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Marriage versus Cohabitation: How Specialization and Time Use Differ by Relationship Type

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Research Summary

Why was the research done?

Relationships have changed dramatically in the last fifty years. Fewer couples are marrying, more are cohabiting (de facto). This shift may have broader consequences. The goal of this research was to see whether there are more than legal differences between de facto and married couples.

What were the key findings?

Women entering de facto relationships do not increase their reported time on housework as much as women entering marriages, though they do 'make up the difference' if they subsequently transition into a marriage. Relationship status does not change men's reported housework time. There is also evidence that on average de facto couples engage in less specialization than married couples. Couples are said to specialize in a task if they report that one partner usually or always performs that task. Amongst the tasks examined are meal preparation, dish washing, cleaning, food shopping, paying bills, and repair work. Not surprisingly, women are more likely to specialize in the first four tasks, while men are more likely to specialize in the last. Bill paying is less gendered, especially in de facto couples who are generally less certain about whether their relationship will endure and hence presumably less willing to merge their finances. De facto couples who marry report increased specialization. These results hold controlling for a broad array of individual and household characteristics.

What does this mean for policy and practice?

The results of this analysis suggest that persons in different types of relationships behave differently. If they allocate their time differently within the household, married and de facto couples may also make different decisions in the marketplace.

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Marriage versus Cohabitation: How Specialization and Time Use Differ by Relationship Type

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ABSTRACT

Relationships have changed dramatically in the last fifty years. Fewer couples are marrying, more are cohabiting. Reasons for this shift abound, but the shift may have consequences of its own. A number of models predict that those cohabiting will specialize less than those marrying. Panel data on time use – particularly housework time – as well as on the degree of specialization in more narrowly defined household tasks from the 2001-2019 waves of the Household, Income and Labour Dynamics in Australia survey are used to test this prediction.

Panel analysis of reported time use data for men provides limited evidence of specialization in any type of relationship. The results for women are much stronger. Women who marry without first cohabiting increase their reported housework time more than those who enter cohabitations (by 3.7 hours versus 1.2 hours). The latter generally make up the difference if they marry. Expanding the analysis to other time uses yields some further evidence of specialization.

Survey responses on the degree of specialization are more informative. The raw data show substantial intrahousehold specialization. Even controlling for a broad array of covariates, on average married couples specialize more than cohabiting couples. Furthermore, specialization increases when cohabiting couples marry. Interestingly, there does not appear to be a substantial tradeoff between tasks; partners who report specializing more on one task are more likely to report specializing on other tasks as well. Given the role couples have in family formation and the labor market, it is important to understand this intrahousehold behavior.

Keywords: Specialization, Time Use, Marriage, Cohabitation, Housework

JEL Codes: J12, J16, I31, Z13

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1. INTRODUCTION

Marriage as an institution is in decline around the developed world. More and more couples are choosing to cohabit and not all such couples marry. This shift is likely driven in part by the expanded and more generously compensated employment opportunities now available to women and in part by changing norms that have made cohabitation more socially acceptable, but the shift may in turn have consequences of its own. A key benefit accruing to couple households is the ability to specialize and divide labor, but a number of models predict that there will be more specialization in married as compared to cohabiting households. Panel data from the 2001-2019 waves of the Household, Income and Labour Dynamics in Australia survey (HILDA) are used to examine how individuals' reported time use – particularly housework time but also time on outdoor tasks, errands, and employment - changes as they enter cohabitations and marriages. The degree of self-reported specialization in more narrowly defined household tasks is also examined. Here not only are cohabiting couples compared with married couples, but couples transitioning from cohabitations to marriages are examined. The results support the theoretical predictions. The consequences could be far reaching as time use decisions have the potential to impact not just individuals, but also families and markets.

The paper is organized as follows. Section 2 documents differences between cohabiting and married couples. Section 3 provides a review of the literature vis-à-vis time use and relationship status. Theories explaining how behavior may differ between cohabiting and married couples are discussed in Section 4. The data are introduced in Section 5. Results regarding time use are presented in Section 6; those regarding task specialization in Section 7. Section 8 concludes.

2. BACKGROUND: MARRIED VERSUS COHABITING COUPLE HOUSEHOLDS

Household composition has changed dramatically over the last fifty years. The fraction of persons in the United States (US) age 18 or older who were married and living with their spouse fell from 70.0% in 1968 to 51.5% in 2019, while the fraction cohabiting rose from 0.4% to 7.4%, indicating that 14% of all couples were cohabiting in 2019 (Table AD-3 from

<https://www.census.gov/data/tables/time-series/demo/families/adults.html>). A Pew research paper (Horowitz, Graf, and Livingston, 2019) reports that more adults have now ‘ever cohabited’ than have ‘ever married’ in the US. Cohabitation is even more common in Australia where the fraction of couples who were cohabiting was 18% in 2016.

If cohabitations were equivalent to marriages and individuals behaved the same in both types of relationships, then these shifts would have little import. However, there is evidence, both qualitative and quantitative, that these relationships are distinct. Stevenson and Wolfers (2007) report that the majority of cohabiters in the US expect to marry (based on the 2002 National Survey of Family Growth), with 34% already engaged and another 24% almost certain they will. However, these figures suggest that a substantial 42% of cohabiters are uncertain. Data from a 2019 Pew Research survey confirms that most people entering a relationship (marriage or cohabitation) cite love or companionship as a reason (Horowitz, Graf, & Livingston, 2019). However, married and cohabiting couples surveyed cite other more divergent explanations for their choice. Three times as many cohabiters as married persons mentioned ‘financial reasons’ and/or ‘convenience’ for entering the relationship. Almost 40% of cohabiters say they are not sure their current partner is right for them. Amongst married persons, 63% said they wanted to make a formal commitment, but 23% of cohabiting persons said they wanted to test the relationship. Certainly, marriages are more expensive to enter and exit as compared to cohabitations, suggesting that the level of commitment in marriages is greater. Overall, these surveys provide qualitative evidence that marriage and cohabitation are not the same.

Quantitative evidence confirms that cohabiting relationships are on average of shorter duration than marriages. In the US, Bumpass and Sweet (1989) found that 40% of cohabitations ended before marriage using the 1988-89 National Survey of Families and Households (NSFH). Stevenson and Wolfers (2007) report that while 25% of couples cohabiting in 1997 were married in 2002, 50% were no longer together. Lillard, Brien, and Waite (1995) report that marriages following cohabitations are less stable than other marriages, suggesting the need to differentiate between marriages that are and are not preceded by a cohabitation. More recent studies indicate there has been some convergence. Cohabitations are becoming longer and less likely to transition into marriages (Lamini, Manning, & Brown, 2020), and the association between pre-marital cohabitation and shorter duration marriages may be weakening (Reinhold, 2010). There is also a strong socioeconomic gradient in relationship formation, with the less educated

significantly more likely to enter cohabitations rather than marriages (Lundberg, Pollak, & Sterns, 2016).

Cohabiting relationships in Australia appear somewhat longer lasting and more likely to transition into marriage as compared to those in the US. Of those in the HILDA survey who were cohabiting in January 2000, about 56% were married five years later and 27% were no longer together.¹ Fifty percent of those marrying had been cohabiting for five years or less, those splitting up almost nine years. Of those married in January 2000, 18% of those who had not previously cohabited were separated five years later as compared to 29% of those who had previously cohabited, suggesting again that marriages beginning with a cohabitation may be less likely to persist. Whether marriage causes the relationship to be longer lasting or those selecting into marriage are more likely to establish longer lasting relationships is unclear. However, this evidence suggests that married and cohabiting persons may well behave differently in Australia as well as the US. The goal here is to compare how married versus cohabiting couples allocate their time and manage household tasks.

Multiperson households form when each party expects the future benefits of the partnership to exceed the future costs and come to an end either when one party dies or the costs exceed the benefits. Clearly mutual affection and the joy experienced by spending more time together are important benefits. The evolutionary theory of the family highlights the importance of couple formation for reproduction and care of children. But there are also several economic rationales for forming a relationship. Couple households benefit from economies of scale, both monetary and time based. A residence for two typically costs less than two single person residences; it takes less time to prepare a meal for two than to prepare two separate single servings. These benefits likely accrue to both married and cohabiting partners. Partners can also gain from specialization and trade. Those in longer lasting relationships may find it more beneficial and/or easier to invest in skills both at work and in the home. A partner can, for example, provide support while one is making such investments. In addition, some skills, like cooking and home repair, may be perceived as more valuable when caring for a larger household.

It has been hypothesized that changes in couple formation, the declining marriage and rising cohabitation rates, have been driven in part by changes in the associated net benefits. Declining fertility and technological advances in home production (see Greenwood & Guner,

2009) have reduced the time necessary to produce at home. The rise of the service sector, increasing demand for cognitive skills as compared with physical strength (Beaudry & Lewis, 2014), and efforts to reduce discrimination have opened up more opportunities for women in the labor market. These factors have acted to reduce the gender wage gap and thereby the net benefits associated with specialization (Juhn & McCue, 2017). As marriages typically entail a greater commitment (as recognized by survey respondents), are more costly to initiate (the average cost of a marriage was purported to be \$24,700 in 2019; Hurst, 2021), and generally more costly to end not just financially (the average cost was reported to be \$15,000; Barcus, 2019) but also perhaps emotionally as compared to cohabitations, the lower benefits would make marriages less attractive. A couple that marries must expect to incur larger net benefits from marriage as compared to cohabitation. The goal of this analysis is to see if some of these benefits arise from greater intrahousehold specialization.

3. LITERATURE REVIEW

Differences in reported time use by marital status were documented using the 1987-88 NSFH survey by South and Spitze (1994). They found that married women reported the most time on housework, followed by cohabiting and divorced, followed by widowed and never married women. By contrast, among men, widowers reported the most time on housework, followed by divorced, cohabiting, never married and, finally, married men. These data, however, represent only population averages and are rather dated.

Several researchers examine the degree of specialization within households by constructing specialization indices. Bonke, Deding, Lausten, and Stratton (2008) capture specialization in Danish and US households using seven different measures of home production. They find evidence of greater specialization in relationships that have endured longer. Siminski and Yetsenga (2022) look at specialization between market work and home production, defining the latter broadly to include housework (cooking, cleaning, ...), outdoor tasks (gardening, repair work, ...), errands (bill paying, shopping, ...), and childcare. They find some evidence in a cross-sectional analysis of Australian data that cohabiters specialize less.

The differences in time use and specialization observed for persons in different types of relationships could arise for several reasons. Broadly speaking, one possibility is that the differences are driven by selection – whereby persons who report spending more time on certain

tasks are more likely to form partnerships. Another is that the differences may arise as a consequence of partnership formation. To distinguish between these explanations, one needs panel data following individuals as relationships form and dissolve. Panel data analysis does not guarantee a causal relation, but certainly takes a step in that direction. Several researchers have examined such transitions.

Gupta (1999) uses two waves of the NSFH to model, separately by gender, changes in reported time in ‘female-typed’ housework as a function of transitions in relationship status and changes in household composition, paid hours of work, earnings, education, and age. He finds that on average never married men reduce and women significantly increase their time on these tasks when entering into a relationship, whether a marriage or a cohabitation. A number of researchers (Gupta, 1999; Baxter, Hewitt, & Haynes, 2008; Wernli & Henchoz, 2011) find that when a marriage ends, on average women reduce their time on housework while men increase their time, though none have been able to see if those changes are the inverse of those observed when a marriage begins.

Work by Borra, Browning, and Sevilla (2021), henceforth BB&S, is most similar to that proposed here. They use data from the United States, the United Kingdom, and Australia to examine the degree to which raw differences in routine housework time between partnered and never married men and women can be explained by introducing controls then adding individual-specific fixed effects. As in the previously cited literature, cross-sectional results indicate that women who are partnered report more time on routine housework while men report less time as compared to those who are not partnered. Between 25 and 35% of the effect for women and all of the effect for men is explained by individual-specific effects. BB&S (2021) end by examining time spent on both routine and what they call non-routine housework. Here they find some evidence of specialization by task as women who join a couple spend significantly more time on routine housework and men who join a couple spend significantly more time on non-routine housework. In their main analysis, BB&S do not distinguish between marriage and cohabitation and focus entirely on changes at the time the first relationship is formed. The goal of this analysis is to use panel data from Australia to examine how time use and specialization differ for those entering cohabitations versus marriages.

4. THEORY

Basic economic principles suggest that partners will specialize up to the point where the expected marginal benefit equals the expected marginal cost. The benefits to specialization in any period derive in part from the increased output possible, in part from the time saved if partners specialize according to comparative advantage, and in part from economies of scale in production. If specialization promotes greater investment in skills or promotes learning by doing, the benefits may rise over time (as observed in Polachek, 1975). In general, the longer the expected duration of the relationship, the greater will be the benefits from specialization and couples will benefit more the earlier they adapt their behavior (Stratton, 2005).

Individuals' perceptions of marginal benefit and marginal cost, their willingness to specialize, will vary depending upon the manner in which household decisions are made. Several models of household decision-making imply that such decisions may differ by relationship type.

The household production model (Becker, 1965, 1981) predicts that couples will divide tasks in such a way as to maximize household utility. Considering the expected net present value of household utility, yields a prediction that households expected to endure longer will have more incentive to specialize. While Becker posited that one partner would specialize completely, Pollak (2013) points out that this result assumes partners' time inputs are perfect substitutes, that there are only two activities, no process benefits, and constant or increasing returns to scale in production. These assumptions are unlikely to hold and highlight the need to look at more narrowly defined activities. Research has, however, generally discredited Becker's unitary household or altruist model (see for example, Lundberg, Pollak, & Wales, 1997).

The bargaining model of household decision-making posits that individuals retain their individual utility functions when forming joint households and bargain to maximize their utility (Manser & Brown, 1980; McElroy & Horney, 1981; Lundberg & Pollak, 1996). The collective model of household decision-making (Chiappori, 1992) posits that there is a household utility function which consists of a weighted sum of the utility of the individuals within the household, with the weights reflecting each individual's bargaining power. The WIHO or Work in Home model (Grossbard-Shechtman, 1984) posits that men and women barter over the supply of household labor and consumption. Bargaining strength is an important component to each of these models and that strength is often tied to labor market and marriage market opportunities.

The better an individual's outside opportunities, the greater that person's bargaining power and the less time the individual is likely to spend on housework, an activity assumed to be undesirable. Empirical work by Stevenson (2007), Nunley and Seals (2011), and Altindag, Nunley, and Seals (2017) demonstrates that legislative changes influencing bargaining power have the ability to alter how chores are allocated within married households. Chiappori, Iyigun, Lafortune, and Weiss (2017) demonstrate that changes in bargaining power can also affect outcomes for cohabiting households.

That there may be differences between married and cohabiting households is predicted for several reasons. As the costs of entering and exiting a marriage are substantially higher than those associated with cohabitation, marriage can be perceived as a commitment device that couples use to signal and/or promote longer lasting relationships that consequently encourage greater investment in family specific capital, including task specialization (Lundberg, Pollak, & Stearns, 2016). Lafortune and Low (2017) document that those with larger assets are more likely to marry versus cohabit and theorize that that asset ownership acts as a commitment device that supports greater specialization by married couples. Assuming traditional gender roles, the WIHO model suggests that the greater commitment associated with marriage leaves married women more willing to specialize in household production. In empirical work hypothesizing that Blacks coupling with whites might have to 'pay a price' for such a match, Grossbard, Gimenez-Nadal, and Molina (2014) find that white women coupling with Black men do spend less time on housework, but only if they are married, suggesting that women who marry Black men may have more bargaining power.

Overall, there are numerous reasons to expect married couples to specialize more than cohabiting couples. How couples moving from a cohabitation to a marriage might change their time use is less certain. They might subsequently specialize more and behave similarly to married couples who did not cohabit. Being older and having already formed habits may, however, lead such couples to specialize less following marriage than those who enter directly into marriage. Or, perhaps, these couples were more committed from the start and specialized more upon entering the cohabitation. This effect may be more of an empirical question.

5. DATA

The data employed here come from the 2001-2019 waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey data (see Watson & Wooden, 2012, for a description).² These data constitute a nationally representative sample of households in Australia. Individuals interviewed in 2001 are followed through time. Their subsequent partners are primarily interviewed only while partnered. Observations of individuals age 18-23 who were enrolled full-time in an academic program of study (and their partners) were dropped, as were single persons less than age 30 who were living with their parents. The sample is restricted to persons age 18-64 who reported a full complement of variables. Relationship histories were created for every respondent using the relationship status recorded at each interview date as well as the dates each partner reported entering or exiting a cohabitation/marriage. When these reports were at odds, priority was given to the woman's response.³ Very few respondents reported same sex relationships, hence the focus here is on heterosexual couples.

The basic sample consists of 83,638 observations of 8,577 men and 8,698 women.⁴ About 13% of these individuals are never observed in a relationship and about 60% are always in a relationship with the same partner. In total, 8,816 different relationships are observed within the data. Over 200 individuals are observed entering a marriage without first cohabiting; over 1,300 cohabitations begin; and over 1,200 cohabiting couples marry. Thus, a substantial number of transitions are observed.

A rich set of control variables are included in the analysis that follows. The data include time varying information on age, disability status, urbanicity, residence type, residential ownership and size, as well as such household characteristics as the number of children age 0-4, 5-9, 10-14, the number of other dependents, and indicators for the presence of a disabled child or other household resident. Information on aboriginal status and immigrant status is time invariant but also available. Educational attainment is an important, largely time invariant control factor. Sample statistics for these explanatory variables are reported in Table 1 separately by gender. Controls for year and state of residence are also included in the analyses. Results by gender and relationship status are available upon request. Not surprisingly, unpartnered individuals are younger, less well educated, and less likely to have children in the household as compared to partnered individuals. They are also less likely to live in a house or own their residence. Cohabiting persons are less likely to live in a house or own their residence as compared to

married persons. They are younger and, cohabiting men in particular, less educated than married persons.

6. ANALYSIS OF TIME USE

The first analysis to be conducted centers on reported time use measures. Time use is not a definitive measure of specialization but has been studied more extensively than specialization, thus allowing some comparison to previous literature. The focus is primarily upon housework tasks, but information on outdoor activities, errands, and employment is also available. The analysis centers on how time use changes as relationships form and is restricted to each respondent's first observed relationship in order to match previous literature and to obtain a more homogeneous sample.⁵ Respondents are also required to have two observations so as to contribute to fixed effects specifications.

6.1 Simple Statistics

Time use for household chores is recorded on a self-completed questionnaire asking "how many hours would you spend on each of the following activities in a typical week?". Time diary data not survey data are the gold standard for empirical work on time use. There is substantial evidence that survey data typically overstate time use (Juster, Ono, & Stafford, 2003) and there is evidence (Foster & Stratton, 2017) that men overstate and women understate their housework time in HILDA. However, time diary data are typically collected over only a twenty-four hour period that may or may not be representative of an individual's 'usual' day. Fortunately, these survey figures closely parallel those from time diary data in Australia (Siminski & Yetsenga, 2022) and the HILDA dataset provides the panel information necessary for this analysis. The 'activity' classified as housework here is described as: "Housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing." Outdoor activities are described as: "Outdoor tasks, including home maintenance (repairs, improvements, painting etc.), car maintenance or repairs and gardening." Errands are described as: "Household errands, such as shopping, banking, paying bills, and keeping financial records (but do not include driving children to school and to other activities)." Respondents are also asked about their time in paid employment on this questionnaire.⁶ Where paid employment time

is missing or of uncertain value from this survey, data from the labor force survey component of HILDA are used.⁷

Table 2 presents sample mean hours spent per week for the time use measures. Panel A shows the results for men, Panel B for women. The first column reports data on housework time. Subsequent columns report the data for outdoor tasks, errands, and paid employment. Overall sample averages are presented first, followed by averages by relationship status at the time of the interview. On average, women report more time on housework (15.6 versus 6.2 hours), less time on outdoor tasks (2.8 versus 4.7), a little more time on errands (4.9 versus 3.5), and substantially less time on paid employment (24 versus 38) as compared to men. There are, however, also significant differences in time use patterns by relationship status by gender.

Men report spending six hours per week on housework no matter their relationship status. Unpartnered men average significantly less time on outdoor tasks, errands, and employment than partnered men. Unpartnered women report spending nine hours per week on housework, a measure that is statistically significantly lower than the average time reported by partnered women. Unpartnered women also report significantly less time spent on outdoor tasks and errands, though more time in employment than unpartnered women. These differences are consistent with a story that upon partnering, women on average specialize in housework while men on average specialize in paid employment.

The means also provide some evidence that cohabiting and married couples allocate time differently. Cohabiting men report significantly less time on errands and in employment than married men. Cohabiting women report significantly less time on outdoor tasks and errands but significantly more time in employment than married women. These differences are generally in line with the hypothesis proposed here that cohabiting couples specialize less than married couples.

However, Table 2 does not clearly identify how time use differs as relationships form. To compare how time use changes as relationships form, the sample is further restricted to individuals reporting time use both before and after such a change. Figure 1 illustrates average weekly hours of housework by gender in the three years before and three years after a relationship forms. Separate illustrations are provided for relationships as a whole, marriages not preceded by a cohabitation, cohabitations, and marriages preceded by a cohabitation.⁸ On average, men report spending about six hours per week on housework, the same amount of time

reported in Table 2. This number is not substantially altered as they enter a relationship, no matter the type of relationship. Women, on the other hand, increase their reported housework time as they enter a relationship, and that increase is greatest for those entering a marriage, providing some evidence of differential specialization.⁹ It is also notable that women entering a marriage average almost an hour more time on housework before marriage than those entering a cohabitation average before beginning to cohabit. This differential could be evidence of a selection effect.

A similar analysis was conducted to examine how average time spent on housework changes as relationships end. Fixed effects models that follow individuals both as they enter and exit relationships necessarily assume that changes in time use are symmetric. There is no guarantee, however, that such will be the case. Results (see Appendix Figure A) indicate that women do indeed report spending less time on housework after marriages end, suggesting the effects of marriage may be symmetric for women. However, while the magnitude of the effect is small, men's reported housework time appears to rise as relationships end. Further analysis indicates that after controlling for a full array of observables and individual-specific fixed effects, women reduce their time on housework upon exiting a relationship, but the magnitude is smaller than the increase observed for women entering relationships, and men do increase their time on housework upon exiting a relationship. Changes in time use upon entry and exit to relationships are not symmetric. For this reason, the analysis that follows focuses only on how time use changes as relationships form. Further analysis is necessary to investigate the asymmetry.

Figure illustrating other time uses are available upon request. Time spent on outdoor tasks clearly increases for men but not women who enter a relationship. Reported time on errands appears to rise over time for both men and women, with no particular change as they enter relationships. Finally, women clearly report less time in employment following marriage. Of course, time use changes as needs change and needs evolve over time. Couples are more likely to have children and to live in (and own) larger homes, causing demand for housework time and outdoor tasks in particular to increase. It is important to control for these differences when evaluating how time use changes with relationship status.

6.2 Empirical Results Regarding Housework Time

Such controls can be incorporated in regression models. As it is housework time that changes the most dramatically, the initial focus is on housework time. Estimation proceeds with ordinary least squares (OLS) and fixed effects (FE) estimation of housework time for those observed first entering a cohabitation or first marrying, as well as for those transitioning from a cohabitation to a marriage. These samples include persons who are never partnered, always partnered, or transition from unpartnered to partnered status. All models are estimated separately by gender and with robust standard errors. Standard errors are clustered at the individual level.

This approach mimics the work of BB&S. That work is extended here by including many more covariates, in particular more detailed information about household composition (see Table 1), year and state dummies, plus dummy variables identifying relationships that are newly formed in expectation that it may take time to adjust one's time use. Not included are the controls for time spent in paid employment and predicted earnings that BB&S employ. The former is another time use necessarily jointly determined; the latter is controlled for indirectly by the covariates that are included, particularly education, a quadratic in age, and disability status.

The initial results are reported in Table 3 for three different specifications: the first (1) includes only a dummy variable to identify persons in a relationship thus mimicking BB&S's specification, the second (2) includes a dummy variable that distinguishes between those married and those cohabiting, the third (3) includes a dummy variable that further distinguishes between marriages that were and were not preceded by a cohabitation.¹⁰ As discussed earlier, how those transitioning from a cohabitation to a marriage might alter their time use is uncertain. If individuals become accustomed to a particular routine while cohabiting, they may be less likely to change that routine upon transitioning to marriage. Alternatively, those transitioning from a cohabitation to a marriage may do so expecting the relationship to endure and then change their behavior to more nearly match that of married couples. Each specification is estimated first using OLS (columns 1, 3, and 5), then individual-specific fixed effects (FE) (columns 2, 4, 6). Results for men are reported in Panel A, those for women in Panel B. There are 7,943 men of whom 1,758 enter a relationship and 8,099 women of whom 1,838 enter a relationship. In each case about 1,000 of these transitions are from a cohabitation into a marriage. Table 3 presents only the results for the relationship indicators. The full results (excluding year and state dummies) are available upon request.

The OLS results for men indicate that those in a relationship on average report spending 0.7 fewer hours per week as compared to those not in a relationship (specification (1)). This estimate is quite close to that of BB&S (-0.8) despite the different specification. Results from specification (2) indicate that married men on average report spending 1.0 fewer hours per week while cohabiting men report spending only 0.3 fewer hours per week as compared to men not currently in a relationship. This difference is statistically significant (p-value 0.00) and could be indicative of less specialization in cohabiting as compared to married households or of differential selection into marriage versus cohabitation. Further distinguishing between marriages that were and were not preceded by a cohabitation (specification (3)) yields estimates suggesting that on average all married men report less time on housework, but those who cohabit first reduce their time use in two steps. One can not reject the hypothesis (p-value 0.18) that the sum of the coefficient to the cohabiting dummy and of the coefficient to the dummy indicating an individual married following a cohabitation is of the same magnitude as the coefficient to entering a marriage directly.

However, none of these differences carry over to the fixed effects specifications. While men in different types of relationships report spending different amounts of time on housework, men observed first transitioning into a relationship do not report spending a significantly different amount of time on housework. As BB&S report, it appears that selection explains all of the observed association between housework time and relationship status for men first transitioning into a relationship. The negative coefficients in the OLS specifications suggest that men who spent less time on housework were more likely to enter relationships. Men who marry without previously cohabiting do, however, report spending a bit more time during the first six months of the relationship than either before or after. This variable was included on the expectation that it might take some time for 'usual' activities and expectations to change. The finding of a positive short run impact was not anticipated and could perhaps be a sort of newlywed effect.

The OLS results for women indicate that on average women in a relationship report spending 3.3 hours more per week than women not in a relationship. This result is again, very similar to that reported by BB&S (+3.5). Specification (2) reveals that cohabiting women average 2.4 more hours per week and married women 3.9 more hours per week, a difference of 1.5 hours that is statistically significant (p-value 0.00). Specification (3) indicates that women in

marriages not preceded by a cohabitation on average report 4.7 more hours per week on housework; women in marriages preceded by a cohabitation report 3.5 more hours per week; and women who are cohabiting report 2.3 more hours per week. Contrary to the results for men, one can reject the hypothesis (p-value 0.00) that women progressing from cohabitations to marriages spend the same amount of time on housework as women who enter marriage directly. In fact, such women appear to spend even more time. However, there is a bit of a lag in take up as women in the first six months of forming a cohabitation or transitioning into a marriage report spending about an hour less on housework.

The fixed effect results, similar to those reported in BB&S, indicate that about half of these reported time differences, a bit less for those transitioning directly into marriage, are attributable to selection. Women entering relationships for the first time appear to be those who spent more time on housework before. Specification (3) results suggest women transitioning directly into marriage reported increasing their housework time by 3.7 hours (an increase of 40% over the average time reported by unpartnered women), those transitioning into a cohabitation reported increasing their housework time by 1.2 hours (a 13% increase) and those transitioning from a cohabitation to a marriage reported increasing their housework time by another 2.0 hours, though mostly after the first six months. One can not in this case reject the hypothesis that housework time increased the same for those marrying whether they first cohabited or not (p-value 0.50), the change simply occurred in two steps for those who first cohabited.

These results indicate that all of the differences in reported housework time by relationship status for men entering their first relationships are likely a consequence of selection as men who spend less time on housework are more likely to enter a relationship. By contrast, while women who spend more time on housework are more likely to enter a relationship, no more than half of the difference in time use is explained by selection for women. Assuming that these time use measures capture specialization, the results also support the hypothesis that there is less specialization in housework for women transitioning into cohabitations than there is for women transitioning for the first time into marriages. While these are not paired results, we do not see how time use changes for each partner entering a relationship, these results suggest that time spent on housework, *ceteris paribus*, may increase with the formation of relationships. Thus, any time savings from economies of scale would seem to be countered by another factor.

6.3 Jointly Modeling Reported Time on Housework, Outdoor Tasks, Errands, and Paid Employment

To examine this hypothesis further, the analysis is extended to look at additional measures of time use: errands, outdoor activities, and paid employment. As selection effects were significant for both men and women, the analysis is restricted to fixed effects specifications. Furthermore, to account for possible cross-equation correlations, the four reported time uses are modeled jointly. The results as they pertain to relationship status are reported in Table 4: Panel A for men and Panel B for women.

Men entering a relationship are not observed significantly altering their time on housework or employment. There is some evidence they increase their time on outdoor chores and errands, but in no case is the change greater than one hour. Only in the case of errands are the results consistent with the hypothesis that marriages induce greater specialization than cohabiting relationships.

Women entering marriages report increasing their time on housework and errands while reducing their time in employment. There is weak evidence they decrease their time on outdoor chores. Women entering cohabitations report either no change or a much smaller change in time use than those entering a marriage. In addition, only in the case of errands would one reject the hypothesis that the sum of the effects of first entering a cohabitation and then a marriage is significantly different from the effect of entering a marriage not preceded by a cohabitation. Thus, the fixed effect results for women entering a relationship are consistent with the hypothesis that there is more specialization in married households and that women entering a marriage via a cohabitation end up adjusting their time use in much the same way as women entering a marriage more directly.

Correlation terms for both men and women indicate that those who for unobserved reasons reported more time on housework also report more time on outdoor tasks and errands. Similarly, those reporting more time on outdoor tasks report more time on errands. By way contrast, the correlation between all of these household activities and time in paid employment is negative. All these correlations are highly statistically significant.

In general, the evidence from these joint models regarding the proposed hypothesis is weak. Men do not significantly alter their time on housework or in employment when entering a relationship. They do adjust their time on errands more when entering marriages than

cohabitations, but the reverse may be true for time on outdoor tasks. However, the evidence indicates that women adjust their time use across the board more upon entering marriages than they do upon entering cohabitations – a result consistent with predictions.

7. EMPIRICAL EVIDENCE REGARDING TASK SHARES

As noted above, time use is not a definitive measure of specialization. Changes in time use as relationships form and change may reflect specialization but may also reflect economies of scale and changing preferences. The prior analysis also relies on the assumption that specialization occurs at the level of housework, outdoor tasks, errands, and employment broadly defined and is visible in reported time use data. Housework, outdoor chores, and errands each constitute an amalgam of different activities. Housework includes meal preparation, laundry, and cleaning. Outdoor chores include gardening and doing home repairs. Errands include shopping and paying bills. Individuals may specialize in different activities within these broad categories. For example, one partner may specialize in meal preparation and another in laundry. While it may not take twice as much time to do these tasks for a couple as opposed to for an individual, it will take longer. Time spent on each broad time use category then may not decrease much for any individual because no one individual specializes in every component within that category.

To address this possibility, we make use of information collected periodically in the HILDA survey asking couples who in the household is responsible for some more narrowly defined household tasks. More specifically, partnered respondents in HILDA are asked in 2005, 2008, 2011, 2015, and 2019, “Who does the following tasks in your household?”, where the tasks include preparing daily meals (Meals), washing the dishes (Dishes), cleaning the house (Cleaning), shopping for food (Shopping), paying bills and keeping financial records (Bills), and doing small repairs in and around the house (Repairs). The first three are subsumed under the broader Housework category, the next two are Errands, the final one is an Outdoor Task. Meals and Repairs are activities that, compared to Dishes and Cleaning, require some skill. Acquiring such skills is costly and so couples are more likely to specialize in these activities. On average, women are more likely to prepare meals, men to complete repairs. Dish washing likely requires the least skill and could at low cost be performed by one partner one day and the other partner another day. Specialization in this activity likely provides little net benefit, but could offset

specialization in another activity. Bills comprises activities that on average men are more likely to perform, but couples that are uncertain about their future together might logically choose to keep their financial accounts separate. Differences in bill paying may, however, be less pronounced by relationship status in Australia where for tax reasons individuals generally keep separate accounts. Finally, as noted before, habit formation may limit changes when cohabiting couples marry.

Usual responses include, “Always me”, “Usually me”, “Shared equally between partner & self”, “Usually my partner”, and “Always my partner”.¹¹ These questions were administered to both partners and there is a substantial degree of agreement within couples, ranging from 49% for Bills to 58% for Meals, with similar results for married and cohabiting couples. The fraction of individuals giving diametrically opposed answers is less than 0.2%. In the case of activities women report always or usually performing (Meals, Dishes, Cleaning, and Shopping), male partners often assert some credit for the activity. This is especially true of Dishes. In the case of Repairs, typically performed by men, female partners often assert some credit. Disagreements are more evenly distributed in the case of Bills perhaps because individuals are accustomed to doing these activities separately and uncertain how to report responsibility.

Looking first at specialization from a gender-neutral perspective, new measures are created that code complete specialization (“Always” answers) as 1, some specialization (“Usually” answers) as 2, and shared responsibility as 3. Thus, lower numbers are indicative of more specialization. Table 5 reports the sample averages by task and relationship status. The results for men are shown in Panel A, the results for women in Panel B. Clearly, there is substantial specialization – which is not possible in a single person household. The fraction reporting shared responsibility is lowest for Repairs, ranging from 9% to 24%, but never exceeds 50%. While twice as many cohabiters as compared to married persons report sharing responsibility for all six tasks, fewer than 3% of persons report such sharing. Couples do specialize.

As hypothesized, the degree of specialization is greater and statistically significantly different at the 1% level in every case for married as compared to cohabiting persons, with the exception of men’s reporting of dishwashing which is significant only at the 3% level. As discussed above, there is little benefit to specialization in dish washing as a standalone activity. There is in addition evidence that married persons who cohabited together report specializing

less in meal preparation and cleaning than married persons who did not first cohabit, but more than cohabiting persons. Married persons who cohabited together also report more specialization than cohabiting persons when it comes to shopping and bill paying.

While these statistics provide evidence that on average behavior is different for those in different types of relationships, they do not control for other household characteristics that might be related to specialization. Table 6 presents results from an ordered probit model that includes all the covariates included in the time use models. Only the coefficients identifying cohabiters and married couples who first cohabited are reported (complete results are available upon request). These coefficients identify differences in the degree of specialization as compared to married couples who did not first cohabit. Positive coefficients indicate less specialization. Cohabiting couples report less specialization as compared to married couples who did not first cohabit in every activity, a difference that is statistically significant except in the case of men's reporting of dish washing activity. Married women who initially cohabited report significantly less specialization than married women who did not first cohabit in every task except bill paying. The magnitude of this effect is, however, less than that for cohabiting women which suggests that women transitioning from cohabitation to marriage might specialize more. Results are similar for married men who initially cohabited, except that the differences are not statistically significant for bills, repairs, or dishes. Thus, even when a substantial set of controls are incorporated, the evidence suggests that cohabiting couples specialize less than married couples and that cohabiting couples who marry may specialize more following marriage, but not as much as married couples who did not previously cohabit.

While these results control for a range of covariates, they reflect only correlations and do not reveal whether behavior changes as the type of relationship changes. It may be that those cohabiting couples who specialized more while cohabiting are subsequently more likely to marry. An analysis of how the transition between cohabitation and marriage influences the degree of specialization may reveal whether the differences observed between these persons is due to selection or due to a change in roles.

To evaluate this probability, a linear model of specialization is estimated with couple-specific fixed effects. The set of control variables includes all the covariates listed in Table 1 as well as the age, education, nativity, and disability status of the respondent's partner. The sample is limited to those observed at least twice. Many respondents are observed only married, but at

least 673 couples are observed transitioning from cohabitation to marriage for each sample. The coefficient estimates for the dummy variable (Marrying) identifying those making this transition are presented in Table 7. Panel A presents the results for men, Panel B for women (full results are available upon request). Each column reflects a different task.

Every estimate is negative indicating that those transitioning from a cohabitation to a marriage on average, *ceteris paribus*, report specializing more. The magnitude and significance of this effect is largest for bill paying, indicating that even in Australia the act of marriage increases specialization in bill paying. Men report significantly more specialization in repair work as well as somewhat more in meals and dishes, women more in food shopping and dishes. These results provide some evidence that couples increase the degree of intrahousehold specialization when transitioning from a cohabitation to a marriage, perhaps because they feel more secure in a marriage. Adding controls for the length of each cohabitation and marriage to date does not significantly alter these results. The only time these measures are significant is in the case of food shopping. There is less specialization in food shopping the longer a couple is married.

Finally, in order to examine the gendered nature of these different activities and their interactions, a six-equation system of ordered probits is estimated separately by gender using the original categorical variables for which a code of 1 means the respondent always does the task and a code of 5 means the partner always does the task. These results for the relationship measures are reported in Table 8. The base case is that of married persons who did not first cohabit. Panel A shows the results for men, Panel B for women. The set of control variables includes all the covariates listed in Table 1 as well as the age, education, nativity, and disability status of the respondent's partner (results available upon request) as well as state and year dummies. Positive coefficient values indicate that the respondent reported doing a greater share of the task. These estimates are distinctly more descriptive than causal in nature.

The results for men indicate that cohabiting men take on a significantly greater share of meal preparation, dishes, cleaning, food shopping, and bill paying and a lesser share of repair work than married men who did not first cohabit. Married men who previously cohabited take on a significantly greater share of meal preparation, dishes, cleaning, and food shopping as compared with married men who did not previously cohabit, but report performing a similar share of repair work and bill paying. The differences in reported shares between men who are

cohabiting and men who are in marriages that were preceded by a cohabitation are all significant at the 10% level or better, with those currently married reporting a lesser share of all activities, except repair work which is generally male dominated but less so for cohabiting men.

The results for women are a close reflection of those for men. Cohabiting women and married women who first cohabited take on a significantly smaller share of meal preparation, dishes, cleaning, and food shopping and a significantly larger share of repair work than married women who did not previously cohabit. Married women who previously cohabited report contributing a significantly larger share of shopping and bill paying as compared to cohabiting women, and a lower share of repair work.

Somewhat surprisingly, all the correlation terms (available upon request) are positive and statistically significant. This indicates that individuals who for unexplained reasons were more likely to report that they performed one task were also more likely to report that they performed each of the tasks. One might reasonably expect that if one partner performed more of one task, the other might compensate by performing more of another. At the least, given the gendered nature of many of these tasks, one might expect somewhat different correlations for repair work which is predominantly performed by men. The correlations between the unobservables associated with repair work and the other tasks were smaller, particularly for men, but still positive and statistically significant.

Technically in this specification both positive and negative coefficients could be indicative of increased specialization, with positive coefficients meaning the respondent specializes more and negative coefficients meaning their partner specializes more – as can be seen in the results for repair work as compared to the other activities. In addition, these coefficient estimates fail to convey information regarding the magnitude of the differences. To address these concerns, simulated marginal effects were calculated. These are reported in Table 9. Many of the differences are statistically significant and rather substantial in magnitude. However, even some of the smaller marginal effects represent substantial shifts in reported behavior. Bolded entries identify marginal effects that shift the average distribution reported by married persons who did not first cohabit by more than 10%.

Married men who first cohabited are substantially and significantly less likely to report that their partner ‘always’ or ‘usually’ prepares meals, washes dishes, or cleans as compared with married men who did not first cohabit, and more likely to report they always or usually

performed the task. Many of these differences shift reported activity by more than 10%. While the marginal effects are statistically significant for shopping, they are not substantial. The marginal effects for repairs and bills are neither significant nor substantial. Differences between cohabiting men and married men who did not previously cohabit are even larger and extend to include repair and bill paying tasks. Again, most of the shifts are in the extreme values, though the fraction reporting shared responsibility does increase across the board and substantially for meal preparation, cleaning, and repair work.

For married women who first cohabited as compared to married women who did not first cohabit, the simulated marginal effects are significant for all tasks except bill paying, though only marginally so for shopping. The implied shifts are most substantial for meal preparation and dish washing, substantiating what men report, that married women who did first cohabit are less likely to always perform the activity and more likely to report that their partner performs the activity than married women who did not first cohabit. The simulated marginal effects for cohabiting women are generally larger and again focused more on the extreme values with some leeching into the shared category for meal preparation, shopping and repairs. Interestingly, while cohabiting men appear to report significant and substantial differences in bill paying responsibilities as compared to married men who did not first cohabit, cohabiting women do not.

Alternative specifications including indicators for recently formed relationships and measures of relationship duration generally find recently formed relationships do not have a statistically significant impact on sharing, but duration does. Controlling for respondent's age, longer lasting relationships are those that formed when the partners were younger. As younger persons face a longer time horizon, the benefits of specialization are greater and the cost of readjusting later is smaller, suggesting young persons should specialize more. Such appears to be the prediction as regards meal preparation, dish washing, and cleaning as the coefficients to duration in these equations when significant have a positive coefficient for men and a negative coefficient for women indicating that women are more likely to take responsibility for these tasks the longer lasting the relationship. The coefficients to relationship status, however remain statistically significant indicating that the type of relationship is also significantly associated with specialization. Relationship status becomes less predictive of specialization for shopping, but more predictive for bill paying, with women who married without first cohabiting being

significantly less likely and men who married without first cohabiting being significantly more likely to report responsibility. Results for repair work change little.

These results provide substantial support for the hypothesis that married couples specialize more than cohabiting couples, with women taking on more responsibility for the generally ‘female-typed’ tasks of meal preparation, dishes, cleaning, and food shopping and men taking on more responsibility for repair work. There is also evidence that married couples who first cohabited on average share responsibility for the female-typed activities more than other married couples, but not as much as cohabiting couples – providing additional evidence that their behavior falls somewhere in the middle.

In sum, an analysis of who reports responsibility for the more narrowly defined tasks of meal preparation, dish washing, cleaning, food shopping, repair work, and bill paying provides substantial evidence of intrahousehold specialization and evidence in line with the proposed hypothesis that cohabiting couples specialize less than married couples. Fewer than 50% (and generally far less than 50%) of couple households report sharing responsibility for any given task and only about 3% report sharing responsibility for all six tasks, even though as singles they would have been solely responsible for them all. Using gender-neutral measures, married couples who did not first cohabit were found to report more specialization than currently cohabiting couples on almost all tasks, even after including a wide array of controls. Married couples who did first cohabit generally report more specialization than currently cohabiting couples, but less than married couples who did not first cohabit. Cohabiting couples are much less likely to specialize in bill paying as compared to married couples, not surprising as such couples are on average less confident about their relationship and so may be inclined to keep their finances separate. Specialization in dish washing, particularly as reported for men, is also less evident. This may be because dish washing is the task that is least likely to require skill and so can be shared at low cost. These results do not tell us whether the behavior is driven by the relationship status or by individual preferences that drive both task allocation and relationship status. However, estimates from a linear, couple-specific fixed effects model indicate that couples transitioning from cohabitation to marriage do report specializing more in all tasks following marriage, with differences in bill paying being particularly statistically significant. These results while not definitively indicative of a causal relation, are a step in that direction.

Joint modeling of reported responsibilities using an ordered probit that takes into account who performs the task reveals significant and substantial differences by relationship status. Women (men) who married without first cohabiting are much more (less) likely to report specializing in meal preparation, dish washing, and cleaning as compared to those who married after cohabiting or those who are cohabiting. The differences between those who are currently cohabiting and those who married without first cohabiting are similar in the case of food shopping. Men who are cohabiting report significantly and substantially less specialization in repair work as compared to men who married without previously cohabiting, a result mirrored by women. Cohabiting men were more likely to report responsibility for bill paying as compared to men who married without previously cohabiting, but the differences were not significantly nor substantially different for cohabiting women. Again, these results are not necessarily causal and there are too few observations per individual to allow estimation of an ordered model with fixed effects. Those who married without first cohabiting are on average about ten years older than those currently cohabiting and may have grown up during a more socially conservative era when gendered behavioral norms were more customary.

8. CONCLUSION

The nature of couple households has changed considerably in the last fifty years with cohabitation rates rising and marriage rates falling. These changes have the potential to impact many outcomes, time use not the least of those. Couple households are able to pool their resources, take advantage of economies of scale and of intra-household specialization. The degree to which they do so likely differs from couple to couple, but may also differ by relationship type.

While a simple model predicts that persons entering into cohabiting relationships will specialize less than persons entering marriages if there are costs associated with changing activities, because on average the expected duration of cohabiting relationships is shorter than that for marriages, more complex bargaining models can yield similar predictions. Data from the 2001-2019 waves of the Australian HILDA survey are used to examine how time use changes as men and women transition into and out of relationships and also how reported specialization differs by relationship type.

Raw statistics indicate that on average, all partnered men report spending almost 1 hour less on housework as compared to unpartnered men (6.2 versus 7.0). Partnered women average about 3.5 hours more than unpartnered women, with the differential higher for married (almost 6 hours) and lower for cohabiting women (less than 1 hour). Controlling for a wide array of control variables - including own education, household composition, and residential characteristics - nets similar differentials between partnered and unpartnered persons in an OLS specification. Of course, some of this differential may be attributable to selection.

To account for selection, the panel nature of the data is exploited to control for individual-specific, time invariant preferences and productivity that influence time use and may be associated with partnership formation. Doing so, we find that men entering relationships do not report spending significantly less time on housework and the effect observed for women is much smaller – a 1.2 hour increase for those entering cohabitations and a 3.7 hour increase for those entering directly into marriages. These results suggest that men who report less time on housework and women who report more time on housework select into relationships. Women transitioning into marriages from cohabitations report increasing their housework time by 2.0 hours, making up much of the difference between these populations. How individuals would behave during this transition was not clearly predicted by theory but the results suggest housework time simply increments in two steps for women who cohabit prior to marrying. Extending the fixed effects analysis to consider jointly outdoor tasks, errands, and paid employment as well as housework provides some further though weak evidence of greater specialization in married couple households.

As these time uses each comprise a wide array of activities and different individuals may specialize in different activities, it is perhaps not surprising that evidence of intrahousehold specialization is difficult to observe clearly using time use data. To address this concern, we examine survey responses regarding who performs six much more narrowly defined household tasks: meal preparation, dish washing, cleaning, food shopping, bill paying, and repair work. With the possible exception of repair work, these are tasks that every household must complete. Singles have to do the tasks themselves (or hire outside help), while couples can specialize. There is substantial evidence from the raw data of intrahousehold specialization within couple households. Couples report sharing responsibility for all these tasks only about 3% of the time. Ordered probit analysis controlling for a wide array of variables reveals that specialization is

greatest in married couples that did not first cohabit and least in cohabiting couples across all tasks. This difference is statistically significant in nineteen of twenty-four cases (two genders, two relationship types, six tasks). To explore whether specialization changes as cohabiting couples marry, a simple linear model with couple-specific fixed effects is estimated. Results indicate that both men and women report increased specialization in all six tasks when transitioning to a marriage from a cohabitation, a differential that is statistically significant almost 60% of the time.

Joint estimation of ordered probits for all six tasks that take into account who does the activity not just the degree of specialization indicate that on average both men and women report that married women who did not first cohabit with their partner specialize more than other married women who specialize more than cohabiters in female-typed activities (meal preparation, dish washing, cleaning, and shopping). Both men and women on average report married men specialize more than cohabiting men in repair work. Bill paying is not as specialized an activity, particularly for cohabiting couples who, given the uncertainty of the relationship, are likely to keep their finances separate. That there is evidence of specialization in dish washing is a bit surprising as no particular skill is required for that task but bargaining theory suggests women entering marriages may feel more secure and so willing to take on that responsibility. Another unexpected finding is that the correlation terms suggest that when one partner reports specializing more for unobserved reasons on one activity, they are also more likely to report specializing in all six activities. One might expect some tradeoff between activities.

In sum, these share data provide substantial evidence that on average married couples specialize more than cohabiting couples, that couples transitioning from cohabitations to marriages do increase their specialization but may not specialize as much as other married couples, and that on average women bear the brunt of the specialization in meal preparation, dish washing, cleaning, and food shopping, while men on average bear the brunt of repair work. As shopping and bill paying are included in the 'errands' time use measure, the fact that reports of specialization differ a bit between household members may obfuscate any pattern with respect to this activity in the time use analysis.

Given the shift away from marriage and towards cohabitation, it would be valuable to better understand both how and why time allocation differs between married and cohabiting

couples. The assumption underlying this analysis is that cohabitators are less committed to their relationship and so less likely to accept a bargain that reduces the value of their alternative options. It would be useful to better understand the heterogeneous motivations underlying the decision to cohabit rather than marry and use those motivations to model subsequent choices. Cohabiting couples who have children together may be more committed to their relationship. In addition, the birth of a child in general may result in revised household responsibilities. While the analysis here controls for the number of preschool age children, it does not directly examine changes around the time a child is born. These are avenues for future exploration.

The evolution of household time use and specialization influences and is influenced by market opportunities. This is true in the case of women who now face substantially better employment options, but is also true of such market-based alternatives to household services as childcare, ready cooked meals, and handy man operations. The evidence presented here suggests that persons in different types of relationships engage in different time use behavior. It would be of interest to know if they utilize market alternatives differently as well, as such behavior has the potential in turn to impact markets.

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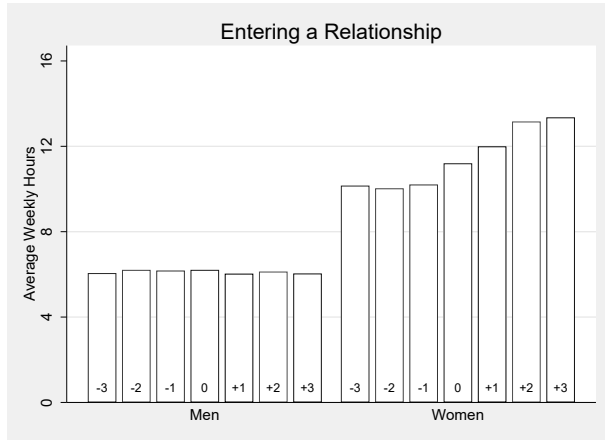
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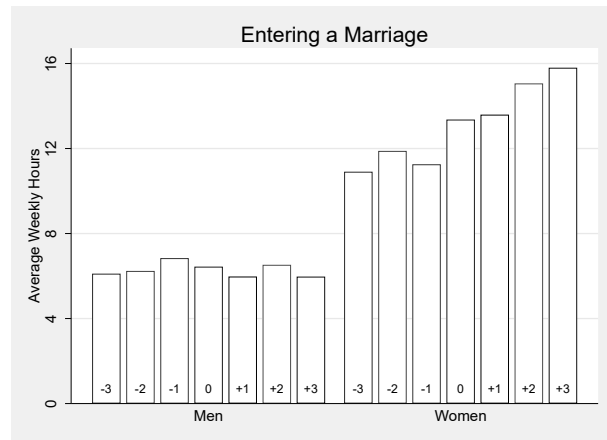
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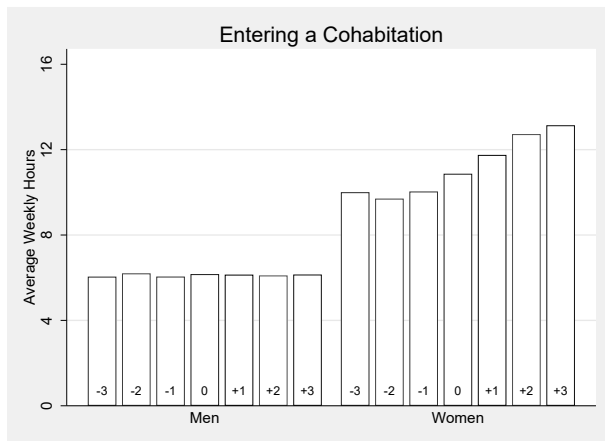
Figure 1: Time Spent on Housework
As Individuals Enter Relationships



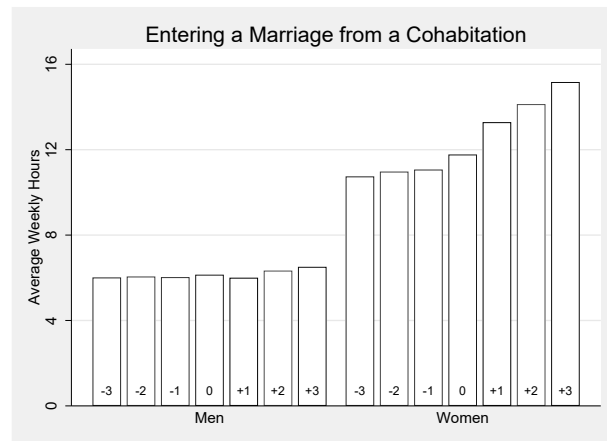
Responses from at least 1,179 men and 1,289 women.



Responses from at least 189 men and 177 women.



Responses from at least 990 men and 1,117 women.



Responses from at least 1,245 men and 1,326 women.

Data from the 2001-2019 waves of HILDA for persons responding at least once before and once after the start of a relationship. '0' reflects the transition year, -# the number of years before, and +# the number of years after.

Table 1: Summary Statistics

	Men		Women	
	<u>Mean</u>	<u>Std.</u> <u>Dev.</u>	<u>Mean</u>	<u>Std.</u> <u>Dev.</u>
Age	42.480	(11.804)	40.690	(11.504)
Disabled	0.131	(0.337)	0.133	(0.339)
Aborigine	0.018	(0.133)	0.025	(0.157)
Immigrant from English Speaking Country	0.099	(0.299)	0.075	(0.264)
Immigrant from Other Country	0.108	(0.311)	0.117	(0.321)
Own Education				
< 12th Grade	0.197	(0.398)	0.242	(0.428)
12th Grade	0.125	(0.331)	0.148	(0.356)
Cert III/IV	0.302	(0.459)	0.166	(0.372)
Diploma	0.096	(0.294)	0.108	(0.310)
BA/Honors	0.161	(0.368)	0.200	(0.400)
Post-Bach	0.119	(0.324)	0.136	(0.343)
Residence in:				
Major Urban Area	0.659	(0.474)	0.664	(0.472)
Other Urban Area	0.204	(0.403)	0.204	(0.403)
Non-Urban	0.137	(0.344)	0.132	(0.339)
Residence Type:				
House	0.834	(0.372)	0.831	(0.375)
Townhouse	0.061	(0.240)	0.065	(0.247)
Flat/NA	0.105	(0.306)	0.104	(0.305)
Owens Residence	0.701	(0.458)	0.700	(0.458)
Number of Bedrooms	3.321	(1.002)	3.327	(0.992)
Household Characteristics				
Number of Other Adults	0.293	(0.686)	0.277	(0.658)
Number of Children				
Age 0-4	0.285	(0.610)	0.298	(0.618)
Age 5-9	0.253	(0.576)	0.269	(0.588)
Age 10-14	0.243	(0.569)	0.253	(0.577)
Number of Other Dependents	0.188	(0.496)	0.194	(0.504)
Disabled Child	0.043	(0.203)	0.042	(0.200)
Other Disabled Resident	0.061	(0.239)	0.041	(0.198)
Number of Observations	67,064		69,257	
Number of Persons	8,577		8,698	

Table 2: Time Use
by Partnered Status

	<u>Housework</u>	<u>Outdoor Tasks</u>	<u>Errands</u>	<u>Paid Employment</u>
Panel A: Men				
Full Sample	6.20	4.74	3.46	37.98
Not Partnered	6.14	3.03	3.28	31.46
Partnered	6.21	5.05	3.50	39.14
Cohabiting	6.27	4.27	3.47	37.44
Married	6.20	5.25	3.50	39.60
Panel B: Women				
Full Sample	15.56	2.76	4.94	23.84
Not Partnered	9.10	2.19	3.82	27.53
Partnered	16.60	2.85	5.12	23.25
Cohabiting	12.44	2.49	4.39	26.74
Married	17.73	2.95	5.32	22.30

Sample sizes vary.

Table 3: Modeling Reported Time on Housework
Upon Entering a First Relationship

<u>Panel A: Men</u>	<u>OLS (1)</u>	<u>FE (1)</u>	<u>OLS (2)</u>	<u>FE (2)</u>	<u>OLS (3)</u>	<u>FE (3)</u>
In a Relationship	-0.7196 (0.1537)	-0.0508 (0.1779)				
Married			-1.0173 (0.1743)	-0.1367 (0.2125)		
Cohabiting			-0.3097 (0.1599)	-0.0171 (0.1764)	-0.2865 (0.1601)	0.0117 (0.1826)
Married, 1st cohabited					-0.8066 (0.1846)	-0.1204 (0.2299)
Married, w/o 1st cohabiting					-1.4032 (0.2002)	-0.3348 (0.4027)
Number of Observations	63,295	63,295	63,295	63,295	63,295	63,295
Number of Men	7,943	7,943	7,943	7,943	7,943	7,943
<u>Panel B: Women</u>	<u>OLS (1)</u>	<u>FE (1)</u>	<u>OLS (2)</u>	<u>FE (2)</u>	<u>OLS (3)</u>	<u>FE (3)</u>
In a Relationship	3.3059 (0.2212)	1.5702 (0.2806)				
Married			3.9109 (0.2499)	2.1630 (0.3334)		
Cohabiting			2.3940 (0.2367)	1.3391 (0.2771)	2.3327 (0.2364)	1.1576 (0.2793)
Married, 1st cohabited					3.4598 (0.2681)	2.0384 (0.3489)
Married, w/o 1st cohabiting					4.6938 (0.3005)	3.7437 (0.7142)
Number of Observations	65,914	65,914	65,914	65,914	65,914	65,914
Number of Women	8,099	8,099	8,099	8,099	8,099	8,099

All the specifications include controls for state (7) and year (18). The OLS specifications also include all the controls listed in Table 1 as well as a quadratic in age and dummy variables identifying relationships that began within the last 6 months. FE stands for individual-specific fixed effects. The FE specifications include all these controls except education and other time invariant personal characteristics.

Robust standard errors in parentheses.

Table 4: Joint Modeling of Time Use
Fixed Effects Specification

<u>Panel A: Men</u>	<u>Housework</u>	<u>Errands</u>	<u>Outdoor Tasks</u>	<u>Paid Employment</u>
	<u>Entering First Relationship</u>			
Married, w/o 1st cohabiting	-0.3590 (0.2936)	0.8125 (0.1838)	0.3761 (0.2216)	-0.2121 (0.7907)
Married, 1st cohabited	-0.1246 (0.1782)	0.1606 (0.1110)	0.4273 (0.1394)	0.3756 (0.4760)
Cohabiting	0.0118 (0.1490)	0.2609 (0.0952)	0.4723 (0.1174)	-0.1144 (0.4049)
Number of Observations	63,295	62,600	62,735	62,693
Number of Men	7,943	7,913	7,910	8,110
<u>Panel B: Women</u>	<u>Housework</u>	<u>Errands</u>	<u>Outdoor Tasks</u>	<u>Paid Employment</u>
	<u>Entering First Relationship</u>			
Married, w/o 1st cohabiting	3.7683 (0.5064)	1.1212 (0.2299)	-0.3104 (0.1840)	-4.4644 (0.9948)
Married, 1st cohabited	2.0638 (0.2760)	0.4097 (0.1223)	-0.1714 (0.1075)	-4.5103 (0.4905)
Cohabiting	1.1638 (0.2275)	0.0625 (0.1029)	0.1201 (0.0929)	-0.6337 (0.4196)
Number of Observations	65,914	65,135	65,120	64,757
Number of Women	8,099	8,078	8,085	8,216

All the specifications include controls for state (7) and year (18). They also include all the controls listed in Table 1 except education and other time invariant personal characteristics as well as a quadratic in age and dummy variables identifying relationships that began within the last 6 months. Robust standard errors in parentheses.

Table 5: Specialization by Task and Relationship Status
Percent Distribution

	<u>Meals</u>	<u>Dishes</u>	<u>Cleaning</u>	<u>Shopping</u>	<u>Bills</u>	<u>Repairs</u>
Panel A: Men's Responses						
<u>Married, w/o 1st cohabiting</u>						
Complete Specialization	19.31	10.72	10.72	16.84	32.22	29.82
Some Specialization	57.90	47.42	47.42	50.77	49.57	60.94
Shared	22.79	41.86	41.86	32.39	18.21	9.24
# of observations	4,532	4,283	4,283	4,607	4,652	4,554
<u>Married, 1st cohabited</u>						
Complete Specialization	14.26	9.06	9.06	14.90	31.51	28.82
Some Specialization	58.38	48.51	48.51	50.73	48.44	59.77
Shared	27.36	42.43	42.43	34.37	20.05	11.41
# of observations	6,860	6,479	6,587	6,945	6,998	6,843
<u>Cohabiting</u>						
Complete Specialization	12.39	9.43	8.16	10.92	20.98	24.37
Some Specialization	51.96	45.74	47.25	39.12	42.48	57.99
Shared	35.65	44.82	44.59	49.96	36.54	17.65
# of observations	3,778	3,710	3,750	3,829	3,856	3,706
Panel B: Women's Responses						
<u>Married, w/o 1st cohabiting</u>						
Complete Specialization	35.34	22.54	35.42	34.92	40.06	19.87
Some Specialization	48.91	47.33	44.90	40.70	42.15	64.07
Shared	15.75	30.13	19.68	24.39	17.79	16.06
# of observations	4,884	4,623	4,670	4,929	4,958	4,701
<u>Married, 1st cohabited</u>						
Complete Specialization	27.50	17.00	29.69	33.06	41.06	17.26
Some Specialization	51.92	49.68	47.88	42.30	40.96	62.97
Shared	20.57	33.32	22.43	24.64	17.98	19.76
# of observations	7,257	6,876	6,945	7,333	7,360	7,049
<u>Cohabiting</u>						
Complete Specialization	23.28	17.12	23.40	24.54	28.70	16.40
Some Specialization	48.36	46.64	45.11	36.33	37.34	59.77
Shared	28.36	36.24	31.48	39.13	33.95	23.83
# of observations	4,080	3,984	4,012	4,099	4,097	3,860

Table 6: Ordered Probit Models of Specialization

	Meals	Dishes	Cleaning	Shopping	Bills	Repairs
Panel A: Men						
Married, 1st Cohabited	0.0858 (0.0360)	0.0143 (0.0358)	0.1096 (0.0358)	0.0812 (0.0348)	0.0060 (0.0340)	0.0387 (0.0349)
Cohabiting	0.1365 (0.0463)	0.0471 (0.0449)	0.1931 (0.0445)	0.1816 (0.0445)	0.3030 (0.0435)	0.1532 (0.0445)
P-value of Difference	0.1945	0.3849	0.0281	0.0086	0.0000	0.0029
Panel B: Women						
Married, 1st Cohabited	0.1093 (0.0358)	0.0788 (0.0363)	0.0671 (0.0370)	0.0754 (0.0354)	-0.0433 (0.0362)	0.0774 (0.0341)
Cohabiting	0.1354 (0.0455)	0.0864 (0.0440)	0.1099 (0.0454)	0.2041 (0.0450)	0.2996 (0.0451)	0.1384 (0.0432)
P-value of Difference	0.5003	0.8345	0.2556	0.0007	0.0000	0.0956

The dependent variable takes a value of 1 if 1 partner 'always' performs the activity, 2 if 1 partner 'usually' performs the activity, and 3 if the activity is shared. Thus, positive values indicate less specialization.

All the specifications include controls for state (7) and year (4), all the controls listed in Table 1, and a quadratic in age.

Robust standard errors in parentheses. The P-values indicate whether married couples who first cohabited specialize differently from cohabiting couples.

Table 7: Changes in Reported Specialization for those Transitioning from Cohabitation to Marriage
Controlling for Couple-Specific Effects

	<u>Tasks:</u>	<u>Meals</u>	<u>Dishes</u>	<u>Cleaning</u>	<u>Shopping</u>	<u>Bills</u>	<u>Repairs</u>
<u>Panel A: Men</u>							
Marrying		-0.0458 (0.0276)	-0.0520 (0.0294)	-0.0387 (0.0279)	-0.0097 (0.0293)	-0.1110 (0.0302)	-0.0820 (0.0265)
# of Observations		12,720	12,024	12,240	12,962	13,113	12,721
# of Couples		4,018	3,887	3,933	4,078	4,099	3,992
# of Couples Transitioning		688	673	685	700	708	681
<u>Panel B: Women</u>							
Marrying		-0.0374 (0.0271)	-0.0507 (0.0289)	-0.0400 (0.0287)	-0.0588 (0.0294)	-0.1449 (0.0297)	-0.0389 (0.0276)
# of Observations		13,716	12,958	13,102	13,877	13,932	13,168
# of Couples		4,280	4,149	4,157	4,320	4,323	4,150
# of Couples Transitioning		722	711	707	728	732	698

All the specifications include controls for state (7) and year (18). They also include a quadratic in age and all the controls listed in Table 1 except education and other time invariant personal characteristics. Robust standard errors in parentheses.

Table 8: Results from a System of Ordered Probits

	Meals	Dishes	Cleaning	Shopping	Bills	Repairs
Panel A: Men						
Married, 1st Cohabited	-0.1109 (0.0236)	-0.1050 (0.0240)	-0.0883 (0.0245)	-0.0489 (0.0237)	0.0111 (0.0234)	0.0159 (0.0246)
Cohabiting	-0.1908 (0.0308)	-0.1587 (0.0315)	-0.1425 (0.0309)	-0.1480 (0.0304)	-0.0963 (0.0290)	0.1113 (0.0325)
P-value of Difference	0.0031	0.0510	0.0437	0.0002	0.0000	0.0009
Number of Observations	12,854	12,240	12,431	13,044	13,175	12,866
Panel B: Women						
Married, 1st Cohabited	0.1489 (0.0233)	0.0896 (0.0237)	0.0534 (0.0245)	0.0457 (0.0238)	-0.0353 (0.0236)	-0.0517 (0.0241)
Cohabiting	0.1929 (0.0307)	0.0928 (0.0310)	0.0781 (0.0313)	0.1548 (0.0304)	0.0330 (0.0291)	-0.1732 (0.0321)
P-value of Difference	0.1028	0.9035	0.3586	0.0000	0.0061	0.0000
Number of Observations	13,315	12,681	12,803	13,437	13,492	12,897

The dependent variable takes a value of 1 if the respondent always performs the activity, 2 if the respondent usually performs the activity, 3 if the activity is shared, 4 if the partner usually performs the activity, and 5 if the partner always performs the activity. Thus, positive values indicate the respondent is less engaged in the activity.

All the specifications include controls for state (7) and year (4), all the controls listed in Table 1 (for each partner), and quadratics in age.

Robust standard errors in parentheses. The P-values indicate whether married couples who first cohabited report specializing differently from cohabiting couples.

Table 9: Simulated Marginal Effects
From Married did Not 1st Cohabit to ...

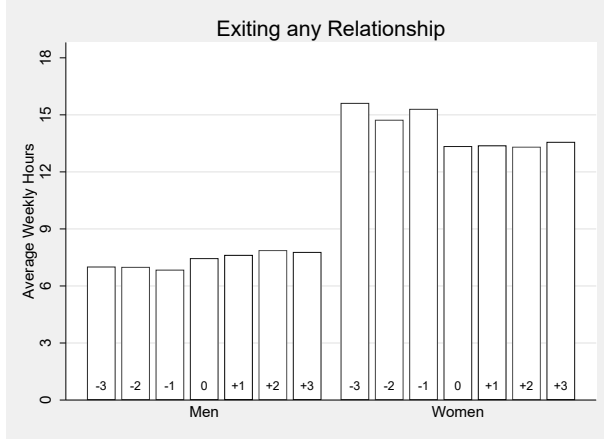
	Meals	Dishes	Cleaning	Shopping	Bills	Repairs
Panel A: Men						
Married, 1st cohabited						
Always Me	0.0064 (0.0013)	0.0071 (0.0016)	0.0023 (0.0007)	0.0027 (0.0013)	-0.0025 (0.0053)	-0.0053 (0.0082)
Usually Me	0.0174 (0.0037)	0.0224 (0.0051)	0.0106 (0.0029)	0.0068 (0.0033)	-0.0014 (0.0030)	0.0019 (0.0030)
Shared Equally	0.0179 (0.0039)	0.0090 (0.0022)	0.0203 (0.0057)	0.0092 (0.0045)	-0.0002 (0.0005)	0.0026 (0.0040)
Usually My Partner	-0.0184 (0.0039)	-0.0254 (0.0058)	-0.0179 (0.0049)	-0.0088 (0.0042)	0.0018 (0.0038)	0.0006 (0.0010)
Always My Partner	-0.0234 (0.0051)	-0.0131 (0.0031)	-0.0154 (0.0043)	-0.0099 (0.0048)	0.0024 (0.0050)	0.0002 (0.0004)
Cohabiting						
Always Me	0.0119 (0.0020)	0.0112 (0.0023)	0.0040 (0.0009)	0.0090 (0.0019)	0.0231 (0.0070)	-0.0362 (0.0105)
Usually Me	0.0308 (0.0051)	0.0342 (0.0068)	0.0176 (0.0039)	0.0213 (0.0044)	0.0118 (0.0035)	0.0110 (0.0031)
Shared Equally	0.0297 (0.0048)	0.0122 (0.0024)	0.0322 (0.0070)	0.0262 (0.0053)	0.0010 (0.0004)	0.0187 (0.0055)
Usually My Partner	-0.0339 (0.0058)	-0.0385 (0.0077)	-0.0299 (0.0066)	-0.0283 (0.0059)	-0.0163 (0.0049)	0.0047 (0.0014)
Always My Partner	-0.0385 (0.0061)	-0.0191 (0.0037)	-0.0240 (0.0052)	-0.0282 (0.0057)	-0.0195 (0.0059)	0.0018 (0.0006)
Panel B: Women						
Married, 1st cohabited						
Always Me	-0.0489 (0.0077)	-0.0222 (0.0059)	-0.0178 (0.0082)	-0.0157 (0.0082)	0.0116 (0.0077)	0.0024 (0.0011)
Usually Me	-0.0001 (0.0006)	-0.0118 (0.0031)	0.0012 (0.0006)	-0.0001 (0.0002)	0.0018 (0.0012)	0.0062 (0.0029)
Shared Equally	0.0254 (0.0040)	0.0170 (0.0046)	0.0125 (0.0057)	0.0097 (0.0051)	-0.0021 (0.0014)	0.0087 (0.0041)
Usually My Partner	0.0179 (0.0028)	0.0143 (0.0038)	0.0035 (0.0016)	0.0047 (0.0024)	-0.0058 (0.0039)	-0.0048 (0.0022)
Always My Partner	0.0057 (0.0009)	0.0027 (0.0007)	0.0007 (0.0003)	0.0014 (0.0007)	-0.0055 (0.0037)	-0.0125 (0.0059)
Cohabiting						

Always Me	-0.0626	-0.0229	-0.0258	-0.0517	-0.0106	0.0090
	(0.0099)	(0.0076)	(0.0103)	(0.0101)	(0.0094)	(0.0018)
Usually Me	-0.0016	-0.0123	0.0014	-0.0029	-0.0019	0.0220
	(0.0011)	(0.0042)	(0.0006)	(0.0009)	(0.0017)	(0.0042)
Shared Equally	0.0327	0.0176	0.0182	0.0325	0.0018	0.0287
	(0.0052)	(0.0059)	(0.0074)	(0.0064)	(0.0016)	(0.0053)
Usually My Partner	0.0238	0.0148	0.0052	0.0168	0.0054	-0.0205
	(0.0039)	(0.0050)	(0.0021)	(0.0034)	(0.0048)	(0.0041)
Always My Partner	0.0077	0.0028	0.0010	0.0054	0.0053	-0.0393
	(0.0014)	(0.0010)	(0.0004)	(0.0011)	(0.0047)	(0.0072)

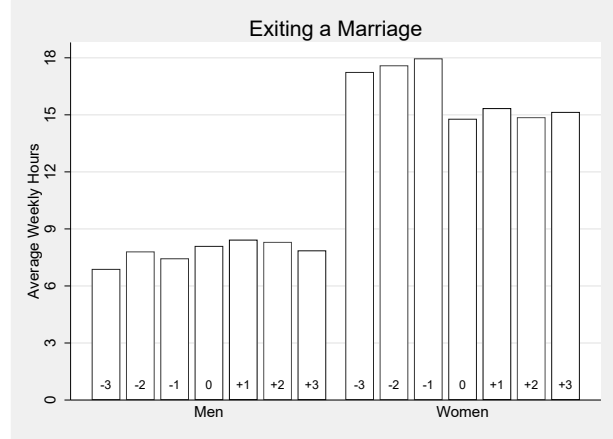
Robust standard errors in parentheses.

Bolded entries indicate marginal effects that constitute changes in excess of 10% from the observed distribution of responses for married persons who did not first cohabit.

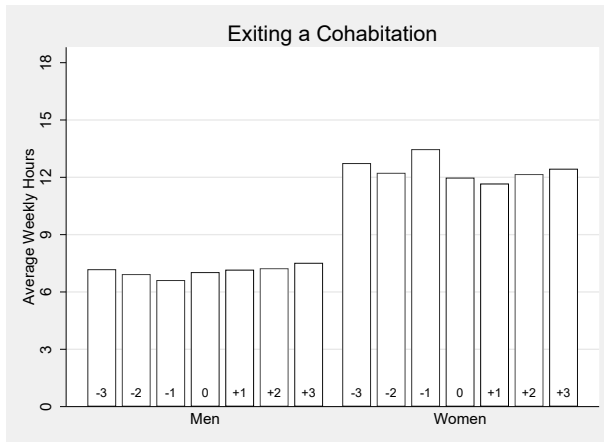
Appendix Figure A: Time Spent on Housework As Individuals Exit Relationships



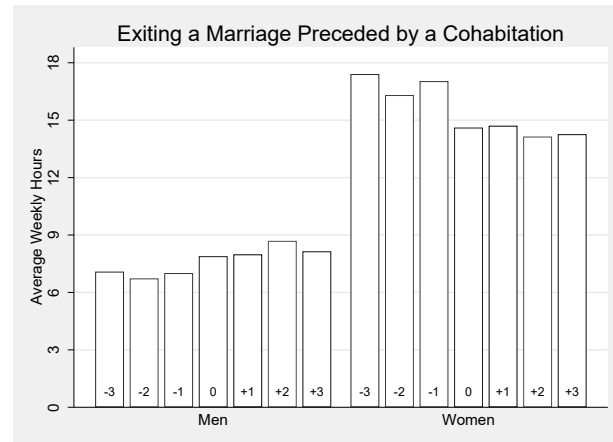
Responses from at least 1,035 men and 1,265 women.



Responses from at least 137 men and 183 women.



Responses from at least 567 men and 660 women.



Responses from at least 331 men and 422 women.

Data from the 2001-2019 waves of HILDA for persons responding at least once before and once after the end of a relationship. '0' reflects the transition year, -# the number of years before, and +# the number of years after.

NOTES

-
- ¹ The sample is restricted to women less than age 45 in 2000 who were part of the original sample and in a relationship in January 2000.
- ² 2020 data were not employed due to the expectation that Covid-19 likely changed behavior.
- ³ Less than 200 couples reporting peculiar, conflicting and/or overlapping relationships are dropped. Examples include couples reporting being married then cohabiting then married or married, divorced, and remarried or reporting dates that differ by more than three years.
- ⁴ Not all are included in each analysis as sample restrictions vary a bit and the availability of each dependent variable is not guaranteed.
- ⁵ Prior relationships are difficult to track. Unpartnered individuals who report they have never been married and individuals who were in a relationship when first observed are included in the sample even if they had a previous cohabitation or marriage. No restriction is imposed on their partner's prior relationships.
- ⁶ Typical time is reported in hours in 2000, but in finer detail in subsequent years. All specifications include year dummies which should on average account for this differential measurement.
- ⁷ All the time measures are trimmed at approximately their 99th percentile (corresponding to cutoffs of 60 for housework, 30 for outdoor activities, 28 for errands, and 80 for paid employment). The sum of time spent on these four activities is also restricted to be no more than 110 hours per week.
- ⁸ Reported time is most variable for those entering a marriage not preceded by a cohabitation for which the sample size is the smallest by a factor of at least five.
- ⁹ That the change in time use in the year of a change is not generally as great as the change in subsequent years could be because in the case of very recent partnerships time allocations have not yet adjusted to reflect the new relationship. The empirical specification reported below will include a control for recent partnerships in order to account for such effects.
- ¹⁰ A dummy variable identifying cohabiters who were later observed married is never statistically significant, possibly because this outcome is only imperfectly observed, and not included in the results reported here.
- ¹¹ A small number of respondents in households with two adults and no children over the age of four who replied the tasks were "Shared equally among household members" were recoded as "Shared equally between partner & self." Other responses were coded as missing.