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MEN'S UNPAID WORK AND DIVORCE: REASSESSING SPECIALIZATION AND TRADE IN BRITISH FAMILIES

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ABSTRACT

Economists have spent a good deal of time examining and trying to explain the positive association between female employment and divorce. However, in doing so, they have paid very little attention to the behavior of men. This paper addresses that oversight. Using data from the 1970 British Cohort Study – a study conducted at a time when gendered specialization was the normative household arrangement for families with small children and when economic theories of marriage and divorce were first being developed – this study considers whether and how fathers' contributions to unpaid work are associated with divorce. Information on fathers' involvement in domestic work and childcare permits a deeper exploration of the relationship between mother's employment and divorce. Contrary to what gains from specialization and trade predict, the findings suggest that fathers' home production stabilizes marriage regardless of mothers' employment statuses.

KEYWORDS

Economics of the family, female labor-force participation, gender division of labor, unpaid work

JEL Codes: D1, J12

INTRODUCTION

As in the United States and many other industrialized countries, economic and family-related behaviors in Great Britain have changed considerably in the post–World War II period. Divorce rates started on an upward trend in the early 1960s and stabilized at a relatively high level in the mid-1980s (Ian Smith 1997). Over roughly the same period, female labor-market participation increased steadily. In 1955 about 46 percent of women aged 15–64 were in paid employment. By 1965 the percentage had risen to 51 percent, and by 1975 just over 55 percent of women aged 15–64 were participating in the paid labor market. In 1985 the figure had climbed to over 60 percent (Margaret Walsh and Chris Wrigley 2001).

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Economists have sought to provide reasons for why there might be a causal association underlying these two trends. For example, Gary S. Becker (1973, 1974, 1981) posits that women's employment reduces the efficiency gains from marriage made possible when women devote their time to unpaid work in order for their husbands to focus exclusively on paid employment. Becker suggests that when efficiency gains linked to such domestic arrangements are reduced, marriages are more likely to dissolve. Consistent with this hypothesis (and some others that are discussed below), many studies find, even after introducing standard socioeconomic controls, a positive correlation between women's employment and divorce (Saul Hoffman and Greg Duncan 1995; Wilbert van der Klaauw 1996; Robert Moffitt 2001).

Historically, economic studies of marriage and divorce have focused almost entirely on women's and men's paid labor. Most studies have failed to consider men's participation in unpaid work. This is unfortunate because, contrary to the predictions of Becker's (1981) model, evidence from sociological studies analyzing data from both the US and Europe suggests that men's participation in unpaid work increases women's marital happiness and stabilizes dual-earner marriages (see, for example, Arlie Russell Hochschild and Anne Machung [1989] and Lynn Prince Cooke [2004]). Of course, these studies use data that were collected well after women's labor-market participation increased to fairly high levels. It is possible that social and economic changes have made specialization and trade a riskier strategy than it was at the time that Becker (1981) was writing. Increasingly, uncertain labor markets, greater divorce risks, and changing norms about appropriate male and female behavior may have reduced the net benefits of a specialization and trade strategy and altered men's ability to negotiate a more traditional gendered division of labor. Understanding when, if ever, specialization and trade was an efficient and utility-maximizing strategy can help economists develop more nuanced and contextually informed models of human behavior.

In this paper, I seek to fill some of these gaps in knowledge by testing the stabilizing effects of Becker's specialization and trade hypothesis by estimating models that take into account men's participation in unpaid work. Using data on British heterosexual couple families that had their first child in 1970 – a time during which gendered specialization was the normative household arrangement for heterosexual families with small children and about the time that economic theories of marriage and divorce were first being developed – I estimate models of divorce that include, in addition to standard measures of female labor-market participation, measures of men's contributions to housework and child-care.[1] I also examine whether psychological distress among mothers is associated with subsequent divorces and assess the extent to which

psychological distress mediates the relationships between female employment and divorce.

BACKGROUND

Neoclassical, "new home economics" theories of marriage and divorce have a long history and have exerted considerable influence on the theoretical approaches of other disciplines. In their simplest form, these models posit that individuals decide to marry (or more generally to form a partnership, but because the models discussed here were focused on marriage and divorce, I use the marriage/divorce terminology) because they anticipate the expected utility of marriage will exceed the expected utility of staying single (Becker 1973, 1974, 1981).[2] These models also assume that, once married, each partner continuously compares the expected utility of remaining together with that of being single or remarrying. As new information becomes available, levels of marital utility or expected utility outside of marriage can change, and, as a consequence, one or both partners may decide to dissolve the relationship (Gary S. Becker, Elisabeth Landes, and Robert Michael 1977). The models suggest that divorce should only take place when the sum of each partner's expected utility after the divorce exceeds that of being in the partnership. In all other cases, the partners should be able to divide the gains from marriage (the difference in total utilities between the two options) in such a way that both partners can be made better off by remaining together.[3] According to this model, the more that marriage increases total utility, the less likely it is that rational spouses will divorce.

In order to explain why total utility can be higher within marriages, Becker (1981) extends the theory of comparative advantage, originally applied to issues of international trade, to argue that a strategy of specialization (in paid and unpaid work) and trade increases total marital utility. In other words, one partner should take responsibility for paid work and the other for domestic, unpaid work. The division of labor should be based on efficiency rather than gender, but in a world where girls and boys are socialized differently, it will often be the case that female partners are *considered* most efficient at home production. Becker (1981) would argue that spouses distribute responsibility for paid or unpaid work rationally and efficiently and that women tend to have a comparative advantage for home production because the socialization process requires them to be responsible for unpaid work at an early age and to learn how to perform it efficiently. But as the bargaining literature has argued, perceptions play an important role in intrahousehold allocations (see for example, Amartya Sen [1989] and Bina Agarwal [1997]), so perceptions of women's "natural" abilities may play an important role in decisions about the

distribution of paid and unpaid work as well as decisions about how to allocate the resources produced within the marriage.

However, specialization is not the only strategy that would increase utility within marriage. For example, marriage allows for the joint consumption of goods, some of which, like housing, lead to large economic savings. To the extent that at least some consumption is joint, utility gains from marriage increase with income regardless of which partner earns it. Moreover, a strategy in which both partners engage in paid work can act as a buffer to risk. If only one partner specializes in paid work and then becomes ill or unemployed, earnings from paid work will fall to zero (Robert Moffitt 2000). Finally, in families with children, men who provide childcare may form closer bonds with their children, and the stabilizing effects of children on marriage may be enhanced (Valerie Kincade Oppenheimer 1994).

Almost all sources of utility gains in marriage point to a positive relationship between better labor-market outcomes for men and marital stability.[4] For women, theoretical predictions are inconclusive. Increased labor-market opportunities and better employment outcomes should reduce their comparative advantage in the home and perhaps reduce gains from specialization. They also reduce exit costs (particularly when nonemployed women face imperfect credit markets), afford women the opportunity to be more self-reliant (sometimes termed the "independence effect"), and provide women the chance to meet alternative partners (Oppenheimer 1994).[5] Conversely, better employment outcomes for women should increase the other types of gains from marriage. The total effect on marriage or divorce should depend on which effect is stronger. Becker (1981) seems to suggest that gains from specialization are decisive, but the net benefits of specialization probably vary considerably across space and time. Where the risks associated with the loss of a specialist partner are high, the net expected benefits of specialization may be small or even negative.

Because labor markets, for young men in particular, have become increasingly risky since the early 1970s in the US and in other industrialized countries as well (Valerie Kincade Oppenheimer 1988, 1994), it is possible that the risks of specialization have increased, and the benefits of role diversification have grown. Becker's (1981) theory of marriage may have reflected the social reality of the US (and other industrialized countries with similar social and economic settings like the Anglo-Saxon countries and much of Western Europe) at the time he was writing, but economic and social changes since then may have made the specialization strategy both more costly and riskier (Torkild Lyngstad 2004). Moreover, where divorce has become more frequent, specialization may have become increasingly risky for women who tend to develop more marriage-specific capital (Paula England and George Farkas 1986). As more women have

entered the labor market and social norms have changed to reflect the expectation that men participate more in childcare and housework, a trend that has emerged in both European and Anglo-Saxon countries, the likelihood that a man will find a suitable alternative partner who is willing to specialize has probably declined.[6] This changing social situation could have altered men's expected opportunities outside of marriage, weakening their bargaining position in marriages when they are asked to contribute (see the discussion in Agarwal [1997] on how bargaining models need to take into account the social context in which they are imbedded). Indeed, contemporary studies using data collected in both Germany and the US have found that, contrary to what specialization and trade would predict, men's home production in dual-earner families is associated with greater marital stability (Cooke 2004; E. Mavis Hetherington and Anne Mitchell Elmore 2004). However, no studies that I am aware of have assessed whether this result would have emerged at the time and in the context that Becker (1981) was writing. This paper aims to assess whether specialization and trade was valid in the kind of social and economic context in which Becker developed his models. In particular, I am interested in whether Becker's theory has simply lost predictive power in recent years or whether it was flawed from the start. To do so, I use British data from the mid-1970s to early 1980s, so I can situate my analysis of specialization and trade within the period and within a similar social and economic context to the one in which it was developed. Becker was writing in the US, but European economic and social trends followed similar trajectories to those of the US. Furthermore British social institutions (the labor market and the welfare state) have historically been (and remain) more similar to the US than those of other European countries. For these reasons, in the absence of suitable US sources, data from Britain in the 1970s are particularly well suited for testing whether Becker's theory was accurate given the context in which he wrote. Nonetheless, results from British data might reasonably be generalized to other industrialized countries that are able to offer stable lifetime employment and afford to pay male breadwinning wages, and where the gendered division of paid and unpaid work within heterosexual couple families receives strong normative support. This describes the Anglo-Saxon states and most Western European states in the early 1970s.

Although specialization and trade is about both paid and unpaid work, most empirical tests of the model have focused only on the relationship between labor-market opportunities and divorce. Both cross-sectional and time-series studies present evidence consistent with gains from (female) specialization in unpaid work. Findings suggest that women's labor-market opportunities are associated with non-marriage and divorce and men's labor-market success stabilizes marriage (Hoffman and Duncan 1995; van der Klaauw 1996; Francine Blau, Lawrence Kahn, and Jane Waldfogel 2000;

Moffitt 2001).[7] A positive association between female employment and divorce is consistent with the explanation of gains from specialization, but it is possible that the estimated relationship is not robust. In a review of the literature (drawing mostly on US studies), Valerie Kincade Oppenheimer (1997) shows that in papers that used panel data or hazard techniques, the relationship between women's employment and divorce received little support. Insignificant results for hazard models suggest that left truncated data may well be an important concern, and consequently I have selected my sample with this issue in mind. Omitted variables about the nature and extent of the gendered division of paid and unpaid work, and its effects on the individuals involved, merit some consideration as well. In this analysis, I seek to assess the importance of omitted variables by including two additional controls, which, if excluded, might either confound the estimated relationship between women's employment and divorce or lead us to misinterpret the evidence.

The primary emphasis on paid work means that few economists have examined empirically whether men's contributions to unpaid work destabilize marriage by reducing gains to specialization. This is a potentially important omitted variable. Moreover, few studies have closely examined and carefully tested the theoretical implications of models that assume specialization and trade is the main driver of efficiency gains within marriage. Indeed, a one-and-a-half-earner model, where men work full time and women work part time but assume responsibility for the home, may not be inconsistent with specialization. If the family's need for domestic production is met efficiently enough, women could specialize in domestic work and devote any remaining work time to the labor market.[8] Similarly, if the family's need for economic resources is met so efficiently that men have surplus hours of working time, men should, according to the specialization and trade model, devote any remaining hours to home production. A one-and-a-half-earner or a one-and-half-homemaker model can, under some circumstances, be the most efficient allocation of both partners' time.[9] Moreover, by helping couples achieve equity in total time spent in paid and unpaid work, these strategies could generate greater equity in leisure time and possibly provide more opportunities for shared leisure. Both could work to stabilize marriage. Only when both partners diversify are the putative efficiency gains posited by specialization and trade clearly attenuated. Consequently, an empirical test ideally requires information on both partners' contributions to paid and unpaid work and a modeling strategy that adequately differentiates between gender divisions of labor that represent specialization and those that represent diversification strategies. Even if we assume that most women engage in home production and most men in paid work, we still require information on women's employment and men's home production. Information on men's

household production, however, has been less available and not often incorporated into empirical models.

Research demonstrating a negative link between an inequitable division of unpaid work and women's subjective well-being merits greater consideration by economists as well (Lawrence A. Kurdeck 1993; Jennifer Glass and Tetsushi Fujimoto 1994). Although economists increasingly condone the use of subjective measures of well-being, few have considered marital satisfaction or psychological well-being in the context of divorce modeling. This may also be an important omitted variable. If there is a positive association between female happiness (or psychological health) and employment, the effects of employment on divorce could be biased downward in models that do not control for these factors. Alternatively, if the stress of working a double shift reduces psychological health, the effects of employment on divorce could be overstated. Consequently, a secondary aim is to assess whether models that do not control for psychological distress are likely to suffer from bias and in what direction.

In this analysis, I estimate models of divorce that take into account both men's contributions to home production and women's psychological distress. I am particularly interested in examining whether and how controlling for these additional factors alters the association of mothers' employment and divorce or challenges existing interpretations of empirical evidence. If men's participation in unpaid work and childcare stabilizes marriage, even when their wives work, the presumed importance of gains from specialization may need to be reassessed. If marital happiness is dependent on "fair" contributions of paid and unpaid work (which are subjective and may influence intrahousehold distributions of resources [Sen 1989]), it is possible that any positive relationship between female employment and divorce will be at least partially mediated by psychological distress or unhappiness. Omitted variables could result in empirical findings that are misinterpreted as lending strong support to specialization and trade when in fact the patterns of association suggest something slightly more complex and possibly inconsistent with this perspective.

METHODS

Data

This study uses data from the British Cohort Study (BCS), a nationally representative, longitudinal study in Great Britain that followed a cohort of over 16,000 children born in one week in 1970 (Sofia Despotidou and Peter Shepherd 1998). The first three follow-up interviews with the mother took place when the BCS children were aged 5 (wave 1), 10 (wave 2), and

16 (wave 3).[10] Interviewers collected information on the parents' characteristics and household structure at baseline and at each of the follow-up waves.

Sample selection

For this analysis, I restrict the sample to heterosexual couple families in which the parents were married when the cohort member was born and still living together at the time of the first follow-up interview (wave 1) because key variables of interest – those required to measure fathers' contributions to unpaid work – were first collected when the child was aged 5. Hence, I lose some families to divorce prior to age 5. I further restrict the sample to those couples in which the BCS cohort member was the first birth, because around 80 percent of the parents of first-born children were married three years or less at the time of the cohort member's birth. This restriction reduces bias due to left truncated data. Moreover, the work history information I have is limited only to the time period since the cohort member was born. Restricting the sample to first-born children means that I know whether the mother was ever employed after becoming a mother. Because I am interested in parental divorce, I remove from the sample those families that experienced a parental death.

For the first BCS follow-up at age 5, there are 12,618 families that were successfully traced and interviewed. Of those, the cohort member was the first birth in 4,747 families (37.6 percent). A total of 4,228 (89.1 percent) of those first births were to families in which the cohort member was living with both biological parents at wave 1. I drop an additional 156 cases from the sample because the parents were not married at the time of birth, and I cannot determine if they ever married. I lose another 488 cases due to missing or inadequate information on the family structure at wave 2 and another fifteen due to the death of a parent. I discard twenty-nine cases in which the information used to construct the fathers' contributions to housework and childcare is completely missing. I impute all other missing information using multiple imputation for chained equations with ten imputed samples (Patrick Royston 2005). My final analytic sample totals 3,540 cases.

Dependent variable

I measure parental divorce using an indicator variable that is set equal to one for those sample families who divorced or separated sometime between the first and second follow-up waves. At the second follow-up, researchers collected information on the relationship between the cohort member and her mother and father figures. Choices included natural parent, adoptive

parent, stepparent, foster parent, grandparent, elder sibling, natural parent's cohabiting partner, other, and no mother/father figure. When the father or mother figure was not the biological parent, interviewers asked the mother (or primary carer in the few cases where it was not the mother) additional questions aimed at determining why a separation had occurred. Responses to these questions allow me to identify whether a disruption was due to death or separation. There were eight cases with evidence of family disruption for which I could not identify the cause. I code these cases as having experienced divorce or separation.[11] The first row of Table 1 presents the number of valid cases for this outcome and its mean. About 7 percent of the sample families divorced or separated before the second follow-up wave. Just under 21 percent of the sample of cohort members who were first births experienced a parental divorce before they were 16, so these represent about one-third of all parental divorces experienced during childhood.

Control variables

To estimate the full models, I control for a variety of parent and household characteristics, all of which were measured either at birth or in 1975 when the cohort member was aged 5. All controls were therefore measured prior to any experience of parental divorce. The lower rows of Table 1 present the number of valid cases (prior to imputation) and means for the control variables.

Our main variable of interest contains information on the fathers' participation in unpaid work and childcare. Unfortunately, the survey did not collect information on the mothers' participation in unpaid work, so I can only include information on the fathers. Nonetheless, in 1975 British mothers tended to assume primary responsibility for domestic work and childcare, so there should be far more variability among the fathers (as reflected in the use of the word "help" in what follows; see also Jonathan Gershuny [2000]). Their participation in unpaid work is measured with a variable that combines mothers' reports of whether, in the last week, a father helped with housework or shopping, helped with looking after the children while a mother was otherwise engaged,[12] helped with babysitting in the evening, and helped with putting the children to bed. I code each of these four items one if the father had participated in the task. I sum the items (the Kuder-Richardson 20 reliability coefficient – Cronbach's alpha for dichotomous items – was 0.60) and construct indicator variables to identify those fathers who performed two of the tasks and three or four of the tasks. Table 1 shows that the majority of the fathers were reported to have helped with zero or one task, and about one-quarter of the fathers carried out three or four. It is worth noting that three of the four items in this scale pertain to childcare. To the extent that childcare differs from

Table 1 Summary statistics of outcome and control variables used in the empirical analyses

	Valid cases	*%*
Divorce between 1975 and 1980	3,540	6.64
Father's home production in 1975		
Father performs 0 or 1 task (reference category)	3,180	51.39
Father performs 2 of the 4 tasks	3,180	23.96
Father performs 3 or 4 of the tasks	3,180	24.65
Father cares for child while mother is at work	3,540	14.49
Mother's employment[a]		
Mother not employed since 1970 (reference category)	3,162	49.94
Mother works full time in 1975	3,467	4.56
Mother works part time in 1975	3,467	24.92
Mother does not work in 1975 but has worked since birth	3,223	17.41
Father's unemployment in the past year, 1975		
No unemployment in the past year (reference category)	2,429	91.40
1–17 weeks	2,429	6.75
18 weeks or more	2,429	1.85
Mother's malaise score is ≤ 7 in 1975 (reference category)	3,505	84.88
Mother's malaise score exceeds 7 in 1975	3,505	15.12
Mother's age at marriage		
Under 18	3,491	10.23
Aged 18 or 19	3,491	25.44
Age 20–2 (reference category)	3,491	52.58
Age 23–7	3,491	17.43
Age 28 or older	3,491	4.55
Duration of marriage in 1975		
Less than seven years (reference category)	3,526	38.29
Seven years	3,526	22.09
Eight or more years	3,526	39.62
Father's academic qualifications		
No academic qualifications	3,320	40.45
Some pre-university qualifications (reference category)	3,320	40.99
Degree or higher	3,320	18.55
Mother's academic qualifications		
No academic qualifications	3,414	47.13
Some pre-university qualifications (reference category)	3,414	43.91
Degree or higher	3,414	8.96
Number of children and gender composition in 1975		
Cohort member is female (reference category)	3,540	48.73
Cohort member is male	3,540	51.27
No younger siblings born between 1970 and 1975 (reference category)	3,527	23.33
Any younger siblings	3,527	76.67
More than one child, all male	3,527	19.02
More than one child, all female	3,527	17.43
Interactions		
Mother works and father performs 2 tasks	3,120	7.66
Mother works and father performs 3 or 4 tasks	3,120	9.20

Note: [a]The employment variables do not sum to 100 percent because they are based on different variables, and the number of valid cases differ.
Source: British Cohort Study.

other types of unpaid work, either in its stabilizing effect or its leisure component, the results will not generalize to all types of unpaid work.

I construct an additional control for fathers' home production from information gathered from working mothers about "who looks after the child when the mother is working." I construct an indicator variable that is set equal to one when the mother identified the father as someone who looks after the child. Because, similar to an interaction variable, it can only take a positive value when the mother works, I analyze it separately from the other four variables discussed above. About 15 percent of the fathers were identified as those who look after the children while the mothers work. This represents about half of all the sampled families in which the mother works (Table 1).

Another focal variable is the mothers' paid employment, which is measured using three dichotomous indicators. The first identifies full-time workers. It is set equal to one if the mother reported that she had a job at the time of the first follow-up interview and worked more than thirty hours per week. The second indicator is set equal to one if the mother reported having a job but working no more than thirty hours per week. These employment measures capture mothers' employment at a specific point in time. If work experience affects efficiency in home production or the financial independence of women, the contrast between employment and home production may be narrowed by the use of an either/or contrast measured at one particular point in time. But women who have left employment are also likely to be different from current workers. For this reason, I also include a third indicator that identifies those mothers who reported not being in the labor force at the time of interview but nonetheless had worked at some point since becoming a mother. All three employment measures are correlated with labor-market experience – an important determinant of earnings (Hugh Davies and Heather Joshi 1994), but there are important differences between the three groups. More than half of the women who were nonemployed in 1975 had previously worked less than one year of the five years since their first children were born. In contrast, more than half of the women employed at the time of the follow-up had worked three years or more since their first children were born. Moreover, since the 1970s part-time work in Great Britain has been low skilled and low paid, with little room for advancement (A.T. Mallier and M.J. Rosser 1980; Marco Francesconi and Amanda Gosling 2004; Alan Manning and Barbara Petrongolo 2004). Hence, access to economic resources and greater economic independence may differ across the three groups of women. In addition, as mentioned earlier, a one-and-a-half-earner model may not reduce gains from specialization if women are particularly efficient at home production and men continue to specialize in paid work. If specialization and trade is one of the most important sources of utility gains within marriage, we might find that women who are

employed full time have higher divorce risks than women who are employed only part time or who have given up work.

The figures in Table 1 indicate that 29 percent of the mothers were employed at the time of the first follow-up interview, only 5 percent of whom were working full time. Another 17 percent reported having had a job at some point since their first children (who were aged 5 at the time of interview in 1975) were born.

I also include measures relating to the fathers' paid work. I measure work instability with two indicators for weeks unemployed in the past year. The first identifies those fathers who were unemployed between one and seventeen weeks in the past year, and the second identifies those men who were unemployed eighteen to fifty-two weeks in the past year.

I measure if the mothers were suffering psychological distress at wave 1 using the Malaise Inventory, a twenty-four-item battery of questions designed to identify those individuals at heightened risk of depression (Michael Rutter, Jack Tizard, and Kingsley Whitmore 1970). The items cover a range of symptoms associated with depression, and similar to previous work (Michael Rutter, Jack Tizard, William Yule, Philip Graham, and Kingsley Whitmore 1976; Naomi Richman 1978), I classify mothers who answered yes to at least eight of the twenty-four items as being at heightened risk of depression. About 15 percent of the mothers in my sample have a high score on this inventory.

I also control for the mothers' ages at marriage and the duration of marriage, both measured using information collected at the time of their children's birth. For my purposes, I increase both variables by five in order to reflect the time elapsed between birth and the wave 1 interview in 1975. Additional controls, all measured at the first follow-up wave in 1975, include the fathers' and mothers' educational attainment, subsequent fertility, and the sex composition of children. I measure the mothers' ages at marriage with a range of indicator variables that identify those women who were aged 17 or younger, aged 18 or 19, aged 23–7, or aged 28 and older when they got married. Those aged 20–2 form the reference group. Figures in Table 1 show that more than half of the sample mothers married by age 22. In addition to young marriage, the 1970s in Britain were characterized by a tight interval between marriage and first birth (Wendy Sigle-Rushton 2008). I control for the duration of marriage with indicators for those who were married two years (seven years in 1975) and three or more years (eight or more years in 1975) when the cohort member was born. Those who were married less than two years when the cohort member was born (less than seven years in 1975) – more than one-third of the sample (see Table 1) – form the reference category. I measure the fathers' and mothers' educational attainments at the time of the first follow-up interview with an indicator for having no academic qualifications (failing to successfully

pass exams given at the end of compulsory schooling) and an additional indicator for having at least a university degree. To assess subsequent fertility, I use an indicator that equals 1 if the mother had any additional births since the cohort member was born up to 1975. In addition to controlling for the sex of cohort members, for those families that have more than one child, I include indicators for whether they have all girls or all boys. The figures in Table 1 show that most families (more than three-quarters of the families in my sample) had subsequent births. This is due to my restricting the sample to parents who had their first birth in 1970, when fertility was above replacement, and birth intervals were relatively short. For the full BCS sample, only 45 percent of families had additional births.

Analytic plan

For the divorce outcome, I estimate five multivariate logit models. The first includes all of the controls except the mothers' malaise and the fathers' unpaid work. The second model includes measures of the fathers' unpaid work tasks. The third model includes measures for both the fathers' unpaid work and the mothers' psychological distress. The second and third models allow me to assess the extent to which the association of the mothers' employment with divorce changes when controls for the fathers' unpaid work and the mothers' malaise are included. If including the fathers' unpaid work attenuates the coefficient for the mothers' employment, the results will suggest that men's failure to share unpaid work explains part of the association of women's employment and divorce, calling into question the explanation that specialization increases the gains to marriage. Moreover, if mothers' malaise explains at least part of the effect of mothers' employment, we may want to reassess whether women's employment (and its reduction in gains from specialization or its independence effects) is a direct and primary driver of divorce. Other risk factors are important, and more complex explanations may be warranted. The fourth and fifth models aim to test whether fathers' unpaid work moderates the association between mothers' work and divorce by interacting measures of mothers' employment with measures of fathers' home production in dual-earner households. Substantial moderation would suggest that certain combinations of paid and unpaid work are associated with a particularly high risk of divorce. This model specification provides a good test of the stabilizing effects of specialization and trade because different high- and low-risk combinations may or may not support the gains from specialization and trade hypothesis. Results suggesting that women who are employed are less likely to divorce when their husbands perform unpaid work will be inconsistent with a specialization and trade explanation for increased divorce risks. Results suggesting that women who are not employed are less

likely to divorce when their husbands contribute to home production may well be consistent with the gains from specialization and trade hypothesis.

RESULTS

Table 2 presents parameter estimates for the logit models of divorce between the first (1975) and second (1980) follow-up waves. In Model 1, we see, contrary to what we might expect from a one-and-a-half-earner model, the parameter estimate for part-time work is actually larger than the parameter estimate for full-time work. Moreover, the parameter estimate for full-time work is not statistically significant at conventional levels. Women who are not working but were employed in the five years since their first children were born are significantly more likely to divorce, however. In Model 2, which includes the fathers' unpaid contributions, the coefficients increase slightly but results for the mothers' employment are substantively unchanged. Furthermore, when men engage in the highest levels of housework and childcare (three or four tasks), the positive coefficients linking paid work and divorce are offset substantially. Put another way, if we assume that men have the lowest levels of home production, the odds ratio (the ratio of the odds of divorce for mothers with a specific level of employment to the odds of divorce for those who are unemployed) is 83 and 93 percent higher when the mother works full time and part time, respectively.[13] The odds ratio is only 19 and 21 percent higher (for full- and part-time work, respectively) when she works and her husband's home production is at the highest level (relative to a family in which the mother does not work and the father has the lowest levels of home production). Nonetheless, in this model, where the parameters are treated as additive and separable, the lowest-risk combination is one in which the mother does not work and the father engages in the highest levels of home production.

The results of Model 3 suggest that a high malaise score significantly increases the odds of divorce by 50 percent, but its inclusion does not alter to any great extent the size and significance of parameter estimates for these mothers' paid work. A malaise score of at least eight does not explain the relationship between female employment and divorce but is instead independent of it, suggesting that omitted variable bias has not affected the parameter estimates for female employment. This means that there is a negative relationship between female employment and divorce net of potential confounding factors – including psychological distress – that remains to be explained.

The next step is to test whether a reduction in the efficiency gains linked to specialization and trade receives the strongest support in our data. Assuming that women tend to take more responsibility for unpaid work and

Table 2 Models of divorce between 1975 and 1980, parents who had their first child in 1970

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Mother works full time in 1975	0.520* [0.313]	0.602* [0.315]	0.605* [0.316]	0.599* [0.352]	0.709** [0.324]
Mother works part time in 1975	0.600*** [0.173]	0.649*** [0.175]	0.657*** [0.175]	0.653*** [0.227]	0.805*** [0.200]
Mother not working but has since birth	0.542*** [0.191]	0.564*** [0.191]	0.564*** [0.191]	0.566*** [0.191]	0.561*** [0.191]
Father unemployed 1–17 weeks	0.484** [0.207]	0.497** [0.207]	0.485** [0.208]	0.486** [0.208]	0.486** [0.207]
Father unemployed 18+ weeks	1.380*** [0.395]	1.416*** [0.399]	1.402*** [0.399]	1.405*** [0.400]	1.407*** [0.399]
Mother married before 18	0.792*** [0.226]	0.782*** [0.226]	0.765*** [0.227]	0.766*** [0.227]	0.754*** [0.227]
Mother married at age 18 or 19	0.846*** [0.173]	0.842*** [0.173]	0.828*** [0.173]	0.825*** [0.174]	0.827*** [0.173]
Mother married at age 23–7	0.051 [0.234]	0.044 [0.234]	0.049 [0.234]	0.050 [0.234]	0.049 [0.234]
Mother married at age 28 or older	-1.013* [0.605]	-1.044* [0.605]	-1.038* [0.605]	-1.040* [0.606]	-1.054* [0.606]
Married seven years in 1975	-0.418** [0.198]	-0.417** [0.198]	-0.398** [0.198]	-0.398** [0.198]	-0.412** [0.199]
Married eight or more years in 1975	-0.386 ** [0.170]	-0.374** [0.170]	-0.351** [0.171]	-0.350** [0.171]	-0.367** [0.172]
Father has no academic qualifications	0.035 [0.168]	0.026 [0.169]	0.016 [0.169]	0.016 [0.169]	0.027 [0.169]
Father has a college degree or higher	0.179 [0.224]	0.194 [0.225]	0.199 [0.226]	0.198 [0.226]	0.204 [0.226]
Mother has no academic qualifications	-0.099 [0.163]	-0.103 [0.163]	-0.143 [0.165]	-0.143 [0.165]	-0.139 [0.165]
Mother has college degree or higher	0.081 [0.304]	0.068 [0.305]	0.078 [0.305]	0.077 [0.305]	0.079 [0.305]
Cohort member is male	-0.356 [0.230]	-0.340 [0.231]	-0.325 [0.231]	-0.326 [0.231]	-0.328 [0.232]
Any younger siblings	-0.504** [0.205]	-0.480** [0.206]	-0.478** [0.207]	-0.481** [0.207]	-0.454** [0.208]
More than one child, all male	0.542* [0.285]	0.537* [0.286]	0.527* [0.286]	0.529* [0.286]	0.531* [0.286]
More the one child, all female	0.300 [0.298]	0.280 [0.298]	0.269 [0.299]	0.270 [0.299]	0.275 [0.299]
Fathers performs 2 of the 4 unpaid work tasks		-0.041 [0.173]	-0.051 [0.173]	-0.031 [0.225]	-0.031 [0.173]
Father performs 3–4 of the unpaid work tasks		-0.425** [0.184]	-0.432** [0.184]	-0.468* [0.248]	-0.394** [0.186]
Mother's malaise score exceeds 7 in 1975			0.410** [0.173]	0.411** [0.173]	0.413*** [0.173]
Father does 2 tasks and mother works				-0.046 [0.355]	
Father does 3 or 4 tasks and mother works				0.070 [0.370]	
Father cares for child while mother is at work					-0.340 [0.228]
Constant	-2.870*** [0.274]	-2.801*** [0.279]	-2.862*** [0.281]	-2.859*** [0.287]	-2.892*** [0.282]
Observations	3,540	3,540	3,540	3,540	3,540

Note. *p < 0.10, **p < 0.05, ***p < 0.01. Standard errors are presented in square brackets.

men for paid work, the results for the mothers' employment are somewhat consistent with specialization and trade, but the fact that the parameter estimate for part-time work is larger than the parameter estimate for full-time work raises some questions. We might expect full-time work to represent a more definitive deviation from specialization and therefore be more strongly associated with divorce. This is not the case. The results for fathers' contributions to unpaid work may be consistent with gains from trade if the total effect is a reduction in the risk of divorce in families where women are not employed but not otherwise. This can only be assessed in models that include interaction terms.

With Models 4 and 5, I look for evidence that fathers' unpaid work moderates the relationship between mothers' employment and divorce. First, in Model 4, I interact the mothers' employment at the time of the first follow-up interview (either full or part time because there was little difference between the two coefficients in any of the previous specifications) with each of the fathers' unpaid work variables (medium level and high level, respectively). Neither of the interaction variables is significantly associated with subsequent divorce, and both are fairly small relative to the size of the main effects of the mothers' employment and the fathers' home production. In other words, men's unpaid work is negatively associated with divorce, and that association does not differ to any great extent with women's current employment status.

Although the finding here is that the highest levels of fathers' unpaid work have a stabilizing effect in families where women are not employed, a result that is consistent with a specialization and trade model, the results for employed women provide less convincing evidence. Assuming that working mothers are engaged in both paid and unpaid work and all fathers are engaged in market work (only 3.5 percent of the fathers were not employed when the cohort member was born), the results suggest that the risk of divorce among working mothers, while greater, is reduced when fathers diversify as well. Similar to previous results, the positive parameter estimate for full-time employment is offset to a great extent when men have the strongest evidence of contributions to unpaid work. For families in which the men's contributions are more moderate (two tasks), the coefficient is offset but far less substantially. These results are inconsistent with models that predict marital gains are maximized with specialization. Statistically significant and positive interaction terms that exceeded the size of the (negative) coefficients for the fathers' home production would have provided the most convincing evidence, but they do not emerge in Model 4.

Model 5 presents a slightly different specification where instead of interacting the fathers' unpaid work with the mothers' employment, I include a control for whether the father cares for the child when the mother works. Of course, this variable can only equal one in those families where the mother is employed, so it may pick up the differential effect of

the fathers' contributions when the mothers work. Although not a formal test of moderation, the results from this specification are consistent with the results from Model 4. The parameter estimate for this additional control is negative and fairly large but statistically insignificant at the 5 percent level. Nonetheless, the findings suggest that fathers' responsibility for childcare reduces the risk of divorce. For employed mothers in mid- to late 1970s Britain, the results are not consistent with a specialization and trade model. When the coefficient for the provision of childcare is combined with the coefficient for high levels of the fathers' home production, the two completely offset the statistically significant coefficient linking full-time employment with divorce ($0.709 - 0.394 - 0.343 = -0.028$).[14]

To illustrate this last result, I use the results from Model 5 to estimate predicted probabilities of divorce for a series of profiles. Figure 1 shows the predicted probabilities of divorce when I vary both the mothers' paid work and fathers' home production. The baseline profile, the first column in Figure 1, presents the predicted probability of divorce for a family in which the mother has not worked since her first birth, was aged 21 when she married, had a daughter for her first birth (the cohort member), and has subsequently given birth to a boy. The baseline profile also assumes that the

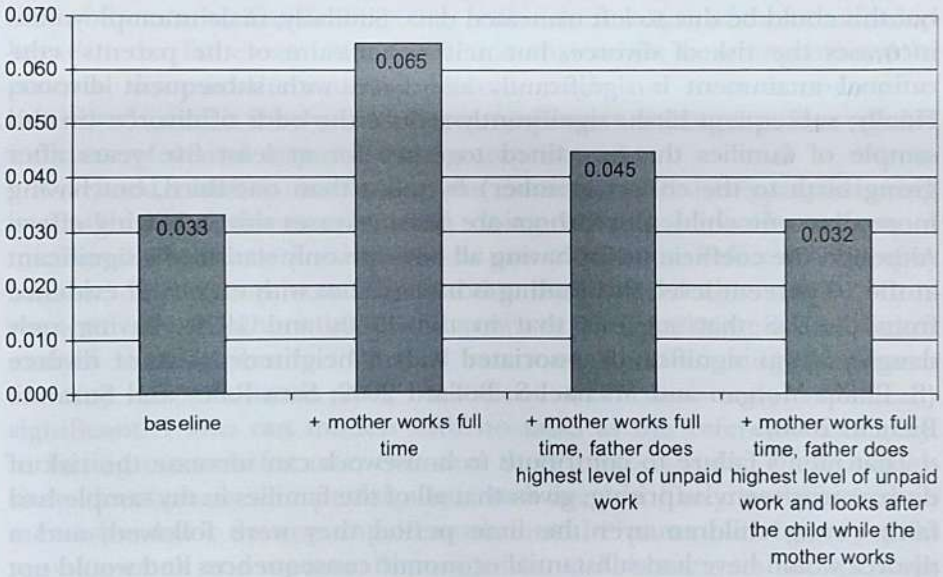

Figure 1 Predicted probability of divorce between 1975 and 1980 assuming different divisions of paid and unpaid work

Notes: The baseline profile sets the father's unpaid contribution to two tasks. All other variables are set as the reference category (both parents have some educational qualification but not a university degree, the father is consistently employed, the mother was aged 20–2 when she married, her first birth [the cohort member] was a girl, and she has subsequently given birth to a boy).

father is consistently employed, and both parents have some educational qualification but not a university degree. Finally, the father's contribution to unpaid work is set at two of the four tasks. For families with these characteristics, the predicted probability of divorce between 1975 and 1980 is 3.3 percent. The second column presents the predicted probability for a family with the same characteristics as the baseline family, but this mother engages in full-time work. Here, the probability of divorce increases to 6.5 percent. When the mother works full time, and the father's unpaid contribution increases to the highest level (third column), the probability of divorce falls to about 4.5 percent. When the father also looks after the child while the mother works (fourth column in Figure 1), the predicted probability falls again to 3.2 percent – about the same as the baseline probability.[15] Although the models in Table 2 suggest that the predicted probability of divorce is lowest when women do not work and men participate in housework and childcare, Figure 1 shows that fathers' unpaid work entirely offsets the increased probability of divorce resulting from mothers' participation in paid work.

The other controls, when statistically significant, are in the expected direction and change little across the different model specifications. Women who married as teenagers are significantly more likely to divorce, and the coefficients are relatively large. Longer marriages are protective, but this could be due to left truncated data. Similarly, male unemployment increases the risk of divorce, but neither measure of the parents' educational attainment is significantly associated with subsequent divorce. Finally, subsequent births significantly reduce the odds of divorce (in this sample of families that remained together for at least five years after giving birth to the cohort member) by more than one-third, but having more than one child, all of whom are boys, reverses this stabilizing effect. Although the coefficients for having all boys are only statistically significant at the 10 percent level, this finding is inconsistent with empirical evidence from the US that suggests that in the 1960s and 1970s having only daughters was significantly associated with a heightened risk of divorce (S. Philip Morgan and Michael S. Pollard 2002; Sara Raley and Suzanne Bianchi 2006).

That men's failure to contribute to housework can increase the risk of divorce may seem surprising, given that all of the families in my sample had fairly young children over the time period they were followed, and a divorce would have had substantial economic consequences and would not have relieved most mothers of the burden of childcare. Although the parameter estimates are significant, as Figure 1 makes clear, men's failure to contribute to home production only increases the predicted probability of divorce by a small amount. Even though relative changes are substantial, the overall risk of divorce is small, and absolute differences across profiles amount to only a few percentage points. In these data, most men

contributed very little to unpaid work (see Table 1), and most mothers, regardless of their employment demands, did not in fact seek a divorce.

Additional models

Although the results suggest that fathers' contributions are relatively important and, at least for some women, suggestive of something more complex than a straightforward specialization and trade model, there are several limitations to the analysis that must be considered when interpreting the results. First of all, the measures of fathers' home production are heavily weighted toward childcare, and participation in childcare and housework might be qualitatively different aspects of home production. To assess whether this is the case, I re-ran the models with all four tasks entered separately. Each of the three childcare tasks was negative and statistically significant, while the coefficient for housework was insignificant. Although a factor analysis confirmed that all four tasks load onto the same item, it appears our results are similar to those found in more contemporaneous studies with German data (Cooke 2004) and tend to be driven by men's participation in childcare but not housework. To the extent that contributions to childcare are qualitatively different from contributions to housework, this may have implications for the interpretation of the results. The findings may reflect the strength of the relationship between the father and the child, one that might be compromised by parental divorce. Alternatively, childcare might not seem as onerous as housework, and it involves a leisure component making it a less reliable indicator of shared responsibility for unpaid work.

A related concern is whether the measure of father's unpaid work is masking a distinction between doing no unpaid work and any. I measured unpaid work using zero or one tasks as the reference category because that group constitutes about one half of the sample. Consequently those fathers that perform two or more tasks are at the higher end of the distribution. When I ran models with a single indicator for any unpaid work, the coefficient was consistently statistically significant. I also ran models with no tasks as the reference category, including controls for one, two, and three or four tasks. These models show that fathers who perform one task are less likely to divorce than men who don't do any unpaid work, but the parameter for two tasks remains small and statistically insignificant. This suggests that perhaps the reference category is too broad, but that the relationships are more complex than a simple monotonic specification might capture. Moreover, the parameter for three or four tasks is larger, suggesting that the number of tasks performed matters. An "any" versus "no" unpaid work specification masks the particularly protective effect of high levels of participation.

In addition to issues of measurement, the sample is more selective than I would prefer. Because many of the parameters of interest were only measured five years after the child was born, I had to restrict the sample to families that remained intact until the first follow-up wave. I attempted to correct for sample selection using a two-stage Heckman model with the mothers' social-class backgrounds (based on reports of their fathers' occupations) as an exclusion restriction. There was no evidence in these models that ignoring selection would bias parameter estimates, and I decided to present simpler models that did not make that correction. Although I found no evidence of selection, these kinds of models are strongly reliant on the use of an appropriate instrumental variable. It is difficult to identify an instrumental variable that is associated with divorce in the first years of marriage but not in later years, and I am not entirely convinced that the choice of social-class background can be strongly defended. Clearly, more work on the possibility and effects of sample selection is warranted.

Although all of the controls predate any divorces, it is important to consider that divorce is a process rather than a sudden event. For example, women may enter the labor market in anticipation of divorce (Donald Haurin 1989). To test whether this is the case, I reestimate the models dropping the subsample of families that divorced roughly within one year of the wave 1 follow-up. The coefficients for the mothers' employment are similar in both magnitude and significance to the parameter estimates presented in Table 2. Those for full-time employment are slightly larger, and those for part-time employment are slightly smaller (and the coefficient for full-time employment was slightly larger than the coefficient for part-time employment), but there are no substantive differences in the results. That said, if risk-averse women are aware of the financial consequences of divorce and invest in work experience as a long-term insurance strategy, taking into account the timing of work and divorce experiences is unlikely to determine the direction of causality (William R. Johnson and Jonathan Skinner 1986; H. Elizabeth Peters 1986), so these results are slightly reassuring but far from definitive.

Finally, I check whether the findings regarding the apparent independence of mothers' psychological distress are robust to different measures. Even among those who are not identified as distressed, variation in well-being may be important. I reestimate the models using a measure of the total malaise score rather than an indicator for a score of eight or greater. Results from these models are substantively unchanged.

SUMMARY AND DISCUSSION

My analysis was motivated by two main questions: first I wanted to assess how fathers' contributions to unpaid work are associated with marital

instability, and whether the relationship is consistent with a specialization and trade model. In particular, I was interested in finding out if controlling for men's unpaid work attenuates the well-established positive association between female employment and divorce in industrialized nations. Second, I wanted to assess whether mothers' psychological distress is an important source of omitted variable bias. If either of these relationships were to be confirmed, it would suggest that models that do not control for fathers' home production or mothers' malaise could lead to biased parameter estimates of the relationship between mothers' employment and divorce. In some instances, parameter estimates could be misinterpreted as being consistent (or indeed inconsistent) with theoretical predictions.

Results suggesting that men's participation in unpaid work is destabilizing or that it is only stabilizing for non-employed women (with perhaps recently employed women benefiting slightly less) would be most strongly consistent with a specialization and trade model. Instead, I found that the risk of divorce is lower when fathers engage in the highest levels of unpaid work and childcare regardless of their wives' employment statuses. Moreover, taken together the coefficients suggest that men's active involvement in unpaid work can substantially offset the destabilizing effect of women's employment. For employed women, the sign of this coefficient is inconsistent with the hypothesis that specialization increases the gains to marriage. The results also provide little evidence that mothers' malaise is a confounding factor. Its inclusion does not alter estimated relationships appreciably. The statistically significant and positive relationship of mothers' employment and divorce in the mid- to late 1970s does not appear to be confounded by this particular omitted variable.

Here, it is important to stress that the data I use are from British families that had their first child in 1970. It is possible that economic theories of marriage and divorce correctly described how marital relationships functioned in a context where specialization was normative and supported by economic and social institutions. The structure of the labor market, rates of female labor-market participation, rates of divorce, and expectations about men's and women's gender roles have all changed considerably since that time both in Britain and the US, as well as in most other industrialized countries. A recent study drawing on more contemporaneous data from the US finds that when it comes to the gender division of labor, both the "feminist ideal" and "traditional" marriages are characterized by stability (Hetherington and Elmore 2004). Our results from data that are several decades old are similar to those reported in that study and raise questions about the importance of specialization and trade even in a similar context to the one in which it was developed.

Although my findings raise some interesting questions and appear robust to the sensitivity testing outlined in the previous section, there are still several remaining limitations. In addition to the fact that the data are selective of parents who remained together five years after having their first births, the data are not as comprehensive as I would like. The lack of information on wages means I cannot fully control for the opportunity costs of women's and men's time. The measures of men's contributions to housework are extremely crude and do not adequately capture the intensity or quality of men's contributions. Ideally, I would like to include absolute and relative measures of market earnings and contributions to unpaid work. In addition, I only control for women's psychological distress, and to do so, I use the Malaise Inventory. This is a subclinical indicator of depression, and although it is correlated with divorce, it is certainly not the best measure of distress, and it is certainly not a valid indicator of marital dissatisfaction. Similar analyses that employ better measures of the marital satisfaction of men as well as women would be welcome. Unfortunately, these measures were not available to me in the data. For all these reasons, the results presented here must be taken as preliminary, and as with all observational studies, a causal interpretation is not warranted.

Now that the 1970 BCS cohort (and the earlier 1958 National Child Development Study cohort) has reached adulthood, an analysis similar to the one I have carried out in this paper could be conducted (but with better measures of relationship satisfaction) for the cohort members themselves and for the parents of the most recent Millennium Cohort Study as well. Although these analyses would not solve the question of whether specialization and trade worked to stabilize marriage in the social and economic context of 1970s Britain (and by extension other industrialized countries with similar social and economic contexts and gendered divisions of paid and unpaid work) – the primary concern in this paper – the findings would substantially increase our understanding of the factors associated with relationship stability and dissolution (and whether patterns of association are consistent with or allow us to reject theoretical models).

Despite the fact that this study's findings are limited and far from conclusive, they underscore the importance of taking into account relationships between men's behavior and marital stability. In economic and sociological research, there has been too great an emphasis on women's paid work and not enough attention given to the division of unpaid work. The results presented here suggest that fathers' contributions to unpaid work reduce the risk of divorce, and at least for dual-earner families, the finding is contrary to what the gains from specialization and trade would predict. Although the evidence presented here suggests that the exclusion of measures of psychological distress does not bias key parameter estimates of interest, in other circumstances they might.

Measures of subjective well-being could and should be more often incorporated into empirical analyses of individual and household behaviors.

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NOTES

[1] For ease of exposition, I use the word "family" to refer to heterosexual couple families – a particular type of family but certainly not the only kind of family – from this point onward.

[2] According to this simple model in which people continuously compare the costs and benefits of their marital status options, current marital status is irrelevant. The process underlying the decision to marry or to remain married is the same. In both instances, women simply compare their well-being within marriage to their well-being outside of marriage. A married woman who wants to obtain a divorce is making the same sort of choice as an unmarried woman.

[3] As Becker, Landes, and Michael (1977) and H. Elizabeth Peters (1986) discuss, this is simply an application of the Coase theorem and requires the assumption that couples can bargain at zero or a small cost. From a feminist perspective, this may be a problematic assumption.

[4] Becker (1981) also shows that an unexpected high or low wage will increase the likelihood of divorce. Once married, increased labor-market opportunities, if unexpected, may make the option of remarriage seem more attractive. Men or women who find themselves (or find their partners) with improved (weakened) labor-market opportunities or higher (lower) than expected wages may feel that they want to exit the current marriage and attempt to make a better match because they have experienced outcomes that are likely to be better than anticipated when their marriage was contracted.

[5] Many thanks to an anonymous referee for pointing this out.

[6] Many thanks to an anonymous reviewer for this suggestion.

[7] Hoffman and Duncan (1995) find that both the husband's and the wife's earnings decrease the likelihood of divorce. The wife's wage coefficient becomes insignificant in the full model specification, however.

[8] This follows from Ricardo's basic specialization and trade model in macroeconomics on which Becker bases his model.

[9] Many thanks to an anonymous referee for the phrase "one-and-a-half-homemaker."

[10] Information was collected from the mother using interview and self-completion techniques. From wave 3 (age ten) onwards, the cohort members themselves were interviewed. Head teachers were interviewed starting at the same wave going forward. In addition, psychological assessments and academic tests were administered to the cohort members at each of the childhood follow-up waves.

[11] My results do not change substantively if they are omitted from the sample.

[12] The BCS survey's exact wording is "whilst the mother shops, attends appointments, does housework, etc."

[13] The odds ratio should not be interpreted as a probability. It is the ratio of the odds of divorce for mothers with a specific level of employment to the odds of divorce for those who are unemployed (assuming all other covariates are the same):

$$[p(\text{divorce}|\text{mother is employed}) / p(\text{no divorce}|\text{mother is employed})] / [p(\text{divorce}|\text{mother is not employed}) / p(\text{no divorce}|\text{mother is not employed})]$$

[14] The parameter estimate for full-time employment is only significant at conventional levels in Model 5, and it is also somewhat larger than in the other model specifications. This is likely due to that fact that women who work full time are most likely to have husbands who contribute to childcare.

[15] Although this parameter is not significant at conventional levels, I examine its effect for illustrative purposes.

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