case, empirical reality and theoretical prediction seem at odds. Cross-national studies show that the traditional negative correlation has now turned positive: fertility rates are higher where female employment levels are high (Ahn and Mira, 2002). Equally puzzling, U.S. fertility has not declined during the last decades of rising relative female earnings. The new link between fertility and employment is frequently explained in terms of welfare state support of working mothers. The incompatibility between motherhood and careers may find reconciliation in policies that enhance employment flexibility (such as part-time jobs) and that diminish the potential opportunity cost of children (such as child allowances, job guarantees, subsidized day care, and parental leaves). There is substantial empirical evidence that mother-friendly policy is key (Gauthier and Hatzius, 1997; Billari et.al., 2002; Esping-Andersen, 2002; Meyers and Gornick, 2003; Del Boca, 2003). Analyses of national microdata also reveal discrepancies between reality and theory. As mentioned, Scandinavian fertility is now *positively* related to education, and we find the highest fertility levels among women with tertiary education. [4] Nordic fertility is positively related also to women's earnings levels (Andersson, 2000; Vikat, 2004).

It is a basic principle in demography that postponed family formation puts a squeeze on the number of fertile years (Kohler et al. 2002; Gustafsson, 2001). The age of first birth has been rising everywhere, from about 25 years to 28-29 now – with minor variation across the advanced countries. Postponement is undoubtedly related to the rising returns to women's human capital investment (as standard theory would predict). Yet, it seems like a poor candidate for explaining the cross-national analomies discussed above. The Danish average age of first birth is pretty similar to

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[3] For an overview, see Coleman (2002) and Brewster and Rindfuss (2000).
[4] In the Nordic countries, fertility is curvilinear with respect to education: lower among the least and most educated women, and highest among those with a semi-professional, tertiary education (Bernhardt, 2000; Esping-Andersen, 2002)

the Italian and, yet, Denmark boasts 50 percent higher fertility. [5] And, as noted, fertility in the Nordic countries is highest among women with long education.

Given that childlessness varies only little, the main consequences of postponement have to do with the probability of having two-plus children (Martin, 2002). In a recent Danish study, Jensen (2002) shows that postponement need not result in fewer births if circumstances allow for catch-up. Jensen emphasizes the cushioning effect of welfare state support and, in particular, of secure mother-friendly jobs. A particular variant of the postponement argument is now being applied to the Mediteranean countries, not so much related to longer schooling as to the increasingly difficult and prolonged transition to adult independence (Kohler, Billari and Ortega, 2002; Billari et.al. 2002; Baizan, 2004; de la Rica and Iza, 2004).[6]

The starting point for most research is Becker and Lewis' (1973) and Willis' (1973) economic theory of family formation. The theory is built on a basic utility maximizing framework where the couple decides on the allocation of work and investments. This means specializing in paid and unpaid work and deciding upon the number of children in conjunction with decisions regarding their desired quality In the 'unitary utility' approach, the male's labour supply is treated exogenously. Women's specialization in unpaid work (and having children) should be negatively related to her expected wage penalty, and to the relative importance of her foregone earnings for total family welfare. Considering the rapid convergence in male and female employment rates, one might relax the assumption that couples indeed do act and decide in perfect concert. If we were to assume that women make their specialization and fertility choices primarily on the basis of their own individual utility preferences (such as maximizing life-long economic independence), we would nonetheless still predict that fertility is inversely related to her perceived wage penalty. Since the wage penalty is reduced the later in her career a woman has children, we would predict that women with potentially high opportunity costs will delay first births especially. But as noted above this does not by necessity imply *fewer* children in the end.

No doubt, it would be equally hazardous to assume perfect decisional harmony as it would be to assume pure individualism across-the-board. Hakim (1996) provides a useful reminder of the heterogeneity of women's preferences, arguing that the share of women who put their own career first and then subject family decisions to this preference is everywhere minoritarian – as is increasingly also the traditional family-oriented woman. The large majority, according to Hakim's data, fall in-between, that is to say, they insist on combining family with a stable, life-long attachment to employment.

It is standard to assume endogeneity in fertility decisions, and this is of particular relevance for any estimation of household-level decision making. Women will choose their education, their employment status, and surely also their partner in accordance

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[5] Denmark situates itself close to the international average, but the mean age of first births in Spain is now 31 (Jurado et.al., 2003).
[6] De la Rica and Iza (2004) and Baizan (2004) show that employment insecurity is a main explanation of postponed marriage and familiy formation in Spain.

with their preference set (Blossfeld and Drobnic, 2001; Hakim, 1996). All else equal, we should therefore expect that women with strong family preferences will select partners that facilitate the realization of such, i.e. in this case the decisive covariates bundle around the male's career and earnings characteristics, and far less around the woman's. To exemplify, a birth is more likely to occur when the male partner has stabilized his earnings prospects *irrespective* of the woman's status. Vice versa, births to career-oriented women depend primarily on events and transitions relevant for her employment prospects. [7]

This said, one clearly needs to adopt a dynamic, life course view. Life-cycle fertility models emphasize the timing of births in accordance with couples' sequential assessment of utility from a life-time perspective. Most economic models make the simple assumption that husbands devote all their working time to market activities; that their contribution to unpaid domestic tasks is *de facto* zero. [8] This implies that dynamic fertility models combine the wife's production function, and the earnings potential of the husband. [9] The timing of births depends on her pre-birth wage and her future earnings depreciation. The higher her wage and the expected depreciation, the greater is the probability of postponing (first) births. Day care will help reduce depreciation and, in any case, births should coincide with the moment that husbands' earnings have stabilized (Cigno, 1991: Chapter 6; Hotz et.al., 1997: 318).[10]

The majority of empirical studies assign a uniform decision logic to households across-the-board, and then deal with unobserved heterogeneity and endogeneity through fixed-effects or instrumental variables estimations. There is usually little attention to the nature of the joint household charcateristics and, hence, fertility decisions end up individualized. The joint element of couples trying to calculate utilities and opportunity costs in lieu of their collectively shared attributes is partially lost. Most micro-level empirical studies concentrate on female co-variates and include (if at all) only summary information on husbands (typically education and earnings).[11] The Hakim typology suggests that the nature of the household bargaining process will differ according to the kind of life project the woman envisages. In any case, the vast majority of couples decide on the basis of the configuration of their joint resources, constraints, and preferences. Common sense tells us the same thing: why form a stable

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[7] Cordon and Sgritta (2000) suggest that Spain's rock-bottom fertility is a consequence of the fact that a growing share of young women now prioritise careers within an unusually hostile welfare state and labour market environment.

[8] See, however, Cigno (1991) and, for a rare empirical application, Del Boca (2002). Tolke and Diewald (2003) have examined birth probabilities for Germany focusing primarily on fathers' employment characteristics.

[9] The production function derives from $w_t = HC(w_{t-1}, h_t) - \delta_1 w_{t-1} - \delta_2 w_{t-1} 1[h_t = 0]$, where δ_1 *and* δ_2 denote rates of depreciation ($0 < \delta < 1$), and $HC(w_{t-1}, h_1)$ represents the human capital production function. 1[.] is the indicator function

[10] We assume (realistically) that the couple cannot borrow against future income.

[11] The need for more comprehensive examination of the family's members in empirical research has been stressed by Kooreman and Kapteyn (1990) and by Del Boca (1997). There are of course exceptions., particularly within the literature on joint labor supply decisions. Specifically related to fertility, Del Boca (2002) for example, includes information on the husband's contribution to unpaid domestic tasks – a variable that ought to be key for wives' perception of whether children will seriously harm their career and earnings opportunities, especially in countries where day care is hard to come by.

partnership in the first place if not for the purpose of doing things together? And within the menu of potential things to do together, having children must surely figure as one of the most epochal – not least because, once brought into the World, they will invariable influence both partners' life course in a major way. [12]

We are, accordingly, left with an odd anomaly in the literature, namely that most research individualizes fertility behaviour while theory and common sense both insist that it must be examined interactively. This paper makes an attempt to bring back the joint element by including co-variates that tap joint household characteristics. The task is to show that a model which gives more attention to the male's attributes and, especially, to his time allocation yields superior explanatory power than one that simply focuses primarily on the woman's attributes.

Fertility and Joint Opportunity Costs

The standard economic approach to fertility assumes that husbands do not contribute to unpaid work and, hence, the husband's relevance is reduced to his overall earnings power. The opportunity costs of children are, in other words, assumed to be purely feminine. [13]

The straightforward prediction is that the higher the child penalty, the lower the likelihood of births. The wage penalty will be higher the earlier in her career a woman decides to interupt employment (Taniguchi, 1999). Hence, to minimize lifetime income loss women will delay births. But this is likely to covary with women's human capital. The wage penalty is minor among the low educated and climbs sharply in relation to women's career chances (Anderson et.al., 2002; Martin, 2002). This is all perfectly consistent with the classical fertility-education correlation that human capital theory predicts (Calhoun and Espenshade, 1988). Yet, a couple's fertility decisions will take into consideration both internal and external compensatory factors. Recent research has highlighted the importance of 'mother-friendly' welfare state programs as one such external factor. Day care should reduce mothers' earnings depreciation; and paid maternity and parental leave will compensate for lost wages and potentially also diminish interuptions (Gustafsson and Stafford, 1992; Gauthier and Hatzius, 1997; Waldvogel, 1998; Del Boca et.al., 2003; Stier et.al., 2001; Esping-Andersen, 2002). Both may, however, yield ambiguous effects. If day care is predominantly private, low income households are easily priced out of the market and mothers' ability to remain employed will then hinge on the availability of a grandmother or other unpaid help. Where day care is mainly supplied through markets, the cost of day care becomes a regressive tax on mothers' labor supply and, in this case, the classical fertility-education correlation should change, since high-income (usually highly educated)

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[12] Of course, children may come as an accident although methods of birth control have drastically reduced this possibility. In this paper we assume that births to a couple are wanted and planned.

[13] There is substantial variation among empirical wage penalty estimates, although it is clear that it increases with women's level of education. U.S. estimates range from a cumulative value between $20.000-$50.000 (Cigno, 1991: 93). Waldvogel (1998), comparing the U.K. and the U.S. suggests that the family gap for women is pretty similar: 20 percentage points. More than a third of this gap is attributable to interruptions during motherhood.

households may substitute via purchased care. [14] The marginal cost of day care changes dramatically where it is predominantly publicly provided and subsidized, as in the Nordic countries.[15] Paid leave schemes may also yield non-linear effects depending, on one hand, on how they interact with day care provision and, on the other hand, on the duration of paid entitlements. Very long durations may have adverse effects on returning to work and may, hence, actually increase future depreciation.

Recent studies question whether 'mother-friendly' policy is a sufficient explanation of the variance we observe across and within nations. Several authors now argue that also job security (temporary versus permanent contracts) and job flexibility (public versus private sector) are key (Bernardi, 2001; Bernhardt, 2000; Esping-Andersen, 2002; Jensen, 2003; Baizan, 2004). Women may deliberately swap higher income for cushioned 'soft economy' employment in order to better reconcile motherhood with work and, most likely, protected jobs offer better guarantees against long-term wage depreciation. [16] Considering the spread of precarious employment in many European labour markets, especially affecting younger (and female) workers, the conventional 'Beckerian' emphasis on income-price effects may now find its rival in job security effects. Employment precariousness should have adverse effects on fertility to the extent that women insist on a stable connection to employment prior to giving birth. Again, depending on type of woman, the importance of her job security will vary. To family-oriented women, the male's earnings capacity is probably more salient.

There has been far less attention to internal compensatory factors – although they are inherent in Becker's theory of investment and time allocation. One compensatory factor lies in the minimization of risk. If the partnership is of uncertain longevity, the risks associated with births rise. Hence, we would expect that the duration of the partnership is positively associated with births. [17] And we must, most importantly, relax the assumption that men's contribution to unpaid housework is nil. Following Del Boca (2002), husbands' contribution to household work can be an important correlate of wives' fertility-work decisions. Again, one would expect non-linear effects. For women with a 'traditional' family preference, husbands' contribution to housework is probably of little significance; not so for women with stronger career commitments. We would expect that women with a combined preference for employment *and* motherhood will select partners predisposed to chip in.

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[14] This obviously depends on the cost structure of day care. In the U.S. costs (and quality) are far more differentiated than in Europe due to a greater wage spread. For several European countries, Esping-Andersen (1999) estimates that private day care is *de facto* priced out of the market for the majority of working mothers.

[15] As a rule of thumb, about 2/3rds of the total cost is subsidized in the Nordic countries, although there are important exceptions. Lone mothers receive a 100 percent subsidy and, especially in Denmark, the parental co-payment is income graduated so that their share rises with their income.

[16] Danish research shows that (would-be) mothers frequently move from private to public sector jobs (Jensen, 2003).

[17] As Ellwood and Jencks (2001) argue, births have more significance for women's life chances than does marriage. However, the fertility decision is increasingly related to the perception of a stable and workable partnership *and* to the assurance of a stable income.

The standard quantity-quality fertility model put forward by Willis (1973) and Becker and Lewis (1973) proposes a production function of children as

$$N = f(\frac{X_c}{Q}, \frac{t_m}{Q}, \frac{t_f}{Q})$$

where N is the number of children, Q is the quality of children, X_c is the total amount of goods and services purchased and t_m and t_f are the amount of mother′s and father′s time dedicated to child care. Since our focus is on decisions to have a second child, we assume that Q is fixed and that $N>1$.

Parents' utility is given by $U(Z, N, Q)$ where Z is parental consumption. [18] The parents lifetime budget constraint is given by $x_c = (T - t_m - t_{mZ})w_m + (T - t_f - t_{fZ})w_f$, where T is the total time each parent has, and w_j is the wage of parent j. Solving this model (see Ermisch, 2003, for a full derivation) leads to the prediction that family size (and child quality) is inversely related to the mother's expected opportunity cost of having a child. In principle, the above model allows for the father to dedicate time to child care but, in practice, t_f is assumed to be zero. More importantly, it is assumed that t_f will not affect the mother's opportunity cost. The opportunity cost of children for the mother can be expressed as

$$Y_j{}^* = w_j + \beta\omega L_j$$

where w_j is the foregone wage, and $\beta\omega L_j$ is the depreciation due to human capital erosion. A more general model of the mother's opportunity cost of having children is to incorporate the father′s time for child care. In particular,

$$L_j=f(t_m, t_f, HC)$$

where HC is the human capital level, $\frac{\partial L}{\partial HC} > 0, \frac{\partial L}{\partial t_m} > 0, \frac{\partial L}{\partial t_f} < 0$

The standard model presented above predicts that the higher the level of the mother′s human capital (and thus higher potential wages in the labour market) the higher the opportunity cost of children and this should result in lower fertility. Now, to the extent that $t_f>0$, this should have a marginally beneficial effect on the mother's opportunity cost of children and would accordingly contribute positively to fertility. This implies that the higher is the mother's level of human capital, the greater must be the father′s contribution to child care in order to generate a second birth in the family.

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[18] Quality and quantity are seen as interactive and this produces a non-linear budget constraint, so that the couple's lifetime income $I = \pi_c nq + \pi_s z$, where π_c is cost of children's consumption and π_z denotes the same for adults (for a further elaboration, see Hotz et.al.1997:294-297, and Francesconi, 2002).

For the purpose of empirical estimation, we can frame the problem in terms of a very simple model of fertility decisions:

Probability (second child) = $aX_m + bX_f + cX_{mf}$

Where X_m are the mother characteristics, X_f are the father characteristics and X_{mf} are the interaction of some characteristics of the father and of the mother. The latter capture the joint element in fertility decisions. Given the above, if Xi (i=m,f) is the mother's and father´s level of human capital, respectively, we would expect the coefficient a to be negative and the coefficient b to be positive as the standard model of opportunity costs would predict. To the extent that the father's child care matters, we expect the associated coefficient to be positive. Similarly, if X_{mf} is the interaction between mother's human capital and father's child care, we would expect the coefficient c to be positive.

Data and Estimation

Using all 8 waves of the ECHP, 1994-2001, we estimate the likelihood of a second birth. We include only couples in our sample since our focus is on fathers and joint parental characteristics. As explained above, we compare two diametrically opposite countries, Denmark and Spain, in terms of features pertinent to fertility and female employment behaviour: while female labour force participation in Denmark is close to universal (ca. 82 percent in the relevant age group), Spain is an international laggard with 56 percent). The two countries also represent the two tail ends of European fertility, with Denmark close to 1.8 and Spain around 1.1-1.2. And as so much research demonstrates, Denmark is a world leader, and Spain a laggard, in terms of public provision of day care, generous leave schemes, and in terms of flexible hours and job guarantees for returning mothers (Gornick and Meyers, 2003). The two countries also occupy opposite ends of the job-security spectrum. Spain is the EU leader in terms of the incidence of precarious fixed-term contracts and boasts additionally very high levels of youth unemployment. [19] It is well established that the incompatabilities between careers and motherhood are unusually severe in Spain and unusually modest in Denmark (Esping-Andersen, 2002).

The ECHP provides panel data for 8 years and is, with some reservations, well suited for national comparison using micro data. There are important left-censoring problems, in particular due to lack of information on the duration of partnerships and individuals' careers prior to the first wave. We do, however, know the date of birth of the first child and this will be used to estimate duration.We restrict the sample to

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[19] Denmark lies close to the EU average in terms of temporary work contracts but these are not comparable to the kind that prevail in Spain. Most temporary jobs in Denmark are either youthful first-entry jobs or substitutes for personnel on (maternity) leave.

couples whose first child is younger than six years old.[20] The relatively few years at our disposal also imply right-censoring which, however, is a lesser problem since most second births arrive within very few years of the first (Baizan, 2004). In our sample, the mean age of the first child at the time of birth of the second child is is 1.9 in Denmark and 2.2 in Spain. Conditional on first births, the ECHP provides 768 'risk events' (corresponding to 278 individuals) for Denmark and 1510 (514 individuals) for Spain. Within the *6-year risk-span* there were 120 second births in Denmark and 115 in Spain. This implies that a little less than half of the sampled Danish women had a second child, compared to only 22 percent for Spain. Table 1 below presents survival estimates, i.e. the likelihood that a mother with one child will *not* have a second within the defined risk-span of the panels.

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[20] This is motivated by two concerns. One, the vast majority of second births fall within 5 years of the first. Two, since father's dedication to childcare is a key variable in our study this needs to be measured while the first child is still of pre-school age.

Table 1. A Discrete Time Life Survival Table for mothers with one child [21]

Interval		Denmark Survival	Std. Error	Spain Survival	Std. Error
0	1	0,9978	(0,0022)	1,0000	(0,0000)
1	2	0,9597	(0,0096)	0,9753	(0,0051)
2	3	0,7706	(0,0219)	0,9090	(0,0100)
3	4	0,5715	(0,0272)	0,8199	(0,0142)
4	5	0,4402	(0,0288)	0,7106	(0,0178)
5	6	0,3660	(0,0296)	0,5655	(0,0212)

Source: ECHP

The ECHP provides information on the key covariates of interest, albeit not always as detailed as we would wish.[22] To assess the potential opportunity costs to women of motherhood, we use two variables. One, education which is a simple trichotomy of low (less than secondary), medium (secondary), and tertiary. We use medium as our reference category. Two, investment in adult, post-formal educational training. This latter variable is key since it addresses potential selection bias by differentiating women dedicated to careers from more family-oriented women. This variable is a time invariant dummy with no training constituting the reference category. [23] To identify the factors that potentially facilitate the reconcialiation of motherhood and careers, we include information on her employment status (whether employed full time, unemployed, or inactive), contractual status (temporary or permanent), and sector of employment (private or public sector).[24]

As discussed earlier, economic theories of fertility assume that the husband's chief role is that of breadwinner. We therefore include information on the fathers' level of education (as above), employment status (a dummy for unemployed and inactive) and, most importantly, his income. Theory argues that the father income effect is non-linear, i.e. that fertility depends on him attaining stable, permanent and sufficient income. Accordingly we prefer to measure father's income via a simple 'low-wage' dummy and adopt standard practice by defining low wage as less than two-thirds of mean wage.

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[21] Only the last record of each subject was considered when computing the life table (option: *tvid*). We define a discrete time hazard rate, i.e. the event and right censoring can only occur at the end of each interval. Hence we specified the option *noadjust*. The full Stata command line used is the following: ltable time censored, tvid(nid) survival noadjust.

[22] See Appendix Table 1 for descriptive statistics of the variables included.

[23] In other words, we wish to highlight training that is initiated (and probably financed) by the mother herself.

[24] For Denmark we omit the permanent/temporary work contract variable since fixed-term contracts in Denmark are not comparable with those in Spain.

For both parents we also include standard variables of age and civil status (married, with non-married as reference). The latter requires some remarks when applied to Danish and Spanish data. For Spain the marriage variable is unlikely to play any significant role considering that first, not to mention second, births are extremely rare outside matrimony. For Denmark, in contrast, first births in the context of cohabitation are very common but it is also common to marry once a couple has children.

A key concern of our study are the joint household characteristics associated with fertility. The ECHP data, of course, do not furnish information on couples' actual preferences and decision making, but we utilize three variables that help identify the allocation of time to caring for children. The ECHP does not provide precise data on access to day care. We use a 'second-best' dummy variable which measures whether someone outside the household looks after the child on a paid basis (which can include babysitting). This variable is treated as time invariant and pertains to the year when the first child is one year old. This is motivated by the fact that most mothers are on maternity leave during the first year after birth. 'No access' is used as reference category. A second key variable measures fathers' (self-declared) weekly hours of caring for the children. We use a simple yes/no dummy, which measures the father's dedication only for the first child (age 0-5). Zero hours (i.e. no care) is our reference category. This variable is time-constant. Thirdly, and most importantly, we introduce an interaction term (mother's investment in training* father's dedication to child care). This variable is key in order to identify the extent to which fathers may help reduce the potential opportunity cost of births among career oriented mothers.

All time-varying right-hand side variables are lagged by one period in order to capture parents' situation at time of conception, i.e. one year before childbirth, since this is presumably the moment that couples decide on the second child. Since our observations are annual, we adopt a discrete time analytical framework with logit estimations and introduce a log-time covariate (time elapsed since first birth) to capture duration.[25] The data is organized in person-years and most of the covariates are time-varying. The only time-constant covariates are parents' education including mother's post-formal education and the information on access to day care. In order to study the likelihood of having a second child we fit a logit model, accounting for the repeated observations on individuals via the cluster option.

A first examination of the ECHP data suggests that fathers' participation in child care varies importantly across nations and, equally importantly, by their educational level. See Table 2.

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[25] We have experimented with continuous time Weibull regressions that, in theory, should constitute the best fit for duration effects. But the few years available for estimation make it impractical. One possible alternative would be piecewise constant (or piecewise linear) estimations, but the Danish data set prohibits this since there is no information on the month of birth.

Table 2. Fathers' Child Care by Level of Education

	None	<14hours	>14hours
EU			
<secondary	58.6	11.8	29.6
secondary	42.1	19.1	38.9
tertiary	38.2	20.6	41.3
Denmark			
<secondary	18.8	18.8	62.3
secondary	10.9	20.6	68.6
tertiary	6.5	15.9	77.6
Spain			
<secondary	50.4	10.7	38.9
secondary	30.5	23.2	46.4
tertiary	31.6	17.5	51.0

Analyses

We fit the event history data to a discrete-time logit model for Denmark and Spain, respectively. The 8 ECHP waves yield 768 observations for Denmark and 1510 for Spain. With such relatively scarce observations, the estimates tend to suffer from high standard errors. See Table 3.

Weak estimations notwithstanding, the models bring out the orthogonal nature of fertility decisions in the two societies.[26] In Denmark, clearly, the decisional logic departs substantially from the conventional model inherent in standard economic theory. Firstly, the male partner's role as breadwinner has *de facto* disappeared. Neither his earnings, employment status, nor his education have any influence whatsoever on second births. [27]The results for Denmark suggest, in fact, that fathers' principal relevance lies in their dedication to child care. The coefficient for father's care is statistically significant and the calculated log-odds ratio suggests that the likelihood of a second birth *doubles* when he actively participates in care.

Secondly, the results suggest that by and large Danish women face few genuine problems of reconciling children and careers. Indeed, contrary to conventional

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[26] The key effects that we highlight in our analyses do remain robust whether we add or delete other variables.
[27] We experimented with an alternative log-income specification, but the result is the same.

theory (but consistent with our earlier discussion) highly educated Danish women are more likely to give second births. With medium education as reference, the odds for women with tertiary education are 1.8. Similarly, fertility is not affected by whether the mother is full-time, inactive or part-time employed (although the sign is negative and approaches significance for unemployed women). There is only one case in which Danish women do appear to face potential opportunity costs that deter fertility, namely among women who invest in adult training. When we exclude the interaction term (mother's investment in training*father's dedication to child care), there is a strong negative effect of training on second births. In this case, the odds-ratio of .432 (z-statistic = -2.75) suggests that career oriented women are half as likely to have a second child. But when, as in Table 3, the interaction term is included, the 'mother-training' variable actually turns positive although it becomes statistically insignificant.

The interaction term (mother's investment in training*father's care) is our key variable of relevance for the joint decision making process within the couple. For Denmark, the coefficient is negative (and does not reach statistical significance). Holding this together with the previous findings, this suggests that Danish men do help compensate for the opportunity costs of births among career oriented female partners but *only insufficiently so*. Put differently, they pitch in to partly offset the child penalty of motherhood. This certainly adds a new twist to the traditional specialization thesis, in particular because we know that the compensatory behaviour of Danish males is far stronger among the highly educated.

Two additional comments on the Danish results: one, we note that the effect of access to outside child care has absolutely no effect on fertility. This is to be expected in the Danish context since practically all children from age 1 onwards are in public day care (Esping-Andersen, 2002). Two, we note that the effect of mother's age is more negative (and significant) in Denmark than in Spain. This, we believe, mirrors national differences in fertility timing and postponement. As we already noted, the age of first births is earlier, and the mean duration between first and second child in Denmark is far shorter than in Spain.

Comparing the Danish results to the Spanish, one is struck by the orthogonalities. While Denmark exhibits a 'new world' of fertility behaviour, Spain presents a fairly good fit with conventional theory. We see from Table 3 that Spanish fathers' human capital and earnings capacity influence fertility just as standard theory would predict. The likelihood of a second birth increases with father's education (approaching statistical significance) and is sharply reduced (an odds-ratio of .409) if he earns low wages. [28] And, again unlike Denmark, the father's role as care giver is completely irrelevant. Mother's human capital has, overall, little effect on second births in Spain. The interaction term of mother's investment in training and

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[28] The Spanish model yields one result that is difficult to reconcile with either theory or common sense, namely that fertility is positively correlated (albeit not significantly) with male partner being unemployed. This effect remains under different model specifications. One explanation may have to do with the geographical concentration of unemployment in the South – where fertility rates also are somewhat higher than average. Unfortunately the ECHP does not allow us to include region dummies.

father's care does not have any effect on the mother investment variable and is, in any case, insignificant. Hence it would appear that Spanish couples' fertility decisions depend far more on the male's breadwinner capacity than on the woman's potential income penalty.

As discussed, research has emphasized the harsh reconciliation problems that Spanish women face due to the high incidence of precarious jobs, unemployment and the lack of access to flexible part-time options. The strong negative impact of full-time employment on second births suggests that this is indeed the case – although controls for permanent contract and public sector job do not have any significant effect. In our model for Spain – in sharp contrast to Denmark – being full-time employed reduces the odds of a second birth dramatically (odds-ratio = .323). We note, at last, that access to outside (paid) care for the children has no effect on births. Of course, the meaning of this variable is ambiguous (it is likely to be interpreted as, simply, baby sitting) but in any case the availability of day care places in Spain is so marginal that it is unlikely to yield statistically significant results in a sample as small as the one we analyze. Put differently, what our results suggest is that Spanish mothers cannot count on day care to help soften the incompatibilities of motherhood and careers.

Conclusions

Taking into consideration the numerous limitations of our data, it would be folly to make strong conclusions. With only 8 panel waves and rather few observations, our analyses are inevitably constrained and suffer from large standard errors. Since we only have data on an annual basis, we are restricted to discrete-time estimations. And key variables are either missing (in particular the duration of the couple) or are measured in ways that are not optimal for this kind of research (especially, the day care variable is ambiguous, and the information we have on parents' time spent on home production is, at best, very rough).

This paper should, in other words, be seen as explorative rather than confirmative, as an attempt to re-examine the ways that couples make fertility decisions in light of the changing role of women and the difficulties women face in reconciling career and family preferences. It is precisely in this spirit that we selected two essentially orthogonal worlds of fertility and female employment, namely Denmark and Spain. The former country is no doubt an international vanguard, and the latter a laggard, with regard to mother-friendly policy. In Denmark practically all mothers remain employed within a context in which the potential career penalty of motherhood is substantially reduced. Hence, women have achieved *de facto* economic independence on a lifetime basis and this, of course, implies far less reliance on the male as income provider.

Of course, even with universal child care coverage, job security and flexibility the potential income penalty of motherhood will not disappear entirely and this we register in terms of the reduced proclivity of strongly career oriented Danish women to have a second child. The key result from our Danish model is that men's

alternative role as care givers can help diminish this penalty, if not fully then at least partially. In brief our results suggest that a decision making logic very different from that depicted in Becker's and Willis' fertility models is evolving in Denmark, while Spanish couples continue to adhere to the conventional mode. Our results therefore question the unitary utility approach that is prevalent in fertility theory. And they provide additional support for those who insist that fertility research must pay far more attention to the male's actual behaviour within the context of household task specialization and time allocation.

Table 3. The Likelihood of a Second Birth in Denmark and Spain. Discrete-time Logit estimations with standard errors adjusted for clustering on nid.

	Denmark	Spain
Logtime	2.703***	2.283***
	(.382)	(.277)
Mother Covariates:		
Age	-.112***	-.050
	(.041)	(.035)
Married	.287	.256
	(.267)	(.440)
<secondary education	.186	-.380
	(.461)	(.287)
tertiary education	.603*	.312
	(.315)	(.315)
Adult training	.196	.194
	(.648)	(.368)
Inactive	-.543	-.075
	(.503)	(.616)
Unemployed	-1.086	-.229
	(.659)	(.666)
Full-time job	.068	-1.131**
	(.394)	(.470)
Public sector job	-.271	.297
	(.282)	(.406)
Permanent contract		.393
		(.513)
Father Covariates:		
Age	-.017	.009
	(.029)	(.031)
<secondary education	-.324	.057
	(.367)	(.270)
tertiary education	.077	.505
	(.308)	(.296)
Unemployed	.400	.975
	(.658)	(.544)
Inactive	-.430	.363

	(.578)	(.930)
Low wage	.175	-.893*
	(.393)	(.401)
Household Covariates:		
Use outside care	-.025	.065
	(.253)	(.329)
Father cares	.857*	-.090
	(.418)	(.246)
[Mother adult training investment* Father cares]	-1.213	-.613
	(.788)	(.532)
N	768	1510
Wald Chi2	113.56	101.59

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Appendix Table 1. Descriptive Statistics of Variables Included

	Denmark				Spain			
	Mean	Std.Dev.	Min	Max	Mean	Std.Dev.	Min	Max
Mother								
age	28,79	4,71	17	46	29,17	4,60	17	48
education								
tertiary	0,41	0,49	0	1	0,30	0,46	0	1
secondary (ref.)	0,44	0,50	0	1	0,24	0,43	0	1
< secondary	0,15	0,36	0	1	0,46	0,50	0	1
employment								
employed (ref.)	0,72	0,45	0	1	0,44	0,50	0	1
unemployed	0,12	0,33	0	1	0,13	0,34	0	1
inactive	0,16	0,36	0	1	0,43	0,50	0	1
permanent contract					0,22	0,41	0	1
public sector	0,31	0,46	0	1	0,12	0,32	0	1
full time employment	0,60	0,49	0	1	0,31	0,46	0	1
married	0,40	0,49	0	1	0,86	0,35	0	1
post-formal education	0,20	0,40	0	1	0,13	0,34	0	1
Father								
age	31,61	6,10	18	60	31,50	4,93	18	55
education								
tertiary	0,36	0,48	0	1	0,26	0,44	0	1
secondary	0,48	0,50	0	1	0,23	0,42	0	1
< secondary	0,16	0,37	0	1	0,51	0,50	0	1
employment								
employed (ref.)	0,89	0,31	0	1	0,89	0,31	0	1
unemployed	0,05	0,21	0	1	0,09	0,29	0	1
inactive	0,06	0,24	0	1	0,02	0,13	0	1
low wage	0,20	0,40	0	1	0,29	0,45	0	1
childcare	0,59	0,49	0	1	0,39	0,47	0	1
Joint								
age of oldest child	1,89	1,53	0	5	2,19	1,65	0	5
daycare	0,52	0,50	0	1	0,32	0,47	0	1
Investment in training*care	0,12	0,33	0	1	0,06	0,24	0	1