

Melbourne Institute Working Paper Series

Working Paper No. 7/11

With or Without You: Hazard of Divorce
and Intra-household Allocation of Time

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Melbourne Institute Working Paper No. 7/11

ISSN 1328-4991 (Print)

ISSN 1447-5863 (Online)

ISBN 978-0-7340-4238-5

March 2011

* This paper has been written during my period of doctoral studies at the University of Essex. I am strongly indebted to my PhD supervisor, Marco Francesconi. I would also like to thank Sarah Brown, Deborah Cobb-Clark, Patrick Nolen, Andrew Oswald, Steve Pudney and João Santos Silva for useful conversations on the topic and the seminar participants at University of Essex, University of Southampton, ESPE Conference 2009, EALE Conference 2009, AIEL Conference 2009, SAEe Conference 2010 and IZA Bonn for their comments. On the early stages of this work I also benefited from valuable suggestions from Robert Pollak. All mistakes are of course my full responsibility.

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Abstract

This paper investigates the relationship between the probability of divorce and marriage specific investments. As these investments in terms of childcare and household activities are likely to increase the marital surplus, they are consequently likely to decrease the risk of divorce. All such activities, however, are characterized by gender role bias through, for example, social norms. In periods in which married women enjoy greater outside options (e.g., by increasing their labor force participation), it is expected that households in which the husband takes on typically female chores are less likely to dissolve, while couples in which the wife takes on typically male chores are more likely to divorce. The paper tests this hypothesis using data from the National Longitudinal Survey NLS) of Mature Women, the NLS Young Women, and the NLSY79. The prediction is strongly supported by the data with respect to older cohorts while it loses empirical relevance when tested on younger individuals. Furthermore, asymmetric effects between genders gain importance over time. Finally, an explanation for the relationship between divorce and marital investments is offered in terms of increasing intra-household time consumption complementarities. To this end, data from the American Time Use Surveys from 1965 to 2005 are studied to illustrate how time spent together by partners in the same household has become increasingly crucial in the American family.

JEL classification: J12, J13, D12

Keywords: Marital market, leisure, time use, survival analysis

Introduction

Marital unions are often described in economics as finding their rationale in the specific investment partners undergo with the aim of building a marital surplus which substantiates itself in the consumption of a public good produced within the household. As an example, the effort exerted by parents in the education of children has very often been seen as a natural representation of the way partners can contribute to the shaping of a union-specific marital capital¹. Nonetheless, the empirical investigation of the role of marital surplus within the household has been limited by the lack of a generally accepted definition of marital capital and of the investments that lead to its formation. In this paper, marital specific investments are defined as the way spouses share responsibilities for household chores and childcare and the focus is on the investigation of the link between the extent of spouses' commitments in the development of an intra-household surplus and the likelihood of success of the marital union². As the investments in terms of childcare and household activities are likely to increase the marital surplus, they are consequently likely to decrease the risk of divorce³. Nonetheless, several features characterizing the process of creation of a marriage-specific capital need to be accounted for. First of all, the investments that lead to the formation of a marital surplus are heavily influenced by a gender role bias that reverberates the effects of social norms in the management of household activities. Several studies on the inter-temporal allocation of time and on the evolution of female labor supply have shown that the incidence of time devoted to household activities still plays an important role in the determination of female career profiles⁴. Moreover, the well documented increase in labor market participation by American women in the last fifty years (Goldin (2006)) has been accompanied by a change in the patterns of time consumption of their spouses. Table 1 presents some evidence regarding the average amount of time (in minutes per day) spent in household chores and childcare by married individuals in the US in the last forty years. The data come from the American Time Use Surveys and show that in the last decade American men spend half an hour more in both activities with respect to during the sixties, while for women

¹Becker (1973), Becker (1974), Becker (1981).

²In this paper a marital union is a partnership characterised by a marriage. Due to data limitation, I will not include cohabiting couples in my analysis. The issue of selection into marriage and cohabitation studied by Thomson and Colella (1992), Lillard, Brien, and Waite (1995), Brines and Joyner (1999), Dush, Cohan, and Amato (2003) and Barham, Devlin, and Yang (2009) will be not addressed in the present work.

³Lundberg and Pollak (1994), Bergstrom (1996), Weiss (1997), Browning and Chiappori (1998), Browning, Chiappori, and Lechene (2006), Lundberg and Pollak (2007).

⁴See, among others, Gronau (1980), Blau and Kahn (2007) and Burda, Hamermesh, and Weil (2007). A theoretical characterization of the effects of social norms on the labor market outcome is given by Akerlof (1980) and Lindbeck (1997).

	1965	1975	1985	2003	Diff.03-65
Males					
House Chores	41.949 <i>74.49</i>	65.317 <i>106.3</i>	70.527 <i>98.85</i>	75.706 <i>111.14</i>	33.756
Childcare	16.612 <i>33.55</i>	17.843 <i>44.47</i>	17.681 <i>41.22</i>	46.404 <i>86.96</i>	29.793
Females					
House Chores	266.105 <i>139.0</i>	190.778 <i>134.0</i>	188.519 <i>127.49</i>	149.539 <i>129.6</i>	-116.566
Childcare	72.9 <i>45.99</i>	56.2074 <i>54.16</i>	58.974 <i>58.97</i>	94.884 <i>69.66</i>	21.984

*All differences presented in the last column are statistically significant at 1% level.
Standard deviations into brackets.*

Table 1: Average Time per Day (in Minutes)

the time devoted to household chores has dramatically decreased and the trend in childcare does not follow a monotonic pattern. The observation of these figures, which confirm the findings of Aguiar and Hurst (2007), should be enough to question the mechanical application of economic analyses purely based on the role of production complementarities and comparative advantages within households to contemporary American families.⁵ I test the relation between household investments and divorce using data from the National Longitudinal Survey (NLS) of Mature Women, the NLS of Young Women and the NLSY79. In particular, the observation of the descriptive statistics leads to define two sets of “female dominated” and “male dominated” activities. As male involvement in the of the chores is increasing over time, the hypothesis that households in which the husband takes on typically female chores are less likely to dissolve, while couples in which the wife takes on typically male chores are more likely to divorce is explored. The multiplicity of datasets allows for the introduction of an inter-temporal dimension in the analysis, which can be performed on three different cohorts of individuals on a length of time spanning from the mid-Sixties to the early years of the present decade. The estimated results suggest that the link between the way partners share household responsibilities and the hazard rate of divorce has changed considerably over time. In

⁵Becker (1981), Becker (1973), Becker (1974), Becker, Landes, and Michael (1977), Anderson and Little (1999), Pollak (2003), Cherlin (2004), Baker and Jacobsen (2007). The contribution of Becker is mainly based on a frictionless framework, which leads toward positive assortative matching (see Becker (1973) and Becker (1991)). Shimer and Smith (2000) and Smith (2006) show under which conditions positive (or negative) assortative matching can still be achieved when the hypothesis of frictionless matching is challenged.

particular, although the involvement of men in the performance of household activities, measured by the amount of time daily devoted to them, has dramatically increased during the last forty years, the explanatory power of male participation in house chores on the likelihood of divorce proves to be significant only with respect to the older cohorts of sampled individuals. Conversely, the empirical linkage between the hazard of divorce and male participation in female dominated activities tends to vanish in the most recent surveys.

These results suggest the need for the introduction of new dimensions in the study of the link between divorce and household activities, especially if related to the decrease in the divorce rates that has been witnessed in America in the last twenty years (Stevenson and Wolfers (2007)). I then enlarge the scope for complementarities within the household, stressing the importance for couples to enjoy the simultaneous consumption of goods. The partnership formed in the wedlock is then observed as a “consumption unit” instead of a mere production center. The vector of goods to be included in the feasible set is to be intended in a relatively broad sense. Due to data availability, the focus of the paper will be on the consumption of time. In this respect, the present work can be located in the same strand of literature on *togetherness* as developed in Hamermesh (2002) and Hamermesh (2007). The very same decision of getting married (and hence that of divorcing) directly depends not just on the way the partners complement each other in their abilities to produce income and goods to be consumed in the household, but also (and perhaps more importantly) on their forecast on the activities they will perform together, on the quality, and not on the quantity, of the time they intend to consume while simultaneously engaged in the same activities. The existence of substantial changes in the way American couples spend their time together over the last forty years is tested, making use of American Time Use. The results show that the way partners spend their time when together has changed over the considered time horizon. Although the total amount of time spent together has decreased in the last thirty years, the data show a considerable increase in the time being devoted to joint leisure activities. Furthermore, the estimates from quantile analysis indicate that the link between an additional minute of leisure time and togetherness is particularly strong for those individuals who already spend a relatively high amount of time with their partners. On the contrary, the time patterns in the link between togetherness and the time variables related to household activities and child care varies depending on sex of the respondent. A projection of these results on to the individual likelihood of divorce would not be appropriate, given the cross-

sectional nature of the time use data. Nonetheless, their implications can provide a useful tool in the development of new models for the interpretation of intra-household complementarities. In this respect, the next section provides the key theoretical elements shaping the context of my empirical analysis.

1 The Changes in Time Management and their Effects on Couples

Within the economic literature the process of formation of families is usually summarized by the assumption that “[C]ouples marry and stay married when the gains from marriage exceed the gains from being single”⁶. The relation between the occurrence of marriages and divorces and the utility achieved by the partners is therefore pivotal for the survival probabilities of marital relationships. Nonetheless, what determines the level of utility achieved by the couple is not totally clear. Following Becker (1991), a number of contributions have focused on the way spouses produce the public good whose consumption determines the utility level of the couple. In this respect, the division of labor within the family has been studied, with reference to the theory of comparative advantages and specialization in households, while the modes of consumption of the public good are generally neglected. The analysis proposed by Goldin (2006), which investigates female labor supply in the United States from the end of the nineteenth century to the present time, clearly indicates how the amount of time women devote to the labor market has been steadily increasing from the end of the Second World War until the mid-Nineties, and has only recently started to stabilize. This increase has been accompanied by an improvement in females’ education and a rise in women’s salaries, which have made time spent in household chores relatively more expensive, and an increase in the average age at first marriage. Moreover Aguiar and Hurst (2007) show that the time spent in leisure activities by married individuals has increased during the last four decades due to a reduction in work hours for men and a decrease in the time spent on household chores for women. The simultaneous occurrence of all these phenomena certainly contributed to the establishment of new patterns of time consumption within families, although the effects of these changes have certainly not been homogeneous across households. It appears therefore natural to

⁶Stevenson and Wolfers (2007), p.40.

study the likelihood of divorce in relation to the development of these new forms of household management. The analysis is based on the explicit assumption that different ways to share the responsibilities of the main household tasks can be directly linked to the success of the marital union and not only implies that the contribution of each spouse to these activities can explain the formation of a marital-specific capital, but it necessarily relates the success of a marriage to the observability of the effort exerted by each partner in the creation of the public good⁷. Furthermore, a model of allocation of time in which men tend to increase their involvement in household chores leads to the need for an investigation into the way individuals extract utility from their marital partnerships. Hamermesh (2002) proposes the explicit introduction of the time spent together by partners in the utility function of the household in order to establish a correlation between togetherness and gains from marriage. His conclusion is that partners' time is complementary in the sense that spouses are better off "having the possibility to consume time together".⁸ The possibility to study divorce rates in terms of their relation with the way partners split the chores and the possible emergence of time use complementarities is strictly connected to Hamermesh's point of view and represents the main focus of this paper. In the same spirit as in Stevenson and Wolfers (2007), consumption complementarities are defined as the extent of the spouses' joint consumption of public goods and quality time and are approximated by the amount of time devoted to shared leisure activities. The effectiveness of projecting the phenomenon of jointness in consumption onto the probability of divorce relies on a set of theoretical and methodological assumptions. In particular, the utility function of each partner needs to capture the desire for the joint consumption of leisure time. If we assume that the utility of an individual is increasing in the consumption of leisure, togetherness *per se* should imply that each partner is strictly better off when consuming leisure with the spouse than alone⁹. The benefit that partners can extract from the joint consumption of "quality time" goes beyond the simple summation of the individual benefit from leisure time and in this sense can be seen as a driving force toward the establishment of complementarities. The ability of couples to extract marginal utility gains from the time spent together is then to be interpreted as an indication

⁷Rasul (2006a) and Francesconi and Muthoo (2003) provide models in which the optimal allocation of resources in terms of child custody in the case of divorce is explicitly linked to the lack of control over the action of the counterpart in the fulfillment of a contractual agreement. In this respect these contributions relate their findings to the literature on contractual hold-up, as in Hart (1995), ch.4 and Laffont and Martimort (2002), ch.9.

⁸Hamermesh (2002), p.617.

⁹If we assume the utility of an individual only depends on her consumption of leisure time and on the state of the world s , where $s = 1$ if the partner is present at time of consumption, $s = 0$ otherwise, then togetherness can be expressed as $u(l, 1) > u(l, 0)$ and $u'(l, 1) > u'(l, 0)$.

of the quality of the match, whose realization determines the stability of the partnership¹⁰.

Although an investigation on the relation between time spent together and success of a match can appear redundant with respect to the reality of Western countries, a number of issues may still affect the effective transposition of the above theoretical claims onto empirical research. First of all, it is not possible to rule out the possibility that couples exist in which partners prefer not to spend their quality time together. In this respect, the possibility to rely on well established datasets characterized by numerically relevant samples guarantees the achievement of relatively robust results. Furthermore, no claims can of course be made in terms of the existence of any causality between the extent of jointness and the trends in divorce rates given the obvious relevance of the issue of endogeneity.

2 The Data

2.1 The National Longitudinal Survey

As the core of the empirical analysis proposed of section 3 consists in the investigation of the linkage between the allocation of household responsibilities and the likelihood of divorce across different decades, it is natural to rely on longitudinal data in order to fully explore the inter-temporal dimension of the relation between the two phenomena. In this respect, the data from the National Longitudinal Surveys (NLS) provide a great amount of relevant information. Out of the set of all the available NLS three datasets will be taken into consideration: The NLS of Mature Women (NLSMW), the NLS of Young Women (NLSYW) and the NLS of Youth 1979 (NLSY79)¹¹. The first two share a very similar structure, allowing for a relevant degree of comparability. In the NLSMW around 5,000 women are first interviewed in 1967 when aged between 30-44 and then are reinterviewed at irregular time intervals until 2007. In total I can count on 16 waves. Taking into consideration the fact that only women who got married (at least once) are at risk of divorce, I drop from the sample all the individuals who never married. In all, the used sample starts with 4,615 individuals and includes 52,892 observations.

The National Longitudinal Survey of Young Women (NLSYW) can be seen as a “twin dataset”

¹⁰Fernandez, Guner, and Knowles (2005) implicitly introduce the quality of the match in the couple indirect utility, according to the following quasi-linear specification: $V(I, q) = u(I) + q$ where q is the quality of the match and $u(I)$ is a (strictly increasing) function of the family income.

¹¹Full details about all these datasets are available on the web page: <http://www.bls.gov/nls/>.

with respect to the NLSW. Both the set of questions posed and the sampling strategy are in fact extremely similar to those described above. The interviews started in 1968 and the last one took place in 2003. The sampled individuals in this case are representative of different cohorts with respect to the respondents of the NLSMW, for their age being included between 15 and 24 years when first interviewed in 1968. By reducing the sample to all the individuals that have experienced marriage, I can make use of information on 4,316 women, with a total of 52,987 observations.

In both the NLSMW and the NLSYW the questions cover a multiplicity of fields and, apart from a consistent bulk of questions regarding the demographic, social and economic characteristics of the individual, respondents are also requested to provide information on the way they share some of the household responsibilities with the other members of the family. The set of household responsibilities included in my regressions is composed of: grocery shopping, childcare, cooking, cleaning the dishes, housekeeping, washing the clothes and garden maintenance. The questions related to this topic are designed in a way that allows to identify the person within the family who is mainly (but not necessarily the only one) responsible for the chore (which might be not only one of the spouses but also a third person). Table 2 shows some descriptive statistics related to the variables of interest. The figures present the percentage of women that indicated themselves or their husbands as the person responsible for a certain chore in the household. Simple observation of the table suggests a clear division between chores whose responsibility mostly pertains to women and those mostly performed by men (that in the set of available variables are represented by “yard maintenance”). The percentage of husbands which are (at least partly) responsible for the chores is systematically higher in the NLSYW than in the NLSMW and this regularity applies to all the household activities included in the analysis. Furthermore, with the notable exception of childcare, for which the role of men appears to have gained an extremely relevant impact, the percentages related to women have not changed in very significant way. This fact suggests that for younger cohorts a more active role of men in the management of the household can be highlighted, possibly as a substitute for the work of third persons.

The National Longitudinal Survey of Youth (NLSY79) substantially differs from the previous datasets. In this case in fact, the analysis is conducted on a sample of 13,201 individuals, including both women (7,006) and men (6,195). The interviews were first conducted in 1979, and the respondents were interviewed annually through to 1994 and are currently interviewed on a biennial basis.

	NLSMW			NLSYW		
	Wife	Husband	Number of Observations	Wife	Husband	Number of Observations
Grocery Shopping	61.10	26.31	49,058	68.32	28.87	45,584
Childcare	44.75	14.39	32,177	39.18	52.07	40,616
Cooking	70.63	14.25	48,873	70.62	22.80	45,543
Cleaning Dishes	53.54	18.57	48,864	52.53	22.88	45,501
House Keeping	57.64	14.40	48,861	57.06	23.34	45,548
Washing Clothes	74.79	7.38	48,874	77.97	13.02	45,563
Yard Maintenance	9.73	58.19	47,699	13.00	67.41	43,087

Questions: “Is Respondent the Main Responsible for the Chore?”

“Is the Husband the Main Responsible for the Chore?”

Table 2: Percentage of positive answers

Given the young age of the individuals included in this dataset, the attrition in this case represents a less problematic phenomenon. Nonetheless, due to the fact that the focus is on respondents that have been married at least once, the number of observations is relatively small. The total number of observations is 92,513. With the inclusion of these data I am able to collect a relevant set of variables on several cohorts, ideally covering the whole spell of time between 1967 and 2003. Tables 12 and 13 in Appendix 1 provide some descriptive statistics with respect to the variables included in all the NLS samples under investigation in this paper.

The study conducted on the NLSY79 dataset is slightly different, as the questions only ask whether the respondent is responsible for the chores (the list of activities is extremely similar to the one of the NLSMW and NLSYW). It is therefore not possible to identify the person responsible for the chore, were the respondent not in charge. In particular, the questions ask the respondent to indicate how often he or she takes care of a particular household activity. Table 3 shows the percentages of individuals which have indicated one answer among: “Half of the time”, “Most of the times”, “Always”. It can be noticed that the division of tasks between genders is once more evident. The fact that the list of activities is slightly richer comparing to those of NLSWM and NLSYW allows for a better identification of the chores that can be seen as mostly “male-oriented”. In particular we can refer to the percentages that characterize “outdoor chores”, “house maintenance” and (to some extent) “errands” as examples of these types of activities.

NLSY79				
	Wife	<i>Number of Observations</i>	Husband	<i>Number of Observations</i>
Childcare	95.40	10,079	37.29	4,248
Cooking	87.73	16,269	12.60	8,317
Cleaning Dishes	89.87	16,269	13.61	8,317
Errands	67.53	16,235	56.97	8,301
Grocery Shopping	85.42	16,232	40.38	8,316
House Keeping	91.95	16,269	16.58	8,298
Washing Clothes	90.21	16,259	13.23	8,317
House Maintenance	24.33	16,269	74.37	8,317
Outdoor Chores	29.71	16,250	63.00	8,301
Paperwork	62.21	16,247	46.85	8,303

Question: "Are you the one responsible for the chore?"

Table 3: Percentage of Individuals Answering: "Half of the Time and More"

2.2 Time Use Data

As already suggested in the introduction, the simultaneous occurrence of a number of social and economic changes that have led to an relevant increase in female labor supply and male participation in household activities might have directly affected the amount and the quality of the time spouses spend together. The second part of the present study aims to analyse of the extent of these changes and to explore their relation with the pattern of the divorce rate in the US. The extent of "togetherness" within American households, its inter-temporal evolution and its relations with the way partners spend their time is studied in this paper making use of data from three waves of the American Time Use datasets. Due to the increased availability of these datasets and the improved quality level of provided information, working with diary surveys has become a widely popular choice among applied researchers in the last few years. The already cited article by Aguiar and Hurst (2007), which focuses on the determinants of the increase in the leisure time of Americans in the last forty years, probably represents the most cited example within this strand of literature. A number of studies have focused on other phenomena related to family economics. With no presumption of completeness, it is worth mentioning the contributions of Ramey (2008) on the changes of home production patterns across time, Guryan, Hurst, and Kearney (2008) on the impact of education on the time spent by parents with their children and Datta Gupta and Stratton (2008) (using both American and Danish data) on the relations between changes in leisure time and bargaining power

	Total	Male	Females
Observations	247,117	41.39%	58.61%
Average Age	40.77 <i>10.75</i>	41.91 <i>10.78</i>	39.97 <i>10.66</i>
White	90.61%	89.38%	91.48%
Other Races	9.39%	10.62%	8.52%
With Children	67.00%	66.33%	68.70%
Low Education	13.17%	14.53%	12.06%
High School	34.17%	30.12%	37.03%
College	52.66%	55.35%	50.91%
Employed	74.07%	93.95%	60.04%
1st Income Quart.	8.84%	8.61%	9.00%
4th Income Quart.	39.69%	41.58%	38.35%

Standard deviations in italics

Table 4: ATUS Sample Descriptive Statistics

within the couple.¹²

The dataset I use is based on surveys of the American Time Use Data as harmonized by the American Heritage Time Use Study¹³. The data are collected from the 1965-1966 Multinational Comparative Time-Budget Research Project, the 1975-1976 American's Use of Time and the 2003 American Time Use Survey¹⁴. Inevitably, the sources of information are different, but all the datasets are characterized by a considerable degree of homogeneity in almost all the relevant variables. For instance, the time use variables are rather consistently categorized across surveys. Each individual is asked to indicate the amount of minutes she spends in every activity she carries out during the day and in the potential secondary activities she might carry out together with the main ones. In my analysis I will concentrate on main activities only. In this way I try to avoid an overestimation of leisure time, as some of the activities included in the broad category of leisure can typically be performed along with others (for example, indoor leisure and childcare). The total

¹²As an example of a time use analysis not directly linked to family economics, see Aguiar and Hurst (2008). For a theoretical approach to the relation between time allocated in home production and market work and divorce and marital rates see Greenwood and Guner (2004).

¹³For more details on the data and the harmonization procedures, see <http://www.timeuse.org/ahtus/>

¹⁴The American Heritage Time Use Study also includes waves from 1985 and 1993. Nonetheless, these waves cannot be included in my analysis as they lack two extremely relevant variables: the 1985 survey does not include any information on the time each individual spends with their partner, while in the 1993 dataset the sampled individuals are not required to provide any details regarding their marital status.

amount of minutes indicated by every person is equal to 1440, so that the whole day is covered. The number of activities which can be chosen varies a little across surveys, from a minimum of 85 up to 94. I grouped these variables into 13 categories, summarizing the main activities: work, education, household chores, purchases, childcare, adult care, voluntary activities, leisure, sport, social activities, art, relaxation (including sleep), travel (not toward work place)¹⁵. Furthermore, in these surveys the interviewed individuals are also requested to specify the amount of time they spend alone, with their partner and with other people. These last variables represent an important tool in order to disentangle the differences in the way couples have changed their time consumption patterns across the last four decades. Table 4 shows some descriptive statistics of the data. In total, the sample I use for my analysis is comprised of 247,117 married individuals, 58.61% of which are women, aged 21 to 65. The survey which contributes the most is the one of 2003, in which 177,000 individuals are included.

3 Household Responsibilities and Probability of Divorcing

Tables 2 and 3 in Section 2.1 provided some evidence on the way partners share household responsibilities across different decades. By including these variables in the set of regressors used to study the probability of divorce, I investigate how different sharing rules in home activities may be correlated with the stability of a marriage.

The empirical strategy employed in this section is that of a standard survival analysis on discretely grouped data (but with a continuous underlying survival process), performed through a complementary log-log specification¹⁶, in which the dependent variable is given by the hazard rate of divorce. Each individual is followed for the entire duration of her marriage. For each dataset I run a regression in which the dependent variable is a dummy which takes value 0 in every period the individual is married; if the individual divorces the dummy takes value 1 in the first year of divorce and the individual is then dropped from the sample (and possibly included again in case of new marriage). The dependent variable is regressed against a set of independent ones which

¹⁵The average times spent in each activity in different decades are reported in table 16 and table 17 in the Appendix.

¹⁶For a good theoretical introduction to survival analysis see Jenkins (2005) and Wooldridge (2001), chapter 20. Details on how to perform the estimation of the suggested specification can be found in Jenkins (1995) and Jenkins (1998). Hosmer, Lemeshow, and May (2008) provide a good summary of applied techniques for survival analysis.

contain the log of the length of the “treatment period” (i.e. the marriage), several personal and demographic characteristics and the set of dummy variables on the responsibility of household chores. The equation to be estimated takes the following form:

$$h(a_j, X) = 1 - \exp[-\exp(\beta'X + \gamma_j)] \quad (1)$$

which expresses the hazard of divorce in period a_j as a function of the set of covariates X and of the baseline term γ_j .¹⁷

Table 5 reports the results of the empirical analysis on the NLSMW and NLSYW with respect to the household chores included in the set of regressors and a few other relevant variables (the complete regressions and a description of the variables are presented in Appendix 2). For each dataset column (1) shows the results obtained without taking unobserved heterogeneity into account, while column (2) presents the results observed when an error term is introduced to control for unobserved heterogeneity¹⁸. All the coefficients are presented in the form of hazard ratios, so that each figure can be interpreted as the proportional effect induced on the hazard of divorce by a change in the regressor¹⁹. The corresponding results in terms of hazard rates can be found in tables 14 and 15 in Appendix 2. As the results do not vary significantly across columns any comment will be based on the results presented in column (1), but can of course be easily applied to column (2). The average duration of a marriage for the Mature Women is above 20 years, while it does not reach 7 years for the individuals included in the Young Women sample, so that the differences in the effects of the duration of marriage in the samples is to be linked to a cohort effect. This is in line with what has already been found in the relevant literature²⁰ and any conclusions to be drawn with respect to this dataset should always take this difference into consideration. Hence, it is quite surprising to observe that the impact of remarriage is particularly important with respect to young women. Of course, in the NLSYW sample the number of respondents who have already experienced more

¹⁷More details on adopted functional form can be found in Tabasso (2010). The estimation procedure has also been repeated using a *logit* specification, obtaining results which are very similar to those presented here.

¹⁸In what follows I will assume that the error term follows a zero-mean Normal distribution and the results of the estimation obtained taking into account unobserved heterogeneity will be presented along those where this phenomenon is not accounted for. An alternative specification would consist of assuming that the error term follows a Gamma distribution (see Abbring and Berg (2007)). The results obtained with such a specification are very similar to those obtained assuming a Normal distribution and therefore are not presented.

¹⁹The way to interpret hazard ratios when controlling for unobserved heterogeneity in the context of proportional hazard models has been extensively analyzed by Hougaard (1986). For a discussion on the validity of the interpretation of the coefficients when the error term is normally distributed, see Gutierrez (2002).

²⁰See, for example, Weiss and Willis (1997).

than one marriage is relatively limited (less than 1,000 individuals out of 5,200). To some extent, the parameter suggests that the attitude toward marriage *per se* can play an important role in the stability of a partnership²¹, so that if a woman has experienced a divorce in the first marriage, the likelihood of divorce in case she remarries is higher compared to the hazard for those that have never experienced a divorce²².

Focusing more on the effect of the responsibility of the household chores, some regularities in the estimated parameters deserve to be highlighted. All coefficients are to be interpreted in relation to the excluded category, which is that of individuals other than wife or husband being responsible for the chore. In both samples the majority of the statistically significant parameters point in the direction of a negative effect (indicated by a coefficient between 0 and 1) and are linked to activities performed by the husband. In the results related to the NLSMW samples, up to three activities are connected to a reduction in the hazard of divorce when (at least partly) performed by the husband, namely grocery shopping, house cleaning and childcare. The latter is the only variable that still presents a negative and statistically significant relation in the study conducted on the NLSYW data. Linking this evidence to what is observed in section and in particular to the fact that the average time men spend on childcare and household chores is increasing over time and assuming a (perhaps stereotypical) point of view in which the woman is traditionally responsible for housekeeping activities and the man takes care of the garden and the outdoor tasks²³, the estimated parameters suggest that moving away from this framework toward a situation in which men are increasingly responsible for the household activities, positively relates to the duration of a marriage but such a result does not appear to be robust in a long run perspective. Different evidence characterizes the pattern of the coefficients related to “yard maintenance”, the only “male dominated” activity included in the samples under investigation. With respect to the sample of the Mature Women, the parameters related to this chore suggest that the performance of these tasks by the husband is negatively correlated to the likelihood of divorce and this result is confirmed in the analysis conducted on the Young Women sample. But with respect to this last dataset, we can

²¹Although within a different context, some of the findings of Lillard, Brien, and Waite (1995) confirm this hypothesis.

²²The number of marriages can also be related with the divorce law. The impact of changes in legislation on the number of divorces per year, is a controversial topic to which scholars have devoted much attention and will not be analysed here. See Friedberg (1998), Wolfers (2006), Gray (1998), Stevenson (2007), Rasul (2006b), Lee and Solon (2011).

²³Some hints about the validity of this point of view can be found in Becker (1973), Akerlof and Kranton (2000) and Cherlin (2004).

	NLSMW		NLSYW	
	(1)	(2)	(1)	(2)
Duration of Marriage	0.590*** (-2.64)	0.592** (-3.88)	1.665*** (2.51)	2.436*** (4.47)
Number of Marriages	1.447 (1.44)	1.559 (4.22)	1.807*** (1.40)	2.298*** (4.15)
Age	1.483*** (4.48)	1.490*** (10.77)	1.964*** (4.43)	2.127*** (10.18)
Age ²	0.997*** (-4.14)	0.997*** (-10.03)	0.992*** (-4.12)	0.991*** (-9.60)
Grocery Wife	0.786 (-1.19)	0.780 (-1.21)	0.792 (-1.55)	0.778 (-1.33)
Grocery Husband	0.255*** (-3.72)	0.251*** (-3.72)	0.781 (-1.47)	0.759 (-1.34)
Childcare Wife	1.111 (0.67)	1.118 (0.69)	1.085 (0.69)	1.069 (0.44)
Childcare Husband	0.525** (-1.97)	0.523** (-1.96)	0.627*** (-3.54)	0.546*** (-3.62)
Cooking Wife	0.953 (-0.22)	0.952 (-0.22)	1.052 (0.36)	1.035 (0.20)
Cooking Husband	0.688 (-0.88)	0.680 (-0.90)	1.036 (0.22)	1.034 (0.17)
Dishes Wife	1.119 (0.51)	1.113 (0.48)	0.870 (-1.17)	0.842 (-1.15)
Dishes Husband	0.873 (-0.36)	0.875 (-0.35)	0.909 (-0.61)	0.856 (-0.81)
House Keep. Wife	0.816 (-0.88)	0.816 (-0.87)	0.947 (-0.42)	0.912 (-0.56)
House Keep. Husband	0.305** (-2.08)	0.301** (-2.08)	1.078 (0.46)	1.049 (0.24)
Clothes Wife	0.714 (-1.55)	0.711 (-1.54)	0.783* (-1.80)	0.691** (-2.11)
Clothes Husband	1.166 (0.30)	1.176 (0.32)	0.783 (-1.28)	0.754 (-1.19)
Gardening Wife	1.227 (1.03)	1.253 (1.10)	1.600*** (3.70)	1.887*** (3.75)
Gardening Husband	0.180*** (-7.96)	0.179*** (-7.89)	0.670*** (-3.47)	0.584*** (-3.65)
Log lik.	-995.1	-994.9	-2177.8	-2165.3
Chi-2	377.2	234.0	924.9	359.7
Observations	25537	25537	22671	22671

Dependent Variable: Marital Status, 0 = Married, 1 = Divorce

Table 5: Clog-log analysis

certainly notice how the parameter characterizing this variable when performed by the wife appears to be larger than 1 (and statistically significant), suggesting an increase in the risk of divorce of a magnitude of 60%, *ceteris paribus*. The coefficients indicate the existence of a relevant rigidity in the way the division of tasks relates to the hazard of divorce, with particular reference to the possibility for men to delegate “male chores” to women. This result cannot be considered surprising: The analysis of the Time Use Data has already highlighted a considerable reduction in the time women tend to devote to household chores in favour of an increase in time dedicated to leisure activities. The scope for a substitution of female time for that of men in the performance of chores such as the maintenance of yards is therefore extremely limited, especially with respect to younger cohorts.

The estimated results presented in table 5 are confirmed by the figures shown in table 6, which summarizes the results of the regressions performed on the data available through the National Longitudinal Survey of Youth 1979 (the whole set of results can be found in tables 15)²⁴. In this case the variables related to household chores are recorded as dummies taking the value of one if the respondent is in charge of the chore, zero otherwise. If we focus on the subset of variables composed of “errands”, “outdoor chores” and “house maintenance”, it is easy to notice that the relation of these regressors with the hazard of divorce follows the same patterns previously highlighted with respect to “yard maintenance”. The possibility that the wife is (at least half of the time) the person in charge of carrying out these chores relates to an increase in the hazard of divorce, validating the hypothesis of a limited substitutability of partner times on predominantly male activities. Furthermore, it is interesting to notice that the link between the participation of men in household activities on the likelihood of divorce does not appear to be very relevant (the only exception being the coefficient related to “outdoor activities”, which goes in the direction already outlined with respect to the set of “male activities”). The estimates in this sense confirm the pattern already outlined with respect to the differences between the results obtained with the NLSMW and the NLSYW data and they can be interpreted as reflecting a different perception of men’s roles within the household: Over the last four decades the involvement of men in house activities has evolved from a rare event to a common practice so that no actual relation between these activities and the duration of a relationship can be detected²⁵. As the male participation in the chores in terms of

²⁴Again, column (1) shows the results when heterogeneity is not taken into account, while column (2) presents the coefficient obtained when correcting for heterogeneity. Given the evident similarity of the two sets of results only the results obtained in the corresponding column (1) are reported in the Appendix.

²⁵The estimates presented in tables 5 and 6 are based on the analysis of samples characterized by a relative high number of observations. This fact can be taken into consideration when evaluating the significance level of

NLSY79	Men		Women	
	(1)	(2)	(1)	(2)
Duration of Marriage	0.545*** (-2.75)	0.545*** (-2.73)	0.476*** (-5.58)	0.426*** (-4.79)
Number of Marriages	1.238 (0.46)	1.237 (0.46)	1.287 (1.29)	1.305 (1.13)
Age	2.267*** (4.60)	2.276*** (4.40)	1.315*** (2.80)	1.480*** (3.07)
Age ²	0.988*** (-4.69)	0.988*** (-4.53)	0.997** (-2.34)	0.995*** (-2.69)
Resp. Childcare	1.004 (0.02)	1.004 (0.02)	0.896 (-0.44)	0.976 (-0.08)
Resp. Cooking	1.017 (0.04)	1.019 (0.05)	0.503*** (-3.42)	0.449*** (-3.07)
Resp. Dishes	1.529 (1.17)	1.525 (1.15)	1.014 (0.06)	1.054 (0.19)
Resp. Grocery Shopping	0.846 (-0.67)	0.846 (-0.67)	0.752 (-1.45)	0.692 (-1.54)
Resp. Housekeeping	0.850 (-0.52)	0.852 (-0.51)	1.569* (1.72)	1.503 (1.29)
Resp. Washing Clothes	0.772 (-0.51)	0.769 (-0.52)	0.885 (-0.55)	0.840 (-0.64)
Resp. Errands	1.098 (0.45)	1.096 (0.43)	1.593*** (3.26)	1.718*** (3.14)
Resp. House Maintenance	0.981 (-0.08)	0.980 (-0.08)	1.321** (2.15)	1.467** (2.36)
Resp. Outdoor Chores	0.518*** (-2.67)	0.517*** (-2.65)	1.047 (0.35)	1.025 (0.15)
Resp. Paperwork	1.831** (2.53)	1.826** (2.47)	1.083 (0.58)	1.068 (0.40)
Log lik.	-354.3	-354.3	-1057.6	-1054.8
Chi-2	332.2	199.9	389.7	258.6
Observations	3019	3019	5522	5522

Dependent Variable: Marital Status, 0 = Married, 1 = Divorce

Table 6: Clog-log analysis

minutes per day considerably increases over time the empirical linkage between the participation and its marginal contribution to the stability of the marital union loses momentum across cohorts.

It is possible to connect these findings to the historical trends in the American divorce rate. It is known that this rate (either calculated as the number of divorces per thousand of married individuals or simply as the number of divorces per thousand of individuals) has been decreasing in the last twenty years, somehow differentiating the US experience from that of all the other developed countries²⁶. The estimates obtained with respect to the NLSMW sample suggest that a more balanced intra-household division of tasks can be considered as one of the elements that might have substantially contributed to the inversion in the trend of divorces, from increasing to decreasing, that can be observed from 1982 onward. With respect to more recent cohorts, as seen, the relation between marriage success and male involvement in female dominated tasks is not particularly strong, but the decrease in the divorce rate still characterizes the American marital market. It appears therefore natural to argue for the possibility of introducing a new dimension in the analysis of the patterns of allocation of time and responsibilities within families. In particular, in the next section I will try to investigate whether other changes beyond the simple division of chores might have occurred in U.S. households over the last four decades. As has already been pointed out by Aguiar and Hurst (2007), the amount of time Americans devote to leisure activities has consistently increased over this temporal horizon. This fact highlights the possibility of investigating whether couples' decisions to spend time together is nowadays more likely to depend on the availability of quality time, here represented by leisure, as compared to the last forty years.

4 The Results on Time Consumption

The starting point for the empirical analysis of the relation between time at home and the extent of quality time consumed by partners consists in the identification of the across decades correlation patterns between the amount of time partners spend together, identified by the variable “Time Spent with Spouse” (TWS), and a set of relevant time use variables. More specifically, I link TWS to a

the coefficients, making use of the formula developed by Leamer (1978), ch.14. The suggested statistic is given by $F > \frac{T-k}{p} \times (T^{p/T} - 1)$, where T is the number of observations, $T - k$ the degrees of freedom and p summarizes the number of restrictions. Even after having obtained the critical thresholds according to this method, most of the statistically significant parameters can be considered valid, with the only possible exception of “Childcare Husband” for NLSMW.

²⁶Stevenson and Wolfers (2007) provide a relevant amount of data for the study of the decrease in the American divorce rate

	1965	1975	2003	Diff.03-65
Males				
Leisure	19.4219	19.0704	32.1297	12.708
House Chores	41.9492	65.3166	75.7055	33.756
Childcare	16.6116	17.843	46.4042	29.793
Time with Spouse	244.116	345.704	317.049	72.933
Females				
Leisure	18.8104	15.3027	33.0473	14.237
House Chores	266.105	190.778	149.539	116.566
Childcare	72.900	56.2074	94.884	21.984
Time with Spouse	235.252	334.57	289.928	54.676
<i>All differences presented in the last column are statistically significant at 1% level.</i>				

Table 7: Average Time per Day (in Minutes)

bundle of time consuming activities and see whether changes in the composition of this bundle might have an influence on the way individuals shape their time with the partners. As including all the thirteen time use categories described in Section 2.2 into my empirical study would of course lead to relevant problems in terms of multicollinearity and endogeneity of the time allocation choice, I limit the number of activities to be included in the set of regressors to three: Household chores, childcare and leisure. Although a certain degree of arbitrariness cannot be avoided when implementing this kind of selection, the three variables appear to be particularly relevant for the present analysis. The importance of the first two has already been assessed with respect to the relation between their inter-temporal management of across families and the likelihood of divorce. A substantive modification over time on the way these activities relate to the amount of time each individual spends with her/his spouse could represent a good indicator of changes in the way couples shape their time together. The relevance of the time spent in “leisure” in explaining the amount of time partners spend together is to be related to the attempt of linking TWS with the increased importance achieved by time use complementarities within the couple. For instance, leisure is to be seen as a proxy for all those activities that people may perform in order to relax and amuse themselves. In this respect, its positive relation with TWS would represent a first confirmation for an enhanced role of consumption complementarities. Table 7 shows the average amount of minutes per day spent in each of the three relevant activities and in TWS across the three decades under investigation. In order to first assess the magnitude of the relation between time spent together and time devoted to the selected activities I use OLS to estimate:

$$TWS_i = \alpha + X_i\beta + Z_i\gamma + \sum_{k=1}^3 \theta_k t_{i,k} \quad (2)$$

where the dependent variable, *Time Spent with Spouse* is regressed against a set of variables X that control for personal characteristics, such as age, education, income, presence of children, area where the individual lives (urban or rural), job status and the matrix Z composed of a set of controls for the day of the week and the season in which the individual kept her diary²⁷. The parameters θ relate to each of the three critical time use variables (household chores, childcare and leisure) and are the focus of interest in this section. A positive sign for these coefficients indicates that an increase in the time spent in the included activity is related to an increase in the time spent with the spouse. Furthermore, considering that the regressand and the regressors are calculated in minutes, the interpretation of the parameters is quite straightforward as the estimated value indicates the change in TWS in terms of minutes per day that can be linked to a one minute increase in the time devoted to the activity under consideration. The analysis is initially performed separately on females and males and for each wave and is then complemented by the OLS estimation of the following equation²⁸:

$$TWS_i = \alpha + X_i\beta + Z_i\gamma + S\delta + \sum_{k=1}^3 \theta_k t_{i,k} + \sum_{k=1}^3 \sum_{j=1}^4 \lambda_{k,j} t_{i,k,j} s_j. \quad (3)$$

where all the observations from the three waves are pooled in a unique dataset and year effects and all the interaction terms between each time use variable and the year dummies are included in the set of independent variables. In particular, the matrix S contains three dummy variables for the survey years and the parameters λ are meant to capture the trend effects.

The coefficients related to the time use variables obtained running eq. (2) separately for each wave are summarized in Table 8²⁹. The estimated parameter for leisure is positive for both genders, and in both cases the effect appears to gain relevance over time. For men, in fact, in 1965 one additional minute of leisure would have been related to an increase in the time spent with their

²⁷The use of ordinary least squares for estimating equations 2 and 3 can be problematic as, by definition, the daily time spent with the spouse can not be negative. In order to test the robustness of my results, the two equations have been re-estimated through a Poisson regression procedure. The results obtained via this procedure are absolutely in line with those delivered by the OLS method, in terms of magnitude, sign and significance of the parameters and with respect of the distribution of the estimated variable.

²⁸Eq. (2) can be simplified into $TWS_i = \alpha + X_i\beta + Z_i\gamma + \theta t_{i,k}$ where each time use variable is individually introduced into the regression. The results obtained by regressing this equation are extremely similar to those reported with respect to eq. (2) and are therefore not presented in the paper.

²⁹The coefficients for all the control variables are presented in tables 19 and 20 in Appendix 2.

Males	Year 1965	Year 1975	Year 2003
Leisure	0.0525** (2.46)	0.269*** (9.66)	0.669*** (56.79)
House Chores	0.0481*** (2.98)	0.113*** (6.97)	0.0718*** (9.75)
Childcare	0.258*** (7.17)	0.427*** (11.09)	0.192*** (19.23)
R^2	0.272	0.207	0.262
Adjusted R^2	0.271	0.206	0.261
Observations	17043	20914	74200

Females	Year 1965	Year 1975	Year 2003
Leisure	0.165*** (7.82)	0.109*** (4.37)	0.415*** (43.18)
House Chores	-0.0949*** (-12.41)	0.0150 (1.46)	-0.0419*** (-8.10)
Childcare	-0.0274** (-2.20)	-0.240*** (-13.43)	-0.00839 (-1.35)
R^2	0.249	0.170	0.213
Adjusted R^2	0.248	0.170	0.213
Observations	25352	30777	102482

t Dependent Variable: Daily Time Spent with Spouse

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: OLS Regression, Time Use Variables Coefficients From General Regression

spouse of just 0.05 of a minute. The impact of one more minute of leisure in 2003 is certainly more noticeable, as it is estimated at 0.66 of a minute. A statistically significant positive sign (although with a smaller magnitude) also characterizes the coefficient obtained regressing leisure on TWS for women. Taking into consideration the averages reported in table 1, that show a reduction in TWS as we move from the 1975 wave to that of 2003, the increasing effect of leisure on the dependent variable indicates a change in the composition of the time spent together. The estimated link between leisure and TWS directly relates to the hypothesis of a direct relation between the partners' utility and the quality of the time spent when together and represents a first, solid stepping stone toward a theory explaining the importance gained by time use complementarities within couples.

The parameters related to the time devoted to household chores and childcare also contribute to define a new pattern in the way wives and husbands shape their joint consumption of time.

	Males		Females	
1975	39.97***	(16.13)	42.84***	(14.77)
2003	-17.65***	(-9.00)	-12.28***	(-5.39)
Leisure	0.185***	(8.21)	0.194***	(9.74)
Leisure*1975	0.079***	(2.44)	-0.170***	(-5.92)
Leisure*2003	0.505***	(20.42)	0.258***	(11.90)
House Chores	0.146***	(10.83)	-0.055***	(-8.00)
House Ch.*1975	-0.018	(-0.97)	0.093***	(8.66)
House Ch.*2003	-0.064***	(-4.29)	0.010	(1.21)
Childcare	0.168***	(5.27)	-0.031***	(-2.88)
Childcare*1975	0.162***	(3.62)	-0.185***	(-11.02)
Childcare*2003	0.034	(1.03)	-0.003	(-0.29)
R^2	0.259		0.220	
Adjusted R^2	0.259		0.220	
Observations	125304		177392	

t Dependent Variable: Daily Time Spent with Spouse

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: OLS Regressions, Coefficients for Year Dummies, Time Use Variables and Interaction Terms

For males, in fact, a constant increase in the average time spent in these activities does not imply an increase in the magnitude of the (always positive) parameters; The male contribution to house chores and childcare is in present times more relevant in quantitative terms than in previous decades, as seen in table 7, and it is still linked to an increase in the time the husbands spend with the wives. Nonetheless, the marginal contribution of these activities in “explaining” TWS decreases over time. For women, the evolution of the parameters across waves does not define a monotonic pattern. The coefficients are generally of smaller magnitude if compared to those observed for men, and always negative when statistically significant. Although the difference in the size of the estimated parameters for Household Chores between 1965 and 2003 is quite small, the fact that while the total amount of time devoted to these activities between the same interval of time has dropped considerably, the coefficient for 1965 is still the larger in absolute value suggests a reduction in the across time degree of substitution between household chores and time with the partner. And this lack of a relation between the the dependent variable and its regressors is more evident if we focus on Childcare, for which an increase in the total amount of time across waves is linked to a final coefficient which shows no statistical relation with TWS.

Table 9 presents the results from the estimation of eq. 3, the aim being to further investigate the way the relation between the time use explanatory variables and TWS changes over time, by explicitly introducing the interaction terms between surveys and time use variables among the regressors. The set of the year dummies and interaction terms does not include the 1965 wave so that the results can be interpreted as changes with respect to this baseline year. The fact that for both men and women the survey year parameters show a change in sign simply reflects the non-monotonic time trend in the amount of time couples spend together, as already highlighted in table 1. Focusing on the time use variables, the emergence in recent years of a relevant link between leisure and time spent with the partner is once more evident. For both men and women the interaction term between leisure and the 2003 wave is characterized by a positive coefficient whose magnitude overcomes that of the non-interacted time variables. In this sense, although the average amount of minutes per day devoted to leisure noticeably increased in the last forty years, the marginal explanatory power of this variable with respect to TWS still gains relevance. This kind of regularity cannot be observed with respect to the other time use variables. For men, the interaction terms related to household chores define a negative trend which acquires magnitude and statistical significance over time. Hence, the inter-temporal changes that characterize these parameters move in the opposite direction to that identified with respect to leisure. An increase in the average daily amount of time devoted to chores tends to be linked to a reduction in the time spent with the wife. The corresponding parameters for women show an opposite pattern in terms of signs across interaction terms, but it is important to stress that the 2003 interaction terms fail to achieve any statistical significance, so that establishing whether a correlation in the changes in the dependent variable and in the time devoted to household chores exist is not possible.

Of course as leisure emerges among the included time use variables as the only regressors consistently related to TWS across time and with a particularly strong link in the last wave, it is important to recall that the way women and their spouses spend their time could have been strongly influenced by the changes in the social context that might have taken place over the spell of time under consideration. The reference is in particular with respect to the female participation to the labor market. In 1965, 30% of the interviewed women were working fulltime, while in 2003 the corresponding percentage had gone up to 46%. In order to better identify the effects of this intertemporal change, the analysis based on (3) was repeated splitting the sample of women between non-workers and

	1965	1975	2003	Diff.03-65
Not Working Women				
Leisure	20.783	12.943	31.089	10.306
House Chores	304.343	215.489	173.367	-130.976
Childcare	90.136	69.207	122.976	32.840
Time with Spouse	247.873	351.998	294.716	46.843
Working Women				
Leisure	14.206	18.303	35.314	21.108
House Chores	179.262	152.084	121.956	-57.306
Childcare	33.837	34.857	62.365	28.528
Time with Spouse	206.281	307.733	284.385	78.104

* Estimated;

All differences presented in the last column are statistically significant at 1% level.

Table 10: Average Time per Day (in Minutes)

workers. Table 10 shows the average amount of minutes per day spent by working and non-working women in the activities we have been focusing on, while table 11 presents the results for the OLS regressions (the parameters for all the other variables are included in the Appendix, table 22).

The regression results show several differences between the two set of individuals. As for non-working women the estimated coefficients tend to reproduce the same inter-temporal evolution outlined for the whole female sample (and this result cannot be considered surprising for the set of non working women being characterised by a higher cardinality than that of the employed ones), the parameters for those women that declare to work full-time considerably diverge from those observed so far. In particular, although the parameter characterising the link between TWS and leisure *per se* is still positive and significant, the time trend associated to this variable shows that such a relation is negative in 1975 and potentially non existent in 2003. The estimates for the other time use variables also do not lead to the identification of clear connection between the observed increase in the total TWS for working women and time spent on these activities over the last four decades.

All the sets of results presented in this section suggest the existence of strict correlation between the way partners model their leisure activities and the time they spend together. Furthermore (with the only exception of the coefficients related to working women), such a link stands out from the whole group of estimates for its reinforcement over time. By connecting these results to the hypotheses on the relation between time spent together and utility of the partners, as outlined in section 1, the hypothesis that in recent years the time spent together is to be identified more as

Females	Non-Working		Working	
1975	36.66***	(4.22)	47.51***	(11.46)
2003	-38.13***	(-11.03)	7.11***	(2.24)
Leisure	0.094***	(3.92)	0.369***	(10.00)
Leisure*1975	-0.059	(-1.53)	-0.392***	(-8.44)
Leisure*2003	0.396***	(14.78)	0.044	(1.15)
House Chores	-0.130***	(-14.46)	0.005	(-0.37)
House Ch.*1975	0.142***	(10.32)	0.019	(0.98)
House Ch.*2003	0.038***	(3.46)	0.023*	(1.60)
Childcare	-0.096***	(-7.81)	0.107	(4.30)
Childcare*1975	-0.228***	(-11.41)	-0.131***	(-3.75)
Childcare*2003	0.067***	(5.07)	-0.146***	(-5.61)
R^2	0.215		0.233	
Adjusted R^2	0.215		0.233	
Observations	102322		75070	

t Dependent Variable: Daily Time Spent with Spouse

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: OLS Regressions, Coefficients for Year Dummies, Time Use Variables and Interaction Terms

quality time and less with the simple performance of routine household activities appears reinforced. At this stage no obvious claim can of course be made neither on the direction of the causality of this link nor regarding the possible implications of this correlation on the divorce rates. Nonetheless, a further level of analysis can be implemented on the same data so as to shed some light on how the outlined relations between the time use variables and our measure of togetherness vary across different couples. In this sense eq. 2 is used as a baseline for performing a set of quantile regressions on the same group of variables already included in the previous estimations. In figures 1 and 2 the parameters obtained by the quantile regression at decile level are plotted for each of the time use variables included among the regressors³⁰. The graphs respectively refer to females and males and are presented separately for each year. The estimates can be interpreted as the marginal effects on the time spent with the spouse due to a one minute change of the covariate. The confidence intervals (indicated by the shadowed areas) are obtained via a bootstrap procedure based on a thousand repetitions³¹. The dashed lines indicate the parameters obtained in the corresponding

³⁰The independent variables included in the quantile regressions are the same as in the OLS analysis. The complete list of regressors is included in the Appendix. The results of the quantile regressions for the non time use variables are not reported but can of course be made available by the author.

³¹For the validity of the bootstrap procedure with respect to quantile regressions and the optimal number of

OLS regressions.

By comparing the plotted lines with the OLS estimates it is evident that in some cases the linear regression does not fully capture the “inter-quantile” changes of the effects on the dependent variable. It is worth noting that for women, the parameters associated with leisure time tend to show a different pattern in comparison to those related to household chores and childcare. With respect to these last two variables, in fact, the effect of an increase of the time spent on these activities generally appears to be decreasing (the only notable exception being the coefficients related to childcare in 1965). So for those women who already tend to spend a relatively high amount of time with the partner, the negative link between the house and family related activities and “togetherness” is particularly relevant. This evidence was at least partially captured by the negative signs of the OLS coefficients presented in table 8. The opposite results characterize the impact of a one minute increase in leisure. The coefficients in this case vary considerably across the distribution, with the larger effects being observed on the higher deciles. In particular, a one minute increase in the daily amount of time devoted to leisure is related to an increase in togetherness of only 3 seconds for individuals located in the lowest decile of the distribution, while for individuals in the right tails of the distribution, such an increase is linked to an increase in joint time consumption of almost 45 seconds. This pattern appears to be rather systematic in 1965 and 2003, while the positive sign associated with the OLS parameter in 1975 seems to be largely driven by the huge increase in the parameter values observed with respect to last two deciles.

The signs and the magnitudes of the parameters obtained with the OLS regressions clearly differed between genders. It is therefore not surprising (and actually quite reassuring with respect to the validity of the results commented so far) that the graphs resulting from performing the quantile regressions on the male sample considerably differ from those related to women. The major disparities emerge with respect to the relation between the dependent variable and an increase of the time devoted to childcare. The largely negative effects that characterized the results related to women are now completely overturned. The coefficients for men are steadily positive across deciles, and in particular, the parameters for 2003 appear to be reasonably close to the least squares estimate. With respect to an increase in leisure, the results in this case are less straightforward as the shapes of the graphs tend to change overtime. Nonetheless, as already noted for women, both the 1965 and the 2003 estimates show a positive trend across deciles. This particular result

repetitions, see Koenker and Hallock (2000), Andrews and Buchinsky (2000) and Koenker and Hallock (2001).

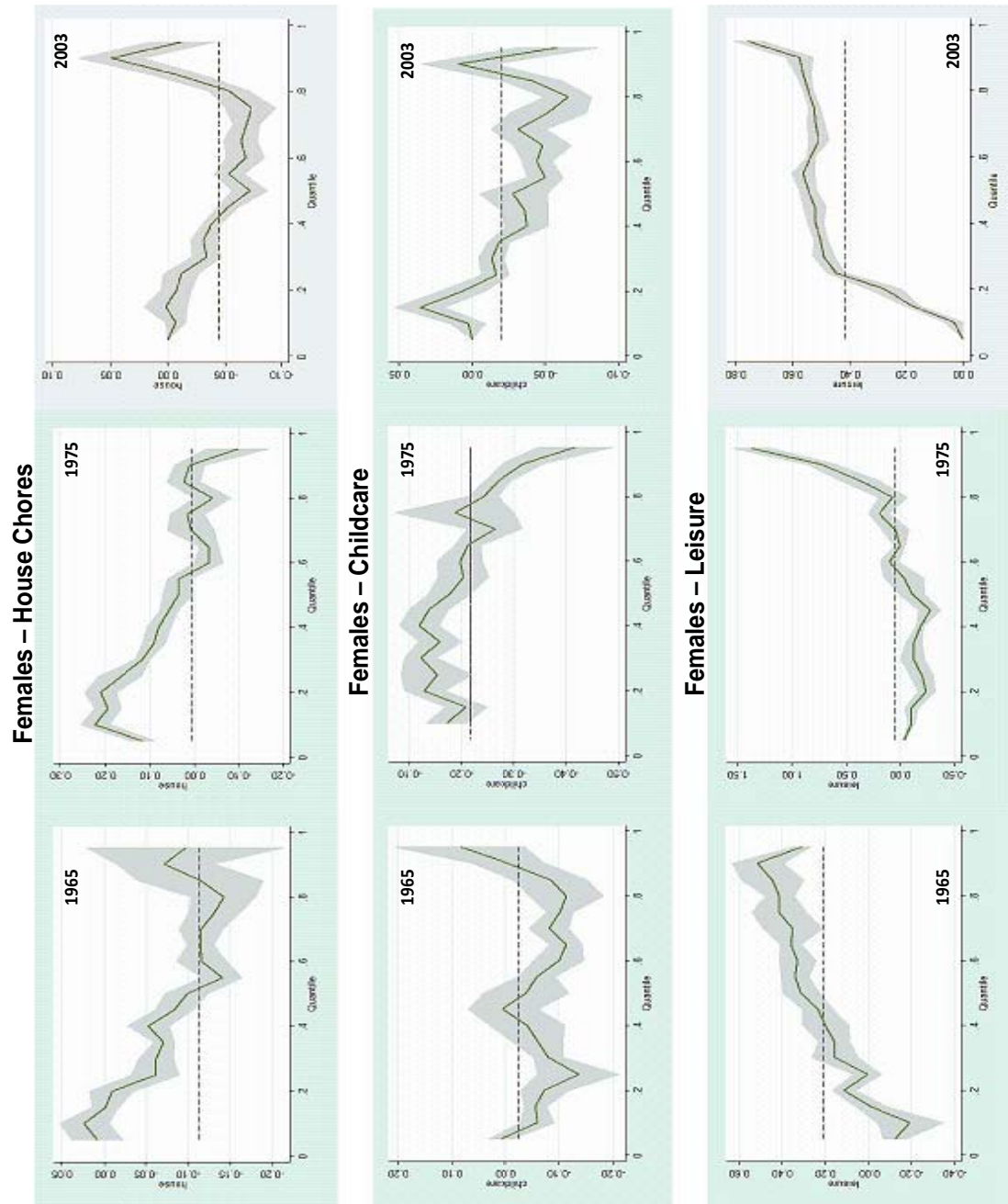


Figure 1: Quantile Regressions - Females. Dependent Variable: Time Spent with Spouse

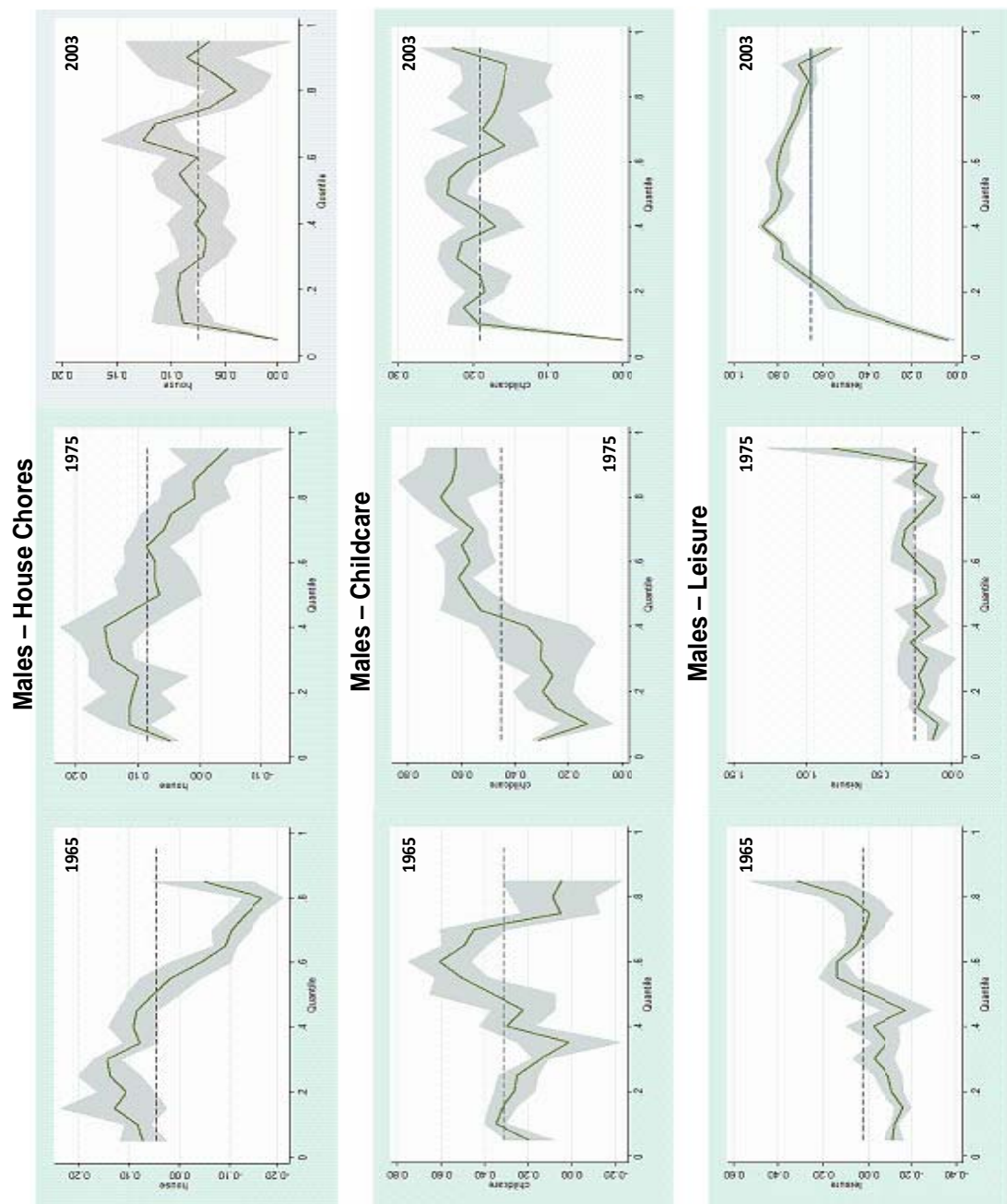


Figure 2: Quantile Regression - Males. Dependent Variable: Time Spent with Spouse

can be related to the theoretical assumption proposed in section 1. As the pattern in the quantile regression coefficients indicates that partners that already spend a relatively high amount of time together tend to increase the time with the spouse were their leisure time marginally increased by an additional minute, this suggests that spending more quality time together should be seen as a sign of an improvement in the utility level reached by the couple.

5 Conclusions

In this paper I investigated the link between the extent and the nature of spouses' commitments in the development of an intra-household surplus and the likelihood of success of the marital union. In particular, the contribution of each partner to the formation of a marital-specific capital is studied through an investigation of the way household chores and childcare are shared within families. The observation of inter-temporal changes related to distribution of responsibilities between spouses is interpreted as evidence for a different influence of social norms on the development of a successful marital union across the last four decades. Thus, the decision to divorce is directly linked to the management of typical household tasks, under the hypothesis that households in which the husband takes on typically female chores are less likely to dissolve, while couples in which the wife takes on typically male chores are more likely to divorce. Furthermore, an attempt is made to reconcile the empirical tests with a more general theory of allocation of time across different families. In this sense, the analysis is expanded in order to evaluate the validity of the theory of the role played by consumption complementarities between partners in determining the stability of marriage, as first suggested by Stevenson and Wolfers (2007).

The analysis is conducted in two stages. I first explore the relation between the way partners share their house responsibilities and the likelihood of divorce, making use of several datasets collected within the National Longitudinal Survey series. Taking advantage of the panel dimension of the datasets I exploit the presence of a set of questions on the management of household chores in order to disentangle how the changed amount of time spent at home by the partners can effectively play a role on the duration of a marriage. Interestingly, the estimated results show that the explanatory power of the documented increase in male participation in house chores over the likelihood of divorce has vanished in the most recent surveys. This evidence can be interpreted as suggesting the establishment among American couples of new regularities that go beyond the household manage-

ment schemes proposed by theory of production complementarities. Furthermore, as the relation between a more balanced way to share tasks within families and the success of the marital union appears to be relevant only with respect to cohorts of individuals whose marriages took place in the late sixties, the analysis leaves room for the introduction of new dimensions in the study of the characteristics of the evolution of intra-families forces.

In this respect, I complement the study on the NLS by investigating the patterns of time consumption of American couples across four decades, starting in 1965. In this way, I can measure to which extent consumption complementarities have substituted production complementarities in determining the degree of “togetherness” across couples. Although, given the way the data are collected, I am forced to rely on time consumption as a proxy for consumption of any other good, the obtained picture is rather complete. Over the years under consideration, partners clearly show a tendency to modify the structure of the time they spend together, favoring a considerable increase in the time devoted to joint leisure activities. The time spent in household chores, childcare and other activities shows different impacts. In particular, my findings suggest that although the amount of time men spend in childcare is increasing, this phenomenon does not positively relate to the time spent with the spouse, which is then dedicated to other activities. Results with respect to women change considerably depending on the working status of the individual, suggesting a lower degree of inter-temporal variation in the time consumption trends for working women. Furthermore, the estimates from a quantile regression procedure show how the relation between the time spouses spend together and the average amount of minutes per day devoted to leisure activities can vary across different couples. In this sense, if we consider the distribution of the variable “Time with Spouse”, a one minute increase in the daily amount of time devoted to leisure is related to an increase in togetherness of only 3 seconds for individuals located in the lowest decile of the distribution, while for individuals in the right tails of the distribution, such an increase is linked to an increase in joint time consumption of almost 45 seconds.

The implications of this paper suggest a number of questions for further research. In particular, the possibility to exactly separate the effects on the likelihood of divorce due the existence of consumption complementarities from those that can be linked to self-selection into the market appears as a relevant empirical task. Furthermore, the analysis performed in order to test for the relevance of consumption complementarities can probably be enhanced by making use of data

on actual consumption of goods instead of time, so to obtain a clearer image of the changes in consumption preferences over time.

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Appendix 1 - National Longitudinal Surveys

Description of the variables:

1. Marital Status: dependent variable; dummy variable, 0 if married, 1 if divorced;
2. Duration of Marriage: duration in months;
3. North/South: dummy variable, 0 if the respondent lives in the Northern part of the US, 1 otherwise;
4. White, Black, Other Race: dummy variables;
5. Employment Status: dummy variable, 1 if the respondent works full-time or part-time, 0 otherwise;
6. Difference in the Number of Kids (NLSY79 only): difference between the desired number of kids in 1979 and the actual number of children at time of the interview.

Variable	Num. of Observations	Mean	St. Dev.	Min.	Max
NLSMW					
Marital Status	52982	.01369	.1162	0	1
Duration of Marriage	52269	330.9271	141.9804	1	780
Number of Marriages	52982	1.0456	.2745	0	4
Age	52982	49.9367	10.4286	30	80
North/South	52701	.3822	.4859	0	1
White	52982	.7583	.4281	0	1
Black	52982	.2264	.4185	0	1
Other Race	52982	.0154	.1229	0	1
Number of Kids	52811	1.9434	1.7810	0	16
Enrolled in Education	52982	.0159	.1252057	0	1
Years of Education	52982	12.7299	8.6438	0	18
Employment Status	50165	.4138	.4925244	0	1
Weekly Hours of Work	52982	14.1008	18.8842	0	168
Wage	45327	29.5305	73.76072	0	2500
Family Income	49973	10639.15	7855.32	0	201795
NLSYW					
Marital Status	52987	0.0339	0.1808	0	1
Duration of Marriage	52987	87.8962	60.2198	12	3.044523
Number of Marriages	52987	1.1172	0.3593	1	4
Age	52987	33.9355	10.3581	14	61
North/South	52984	0.4081	0.4915	0	1
White	52987	0.7730	0.4188	0	1
Black	52987	0.2165	0.4118	0	1
Other Race	52987	0.0105	0.1017	0	1
Number of Kids	52673	1.8638	1.4115	0	12
Enrolled in Education	52987	0.0573	0.2324	0	1
Years of Education	52886	12.477	2.4824	0	18
Employment Status	42863	0.4779	0.4995	0	1
Weekly Hours of Work	43726	34.6036	13.2472	0	168
Wage	44327	56.834	210.1157	0	19586.41
Family Income (categ.)	51035	8.4466	3.4513	0	13

Table 12: List of Regressors, NLSMW and NLSYW

Variable	Num. of Observations	Mean	St. Dev.	Min.	Max.
NLSY79 - Males					
Marital Status	41968	0.04086	0.19798	0	1
Duration of Marriage	40528	7.0267	5.4058	1	32
Number of Marriages	41968	1.1342	0.37208	1	4
Age	41968	31.0489	6.14346	17	47
White	41784	0.73887	0.43926	0	1
Other Race	41784	0.20369	0.40275	0	1
Number of Kids	39743	1.4194	1.28692	0	10
Enrolled in Education	41968	0.04079	0.19781	0	1
Years of Education	41505	13.0686	4.65119	0	95
Employment Status	31676	0.69163	0.46183	0	1
Weekly Hours of Work	24484	36.3818	19.1515	0	168
Wage	34909	2007.21	46478.9	0	6000000
Family Income	36408	48160.1	74419	0	1057448
NLSY79 - Females					
Marital Status	50545	0.04171	0.19992	0	1
Duration of Marriage	49220	7.7878	5.7724	1	33
Number of Marriages	50545	1.15003	0.39568	1	5
Age	50545	30.3641	6.29048	17	47
White	50172	0.74727	0.43458	0	1
Other Race	50172	0.19274	0.39445	0	1
Number of Kids	48025	1.53447	1.31964	0	10
Enrolled in Education	50545	0.04869	0.21522	0	1
Years of Education	49974	13.2996	4.95882	0	95
Employment Status	45935	0.46194	0.49855	0	1
Weekly Hours of Work	34969	18.7992	19.7919	0	168
Wage	36481	1317.25	26154.9	0	2940000
Family Income	42389	45060.1	74759	0	1057448

Table 13: List of Regressors, NLSY79

	NLSMW		NLSYW	
Duration of Marriage	-0.322*	-0.302	0.904***	1.313***
	(-1.66)	(-1.46)	-6.76	-6.4
Number of Marriages	0.547**	0.677**	0.922***	1.206***
	-2.26	-2.13	-7.03	-6.11
Age	0.0295**	0.0319**	0.0408***	0.0551***
	-2.56	-2.51	-4.93	-5.46
Region	-0.111	-0.0984	-0.269***	-0.287**
	(-0.69)	(-0.60)	(-2.96)	(-2.44)
White	-0.234	-0.223	1.254*	1.526*
	(-0.40)	(-0.37)	-1.76	-1.78
Black	-0.564	-0.551	1.041	1.378
	(-0.93)	(-0.88)	-1.45	-1.6
Number of Children	-0.182***	-0.183***	-0.00499	-0.0148
	(-3.21)	(-3.17)	(-0.14)	(-0.32)
Enrolled in Educ.	0.858**	0.861**	0.664***	0.702***
	-2.38	-2.2	-4.58	-4.04
Education Level	0.0221	0.0266	0.0931***	0.120***
	-0.74	-0.84	-4.57	-4.42
Employed	0.770***	0.773***	1.354***	1.424***
	-3.2	-3.17	-12.34	-11.54
Weekly Hours of Work	0.0117**	0.0124**	0.0161***	0.0201***
	-1.99	-2.05	-4.96	-4.94
Wage	0.000556	0.00055	-0.00131***	-0.00150***
	-0.66	-0.64	(-2.83)	(-2.96)
Family Income	-0.0000109	-0.0000114	-0.199***	-0.237***
	(-1.00)	(-1.03)	(-13.63)	(-12.15)
Grocery Wife	-0.248	-0.261	-0.277*	-0.242
	(-1.22)	(-1.26)	(-1.80)	(-1.27)
Grocery Husband	-1.352***	-1.374***	-0.285*	-0.282
	(-3.66)	(-3.67)	(-1.66)	(-1.35)
Childcare Wife	0.111	0.117	0.11	0.0877
	-0.71	-0.72	-0.91	-0.57
Childcare Husband	-0.605*	-0.613*	-0.456***	-0.602***
	(-1.85)	(-1.85)	(-3.40)	(-3.58)
Cooking Wife	-0.049	-0.046	0.0661	0.0727
	(-0.22)	(-0.20)	-0.47	-0.41
Cooking Husband	-0.338	-0.352	0.0705	0.0923
	(-0.79)	(-0.81)	-0.42	-0.45
Dishes Wife	0.131	0.121	-0.166	-0.227
	-0.59	-0.54	(-1.39)	(-1.50)
Dishes Husband	-0.126	-0.127	-0.14	-0.206
	(-0.33)	(-0.33)	(-0.88)	(-1.07)
House Keep. Wife	-0.182	-0.182	-0.0374	-0.0622
	(-0.78)	(-0.77)	(-0.28)	(-0.38)
House Keep. Husband	-1.205**	-1.219**	0.054	0.0427
	(-2.10)	(-2.11)	-0.33	-0.21
Clothes Wife	-0.353	-0.359	-0.278**	-0.398**
	(-1.62)	(-1.62)	(-2.03)	(-2.27)
Clothes Husband	0.178	0.189	-0.238	-0.282
	-0.35	-0.36	(-1.23)	(-1.19)
Gardening Wife	0.223	0.252	0.485***	0.638***
	-1.13	-1.22	-3.8	-3.8
Gardening Husband	-1.711***	-1.717***	-0.437***	-0.574***
	(-7.96)	(-7.89)	(-3.79)	(-3.92)
Constant	-3.693***	-4.267***	-9.267***	-11.82***
	(-2.89)	(-2.68)	(-11.32)	(-9.84)
Log lik.	-1005.5	-1005.3	-2244.2	-2230.9
Chi-2	356.2	228	792.1	341.3
Observations	25537	25675	22671	22688

Table 14: Clog-log analysis - Mature and Young Women (*Dependent Variable: Marital Status*, 0 = *Married*, 1 = *Divorce*)

NLSY79	Men		Women	
Duration of Marriage	-0.0519 (-0.24)	-0.0518 (-0.24)	-0.597*** (-4.83)	-0.605*** (-4.27)
Number of Marriages	0.611 -1.35	0.611 -1.35	0.321* -1.66	0.348 -1.61
Age	-0.0376 (-1.40)	-0.0376 (-1.40)	0.0458*** -3.11	0.0562*** -3.15
Number of Children	-1.717*** (-12.32)	-1.717*** (-12.32)	-0.170*** (-2.86)	-0.195*** (-2.98)
Education Level	0.00925 -0.19	0.00928 -0.19	0.133*** -3.94	0.143*** -3.83
Employed	0.062 -0.23	0.062 -0.23	0.531*** -3.6	0.517*** -3.38
Wage	0.0000329 -0.75	0.0000329 -0.75	0.0000237 -1.23	0.0000263 -1.27
Family Income	-0.00000264 (-0.30)	-0.00000264 (-0.30)	-0.000112*** (-12.53)	-0.000115*** (-12.18)
Urban or Rural	0.202 -0.89	0.202 -0.89	0.420*** -3.17	0.437*** -3.04
North-East	-0.235 (-0.61)	-0.235 (-0.61)	-0.134 (-0.60)	-0.14 (-0.56)
North-Center	0.664** -2.13	0.664** -2.13	0.246 -1.41	0.251 -1.29
South	0.743** -2.55	0.743** -2.55	0.0937 -0.61	0.107 -0.62
White	-0.26 (-0.64)	-0.26 (-0.64)	0.315 -1.12	0.354 -1.12
Black	-0.12 (-0.26)	-0.12 (-0.26)	0.0497 -0.16	0.108 -0.31
Resp. Childcare	-0.0315 (-0.15)	-0.0315 (-0.15)	-0.0798 (-0.32)	-0.0216 (-0.08)
Resp. Cooking	-0.0151 (-0.04)	-0.015 (-0.04)	-0.683*** (-3.41)	-0.746*** (-3.17)
Resp. Dishes	0.373 -1.03	0.373 -1.03	-0.00598 (-0.03)	0.0108 -0.04
Resp. Grocery Shopping	-0.099 (-0.40)	-0.099 (-0.40)	-0.249 (-1.27)	-0.3 (-1.36)
Resp. Housekeeping	-0.0545 (-0.18)	-0.0544 (-0.18)	0.399 -1.55	0.371 -1.28
Resp Washing Clothes	-0.292 (-0.59)	-0.292 (-0.59)	-0.119 (-0.54)	-0.135 (-0.54)
Resp. Errands	0.0535 -0.25	0.0534 -0.25	0.465*** -3.25	0.512*** -3.2
Resp. House Maintenance	-0.0499 (-0.20)	-0.0499 (-0.20)	0.289** -2.25	0.359** -2.39
Resp. Outdoor Chores	-0.474* (-1.95)	-0.474* (-1.95)	0.0515 -0.39	0.0287 -0.19
Resp. Paperwork	0.493** -2.08	0.492** -2.08	0.0533 -0.39	0.0412 -0.27
Constant	-1.065 (-1.09)	-1.066 (-1.09)	-2.397*** (-3.55)	-2.824*** (-3.56)
Log lik.	-368.3	-368.3	-1060.5	-1059.1
Chi-2	304.3	192.6	384	284.9
Observations	3019	3019	5522	5522

Dependent Variable: Marital Status, 0 = Married, 1 = Divorce

Table 15: Clog-log analysis - NLSY79

Appendix 2 - Time Use Variables

Description of the variables:

1. Urban-Rural: dummy variable, 1 if the respondent lives in an urban area, 0 otherwise;
2. Education: categorical variables: from 1 (no formal education) to 6 (university education);
3. Presence of Children: dummy variable, 1 if children younger than 18 are present in the family, 0 otherwise.

Activity	1965	1975	1985	2003
Work	421.09	314.36	339.71	279.48
Education	10.19	5.42	4.69	1.40
Household chores	41.95	65.32	70.53	75.71
Purchases	45.37	37.98	47.87	56.85
Child Care	16.61	17.84	17.68	46.40
Adult Care	4.73	9.26	4.65	10.49
Voluntary Activities	15.12	25.32	16.41	26.82
Leisure	19.42	19.07	13.61	32.13
Sport	9.55	22.90	26.57	37.05
Social Activities	32.31	39.78	27.74	46.41
Art	3.96	4.99	4.03	1.30
Relaxation	260.27	273.47	315.37	300.42
Travel	17.57	22.96	22.99	17.00

Table 16: Average Time per Activity - Males

Activity	1965	1975	1985	2003
Work	110.71	103.68	147.70	145.73
Education	12.74	2.99	7.91	1.42
Household chores	266.10	190.78	188.51	149.53
Purchases	65.42	66.42	71.68	76.27
Child Care	72.89	56.21	58.97	94.88
Adult Care	6.66	12.87	4.66	14.89
Voluntary Activities	18.76	29.47	19.46	30.79
Leisure	18.81	15.30	13.18	33.05
Sport	8.90	18.93	21.67	25.15
Social Activities	47.94	57.36	30.53	52.72
Art	15.23	15.52	11.19	1.47
Relaxation	208.22	265.51	277.28	242.56
Travel	17.23	19.33	17.19	15.26

Table 17: Average Time per Activity - Females

Variable	Num. of Observations	Mean	St. Dev.	Min.	Max
Males					
Age	126659	40.7715	10.7547	21	65
Urban-Rural	126259	0.7421	0.4375	0	1
Education	126536	3.8179	1.3279	1	6
Presence of Children	126123	0.6772	0.4676	0	1
Full-time Workers	126348	0.6192	0.4855	0	1
1st Income Quartile	126659	0.0884	0.2838	0	1
4th Income Quartile	126659	0.3969	0.4892	0	1
Females					
Age	179386	39.9689	10.6637	21	65
Urban-Rural	178915	0.7362	0.4406	0	1
Education	179334	3.7703	1.2729	1	6
Presence of Children	178257	0.6869	0.4637	0	1
Full-time Workers	179009	0.4233	0.4941	0	1
1st Income Quartile	179386	0.0899	0.2862	0	1
4th Income Quartile	179386	0.3835	0.4862	0	1

Table 18: List of Regressors

Males	Year 1965	Year 1975	Year 2003
age	3.612*** (4.41)	-6.013*** (-4.87)	-1.704*** (-2.62)
age squared	-0.0448*** (-4.49)	0.0673*** (4.58)	0.0153** (2.03)
urban-rural	6.619*** (2.64)	-12.04*** (-3.47)	11.96*** (5.88)
kids in family	-30.93*** (-9.83)	-68.78*** (-16.75)	-40.79*** (-19.65)
education	-6.282*** (-6.49)	-6.589*** (-5.51)	1.533** (2.17)
fulltime job	23.47* (1.74)	-108.7*** (-11.51)	-44.67*** (-16.23)
unemployed	171.6*** (8.69)	-59.38*** (-4.37)	46.00*** (8.79)
2nd lowest quartile	-10.07** (-2.09)	4.307 (0.52)	-10.67*** (-3.24)
2nd highest quartile	-23.68*** (-4.93)	-22.57*** (-2.80)	-26.01*** (-8.64)
highest quartile	-18.32*** (-3.69)	11.83 (1.46)	-29.54*** (-9.09)
spring	23.55*** (9.13)	-25.55*** (-4.30)	-8.003*** (-3.56)
summer	0 .	-27.75*** (-4.37)	-12.00*** (-5.34)
autumn	-2.055 (-0.59)	-16.17*** (-2.98)	-28.72*** (-12.88)
monday	-13.21*** (-3.22)	18.91*** (2.63)	11.58*** (3.34)
tuesday	15.79*** (3.83)	36.30*** (4.89)	1.057 (0.31)
thursday	24.14*** (5.71)	52.74*** (6.66)	-31.99*** (-9.03)
friday	14.09*** (3.25)	45.66*** (6.93)	34.48*** (9.92)
saturday	136.5*** (29.90)	207.3*** (31.13)	187.6*** (62.52)
sunday	213.8*** (49.51)	265.5*** (40.93)	230.6*** (78.41)
Constant	134.7*** (6.64)	520.9*** (19.94)	304.0*** (21.92)
R^2	0.272	0.207	0.262
Adjusted R^2	0.271	0.206	0.261
Observations	17043	20914	74200

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 19: OLS Regressions - Results not included in Table 4

Females	Year 1965	Year 1975	Year 2003
age	-5.013*** (-7.69)	-17.46*** (-17.55)	-9.691*** (-18.42)
age squared	0.0644*** (7.95)	0.212*** (16.97)	0.102*** (16.19)
urban-rural	-1.480 (-0.74)	-17.44*** (-6.18)	-11.59*** (-7.01)
kids in family	-26.05*** (-9.09)	-40.24*** (-10.69)	-56.46*** (-29.91)
education	-1.244 (-1.33)	-4.422*** (-3.27)	-2.829*** (-4.69)
fulltime job	-59.85*** (-25.51)	-57.35*** (-19.66)	-30.82*** (-22.03)
unemployed	0	-48.69*** (-6.59)	0.991 (0.27)
2nd lowest quartile	-34.95*** (-9.91)	-20.91** (-2.37)	-16.90*** (-6.65)
2nd highest quartile	-45.48*** (-12.64)	-19.14** (-2.19)	-18.64*** (-7.90)
highest quartile	-39.30*** (-10.65)	-5.345 (-0.60)	-5.062** (-2.01)
spring	14.90*** (6.78)	-27.85*** (-6.11)	2.092 (1.15)
summer	0	-55.49*** (-10.58)	12.77*** (7.00)
autumn	11.81*** (4.61)	-62.82*** (-15.19)	-17.00*** (-9.32)
monday	-11.85*** (-3.32)	0.117 (0.02)	6.250** (2.24)
tuesday	25.03*** (7.73)	-15.73*** (-2.83)	-17.87*** (-6.45)
thursday	17.87*** (5.32)	-21.88*** (-3.64)	-20.09*** (-7.22)
friday	44.11*** (12.64)	-31.54*** (-5.62)	43.99*** (15.63)
saturday	134.5*** (36.77)	103.2*** (19.37)	175.4*** (72.76)
sunday	220.9*** (56.41)	174.4*** (33.41)	206.1*** (86.67)
Constant	364.4*** (28.18)	757.3*** (37.89)	493.8*** (46.24)
R^2	0.256	0.176	0.229
Adjusted R^2	0.256	0.175	0.229
Observations	25352	30777	102482

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 20: OLS Regressions - Results for the variables not included in Table 4

	Males		Females	
age	-1.115** (-2.51)	-9.094*** (-25.61)	-8.823*** (-19.37)	-8.976*** (-15.86)
age squared	0.0116** (2.21)	0.103*** (23.96)	0.0969*** (17.47)	0.102*** (14.88)
urban-rural	0.741 (0.55)	-10.67*** (-9.75)	-12.49*** (-8.49)	-7.339*** (-4.48)
kids in family	-37.84*** (-25.63)	-38.19*** (-28.92)	-53.07*** (-26.48)	-25.79*** (-14.34)
education	-0.927* (-1.92)	-2.455*** (-5.52)	-0.323 (-0.54)	-5.527*** (-8.28)
fulltime job	-43.15*** (-19.03)	-39.69*** (-38.67)	0 .	0 .
unemployed	46.95*** (11.44)	-15.93*** (-5.55)	-14.60*** (-5.02)	-196.4*** (-5.40)
2nd lowest quartile	-15.87*** (-6.52)	-23.76*** (-12.58)	-28.24*** (-12.38)	-14.63*** (-4.34)
2nd highest quartile	-29.36*** (-12.82)	-26.25*** (-14.47)	-30.73*** (-13.58)	-17.44*** (-5.59)
highest quartile	-24.98*** (-10.35)	-16.05*** (-8.42)	-34.32*** (-14.28)	10.36*** (3.22)
spring	-2.016 (-1.26)	1.147 (0.89)	8.268*** (4.89)	-8.865*** (-4.50)
summer	-7.614*** (-4.36)	8.742*** (6.15)	5.166*** (2.68)	11.47*** (5.47)
autumn	-17.95*** (-11.05)	-14.22*** (-10.99)	-14.31*** (-8.50)	-15.99*** (-7.93)
monday	9.368*** (3.92)	2.368 (1.23)	-8.330*** (-3.26)	18.05*** (6.18)
tuesday	8.989*** (3.76)	-5.406*** (-2.89)	-13.52*** (-5.65)	4.716 (1.57)
thursday	-5.681** (-2.30)	-8.328*** (-4.32)	-13.06*** (-5.29)	-4.300 (-1.40)
friday	31.16*** (13.25)	30.38*** (15.88)	31.75*** (12.42)	30.80*** (10.72)
saturday	178.4*** (83.23)	152.7*** (89.07)	127.9*** (56.00)	178.2*** (67.89)
sunday	227.6*** (23.11)	195.6*** (9.74)	177.4*** (12.41)	211.6*** (0.50)
Constant	298.7*** (32.12)	462.6*** (61.76)	526.6*** (53.30)	365.8*** (30.73)
R^2	0.259	0.220	0.217	0.236
Adjusted R^2	0.259	0.220	0.217	0.236
Observations	125304	177392	102322	75070

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 21: OLS Regressions with Trends - Results for the variables not included in Table 7

Females	Non-Working		Working	
age	-8.338***	(-18.29)	-9.037***	(-15.96)
age squared	0.0910***	(16.39)	0.104***	(15.05)
urban-rural	-13.47***	(-9.15)	-6.777***	(-4.13)
kids in family	-52.85***	(-26.36)	-25.84***	(-14.35)
education	0.197	(0.33)	-5.221***	(-7.82)
fulltime job	0	.	0	.
unemployed	-12.17***	(-4.19)	-209.0***	(-5.75)
2nd lowest quartile	-26.63***	(-11.64)	-14.03***	(-4.16)
2nd highest quartile	-29.80***	(-13.15)	-16.41***	(-5.26)
highest quartile	-33.05***	(-13.73)	10.14***	(3.15)
spring	9.269***	(5.46)	-8.640***	(-4.36)
summer	5.824***	(3.02)	11.50***	(5.47)
autumn	-12.67***	(-7.47)	-16.63***	(-8.10)
R^2	0.216		0.234	
Adjusted R^2	0.216		0.234	
Observations	102322		75070	

t Dependent Variable: Daily Time Spent with Spouse

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 22: OLS Regressions with Trends - Results for the variables not included in Table 8