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RESEARCH ARTICLE

The effect of alimony on married women's labor supply and fertility: Evidence from state-level reforms

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Abstract

Reforms that reduce spousal support after divorce are generally thought to reduce the bargaining power of alimony recipients as well as their incentives to participate in the traditional model of household specialization. Using the U.S. Time Use Survey and exploiting a series of recent reforms in several U.S. states that reduced the rights of eligible spouses, we find that wives surprised by the reforms reacted by increasing their labor supply, but the adjustment mechanism varied by educational group. While college educated wives' labor supply increased at the expense of time spent on housework and childcare, wives with less than a college degree sacrificed personal care and leisure time. Effects for men are generally smaller and not statistically significant. We also find a reduction in the rate of new births following the reforms, with the effect being much more pronounced in the case of women with a university education, suggesting that part of the difference in time use may be attributable to differences in preferences and the cost of children by educational levels. Since children are a marital public good, our results imply a decrease in marriage-specific investment. The estimated effects are robust to various sensitivity tests and are greater in couples with a high-income differential and therefore more exposed to changes in alimony laws.

INTRODUCTION

Alimony, or spousal support, involves payments made by one spouse to the other after separation or divorce. It is regulated by each state in the United States and can be temporary or for life. Since the mid-2000s, several states in the U.S. have passed reforms to reduce the amount of alimony or to limit how long alimony payments can last. Proponents of the reforms often argue that alimony, particularly alimony for life, imposes an unfair financial burden on the payer, usually the ex-husband, while opponents of the reforms highlight that alimony regulations have long been a means of protecting the spouse who during marriage specialized on housework and childcare, providing them a fair compensation in case of divorce.

In this paper we investigate the effects of reduced alimony on household specialization and the use of time of married couples. As we discuss in more detail in the next section, we posit that reforms that reduce alimony can affect married couples in at least two different ways. First, according to marriage bargaining models, reduced alimony represents a future negative income effect for the potential payee (usually the wife) and a decrease of her bargaining power within marriage, which bargaining theory implies should lead to a lower consumption of leisure and more work. Moreover, aside from bargaining effects, the decrease in women's expected lifetime income should decrease leisure due to direct income and substitution effects. Note that while the reform improves men's expected lifetime income which would tend to increase leisure and decrease work due to bargaining and income effects, the substitution effect may generate an increase in work.

Second, reduced alimony lowers the incentives of wives to engage in the traditional male breadwinner model of household specialization. In essence, reduced alimony increases the relative returns to current labor market experience for the spouse that would be beneficiary of the entitlement. If future wages depend on the accumulation of current labor market experience and if reduced alimony increases the probability of participating in the labor market in the future, then reduced alimony increases the relative returns to current labor market experience and should be associated with increased labor supply of married women.

Moreover, changes in alimony laws may affect fertility through changes to marriage-specific investment and incentives for specialization, along with other potential channels. On the one hand, as we discuss in the next section, reduced alimony may decrease fertility due to reduced incentives for household specialization and marriage specific investment. On the other hand, the decrease in expected spousal support income upon divorce increases the relative importance of child support as an income source upon marital dissolution, potentially increasing incentives for childbearing among women. Fertility may also be affected by decreases in alimony since children may be viewed as a commitment device instead of alimony.

We test the effects of changes in these incentives on fertility, labor supply and time use using the American Time Use Survey and taking advantage of the different timing of reforms in 8 states in the U.S. that reduced alimony rights since the mid-2000s. In doing so we identify the causal effect of reduced alimony on the distribution of time within married couples. Following Chiappori et al. (2017), we focus on couples "surprised" by the laws, that is, couples that were already married at the time of reform, eliminating concerns of selection into marriage, since the match itself and entry into marriage may be affected by the reform. To avoid the problems with OLS estimation of difference-in-differences/event-studies in the presence of staggered treatment adoption, we implement the estimator proposed by Borusyak et al. (2024). A detailed description of this method is provided in Appendix B.[1]

We find heterogeneous effects of the reforms for two groups of married women defined by their level of education. While wives with less than a college degree spend more time at work at the expense of their personal and leisure time, college educated wives also spend more time at work but at the expense of time spent on housework and childcare. Additionally, we find that the reforms had a negative effect on fertility, mainly in households where the wife has a college degree. The effects for men are generally

[1] All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at http://onlinelibrary.wiley.com.

smaller and not statistically significant. We interpret these results to suggest that wives seek to improve their future position in the event of divorce, an improvement that is achieved by moving away from the traditional male breadwinner model of household specialization. Either because of higher initial bargaining power, higher household income, lower preferences for housework and childcare, or a combination of all those, college educated wives achieve that change by reducing time devoted to housework and childcare, without a loss of their personal care and leisure time. In contrast, wives with less than a college degree reduce their leisure and personal time as they spend more time in market work. The fact that the fertility rate decreases much more for college educated wives compared to wives with less than a college degree, suggests that the heterogeneous response in time use of wives with different levels of education is due at least in part to different preferences and costs between the two groups for children.

Note that while all of the reforms that we study in this paper limit alimony, the implementation of these limitations may differ by state. As such, the conservative interpretation of our results is that alimony reform has on average led to a statistically significant increase in women's labor supply and decrease in fertility as predicted by the theoretical framework and previous literature. Finally, we show that our results are not driven by selection into divorce and are robust to various sensitivity tests, including a placebo test using single women.

Our analysis is closely related to a strand of literature that studied the causal impact of alimony reforms on the distribution of time within households. Chiappori et al. (2017) and Rangel (2006) studied the impact of reforms that extended alimony rights to cohabiting couples in the context of Canada and Brazil, respectively. Consistent with our findings, both papers found that increased alimony leads to a reduction in work time of married women surprised by the reforms. Chiappori et al. (2017) also found no effects of the extended alimony rights on the fertility decision of couples that were married before the reforms. Rangel (2006) further found that women in cohabiting couples affected by the reforms in Brazil reduce the time devoted to housekeeping, implying an increase in their leisure time. A set of studies have investigated the effects of a reform in Germany in 2008 that harmonized the rulings for married and non-married couples, reducing the entitlements for married couples. Those studies find mixed results, from no effect (Bredtmann & Vonnahme, 2019) to a finding of increased labor supply of affected mothers (Schaubert, 2023) and a decrease of fertility rates (Fahn et al., 2016). In a working paper, Verma (2021) found that the reduced alimony reform of Massachusetts in 2011 led to an increase in female part-time employment, especially among ever-married and college educated women. Our study finds consistent results, expands this finding to other uses of time and considers the reforms in Massachusetts as well as in other seven states.

Our contribution to the literature that analyzes the behavioral responses to alimony reforms is twofold. First, our study is the first to examine the effects of alimony using recent U.S. reforms and represents one more piece of evidence in the context of a literature on the effects of alimony that is still very scarce and has provided mixed results. Second, we show heterogeneous effects of time use with alimony reform for women of different educational levels. Specifically, we provide evidence that reduced alimony has a negative impact on the well-being of wives with a low educational level, as well as a change in the behavior of wives with a high educational level, including a shift towards a more egalitarian distribution of time vis a vis their husbands, but at the cost of a lower fertility rate.

The results of our analysis also fit within the large literature studying the effects of divorce law on the intrahousehold allocation of resources. One branch of that literature has shown that joint custody laws shift bargaining power away from women and lead to an increase in their time devoted to work (Altindag et al., 2017; Halla, 2013; Nunley & Seals, 2011). Similarly, increases in paternity leave have been shown to increase the labor force attachment among mothers, raising the opportunity cost of an additional child and reducing fertility (Farré & González, 2019). Another line of investigation has looked at the rules regulating how marital property is divided after divorce and tends to find that property division laws that are relatively more generous to women increase investments in marital specific assets (e.g., children) and lower female labor supply (Chigavariza et al., 2019; Huang et al., 2023). The large literature investigating the effects of no-fault divorce laws has found evidence that an increase in the perceived risk of divorce leads to an increase in female labor supply as women attempt

to secure outside options in case of marital dissolution through participation in the labor market (Bargain et al., 2012; Genadek et al., 2007; Kneip & Bauer, 2007; Stevenson, 2008; Voena, 2015).

Finally, our results also fit into the literature that finds an increase of married women's labor supply when their relative wages increase (Jones et al., 2015; Knowles, 2013; Siegel, 2017) or when the returns to market experience increase (Caucutt et al., 2002; Olivetti, 2006). That is, reduced alimony is equivalent to an increase in female wages relative to the alternative source of income represented by alimony. It is also equivalent to an increase in the returns to job market experience to the extent that with the alimony reforms the future income of affected wives depends more significantly on current market work.

The rest of the paper is organized as follows. The next section describes our theoretical framework. "U.S. Alimony Reforms and Empirical Strategy" describes the identification strategy, that is, the alimony reforms in several U.S. states, and the empirical specification. The data used in the analysis is presented in the section titled "Data." The section "Results" shows the main results of the empirical analysis, and "Robustness Tests, Selection Issues, and Policy Endogeneity Tests" discusses issues of selection and robustness tests. Finally, "Conclusion" concludes.

THEORETICAL FRAMEWORK

As previously mentioned, alimony reform may affect women's time use through incentive effects for marriage-specific investment and specialization, and through effects on spousal bargaining power. While a full theoretical model is outside the scope of this paper, in what follows, we outline some of the implications of alimony reform on time use given recent research in these areas.

Several papers have shown that unenforceable contracting in the marriage market may lead to inefficient marriage market outcomes (see, e.g., Lundberg & Pollak, 1993, 1994, 1996, 2003; Pollak, 2019), since divorce may allow spouses to renege on commitments made at the start of the marriage.[2] This possibility coupled with policies such as unilateral divorce may prevent spouses from undertaking marriage specific investment (Stevenson, 2007) and may reduce incentives for one spouse to specialize in household work, since the spouse who works outside the home may decide unilaterally to end the marriage, leaving the partner who specialized in the household with poor labor market prospects. Recent research has examined the role that policies that increase marital commitment, such as contractual income- and asset sharing upon divorce, may play in increasing household specialization by providing the partner who works in the home with a share of marital assets upon marital dissolution (LaFortune & Low, 2017, 2023; Reynoso, 2019, 2023; Wong, 2023). LaFortune and Low (2023) developed a theoretical model that shows that assets may act as a commitment device that encourages marriage as well as household specialization and that income-sharing upon divorce also increases incentives for specialization. Their work showed that, while imperfect commitment reduces household public goods and specialization, income-sharing will mitigate this reduction. Similarly, Reynoso (2019, 2023) showed that laws that reduce marital commitment (such as unilateral divorce) reduce the willingness of the lower earning partner to specialize, even when that is the efficient choice for the household.

In a similar manner, alimony may increase incentives for specialization and marriage-specific investment by acting as a commitment device and by providing spouses who work in the household with an enforceable share of family income upon divorce, with a reduction in alimony causing a corresponding decrease in household specialization and an increase in married women's labor supply. Indeed, we see that alimony reform decreases fertility, which is consistent with a reduction in marriage specific investment since children are a marital public good. Moreover, one should expect to see larger behavioral responses among those more likely to be affected by the reform. Since

[2] Note that this is inefficient if both partners would prefer to commit to no possibility of divorce and for one to be able to specialize, but they are unable to credibly commit to an outcome that both would prefer.

alimony is awarded to the spouse with lower earnings and larger earnings differentials (Garrison, 1996), behavioral incentives grow with earnings and education differentials.

Moreover, a long-standing literature that models bargaining within the household (Manser & Brown, 1980; McElroy & Horney, 1981) has indicated that alimony reform may affect bargaining within the household among existing marriages by directly affecting married women's utility of divorce (their threat point) and therefore their bargaining power within the marriage.[3] A reduction in alimony rights may therefore be expected to decrease leisure and increase work among women as their bargaining power decreases. Indeed, Rangel (2006) compared cohabiting couples in Brazil who were newly granted alimony rights to a control group of married couples and found an increase in daughters' schooling and a decrease in hours worked among women newly affected by the law; these findings are consistent with improved female bargaining power. Chiappori et al. (2017) also used a bargaining framework to examine the effects of alimony on couples' time use, albeit one that differentiates between couples already together at the time of the reform as compared to newly formed couples. They posited that only couples surprised by the reform will see an increase in their bargaining power, as those who are entering a relationship will negotiate an offsetting utility transfer at the start of the relationship. They found a decrease in hours worked among women in those couples surprised by the change and an increase among those who were not.[4] Finally, alimony reform may also affect labor supply directly by acting as a negative expected future income shock for married women's expected income and increases the relative return to market versus household work, generating both income and substitution effects that incentivize market work.

Another section of the literature has examined the relationship between bargaining and fertility and has shown that bargaining power tilts fertility decisions in favor of the parent with more bargaining power (Rasul, 2008), that women are more likely to be opposed to having children when their partner does less household work (Doepke & Kindermann, 2019), and that men are more likely than women to want kids (Minkin et al., 2024). Given that alimony reform reduced wives' bargaining power, we would expect an increase in the number of children, offsetting to some extent the reduction in the number of children predicted by household specialization models. Finally, one may expect heterogeneous bargaining impacts by the wife's education level. Given that highly educated wives have better outside options than their less educated counterparts, one may reasonably expect a bigger loss of bargaining power and larger within marriage utility transfers from non-college-educated wives to their partners.

Taken together, the theoretical literature we have discussed implies the following predictions regarding alimony reform that reduces income-sharing upon divorce: 1) women will spend more time spent in market work due to the reduction in female bargaining power combined with the reduced incentives for specialization; 2) women may have less leisure time due to the reduction in female bargaining power; 3) fertility will fall or increase depending on the relative importance of a decrease in marriage-specific investment and potential bargaining effects; and 4) one may expect to see larger leisure decreases and smaller fertility decreases among women with lower education levels, who have less desirable outside options and a worse bargaining position. Finally, to the extent the marriage is more likely to be affected by the reform, one should see larger effects.

U.S. ALIMONY REFORMS AND EMPIRICAL STRATEGY

U.S. alimony reforms

Several U.S. states have undertaken reforms of their alimony (or spousal support) laws over the last several years with those reforms intended to limit cases in which alimony is awarded indefinitely

[3] While legally alimony may be granted to either gender, only 3% of alimony cases have men as the claimant.

[4] Of course, as previously discussed, given the unenforceable nature of commitments at the start of a relationship, it is also possible that policy reforms such as alimony reform that affect lifetime utility affect who matches with whom. Indeed, in a companion paper to this work, Fernández-Kranz and Roff (2021) found that alimony reform affects the marital match, leading to higher levels of assortative matching on education.

or in high amounts. These reforms are explained in detail in Fernández-Kranz and Roff (2021) and summarized in Appendix Table A.1. The reforms have ranged from the institution of state guidelines that use a formula to compute alimony based on both spouses' incomes and is intended to remove judicial discretion, to limits in the length of time that alimony may be received and the maximum amount of alimony that can be assigned.

In total, nine states instituted substantial reforms to their alimony laws from 2006 to 2018. New Mexico instituted guidelines in 2006, and Massachusetts eliminated permanent alimony and implemented guidelines with caps on maximum alimony amounts in 2011. Over the next several years, other states undertook their own reforms. Maine instituted reforms that made the termination of alimony easier in 2013, while Colorado, Illinois, and New York underwent reforms to limit the maximum amount of alimony paid and Alabama and New Jersey limited the length of time that alimony could be awarded. In contrast to these states, Texas loosened previously existing limitations alimony amounts and durations; for this reason, we eliminate Texas from our sample. To measure the effects of alimony reform, we use a single discrete variable that equals 1 if the state reduced alimony amounts or the duration of receipt in all years affected by the reform and 0 otherwise.

But how salient are these policy changes? Alimony plays a significant role in American cultural narratives about divorce, despite its actual award in a limited percentage of divorce cases. Historically, during the mid-20th century, about one fourth of divorces resulted in alimony awards (Workman, 2011), but this figure has decreased to 10% to 15% in recent decades (McMullen & Oswald, 2010; Workman, 2011). The likelihood of receiving alimony varies greatly, with longer marriages, especially those exceeding 15 years, and older women being more likely to receive it (Bureau of the Census, 1989; Weitzman & Dixon, 1980). Typically, alimony aims to sustain living standards, favoring women who part ways from higher-earning spouses, particularly if they have lower incomes or educational attainment themselves. Furthermore, high-profile divorce cases often emphasize alimony, possibly skewing public perception. Notably, high-income divorces are more likely to involve substantial alimony, and such cases, especially those involving celebrities, frequently garner significant media attention (Weitzman & Dixon, 1980).

This skewed perception is not limited to the public; it extends to legal professionals as well. A study from the 1970s showed that Los Angeles lawyers and judges significantly overestimated the prevalence of alimony awards, compared to the actual figures (Weitzman & Dixon, 1980). This discrepancy highlights a broader misperception regarding the frequency of alimony.

Furthermore, the societal implications of alimony are underscored by research showing significant behavioral changes following alimony reforms, such as reductions in full-time employment among women (Chiappori et al., 2017; Rangel, 2006) and a significant increase in appeals for alimony reduction or termination (Verma, 2021). Verma (2021) analyzed the Alimony Reform Act (ARA) of 2011 in Massachusetts, which marked a significant shift in the treatment of alimony by eliminating the provision of lifetime alimony and linking the duration of alimony payments to the length of the marriage. This reform was applied retroactively to both future and past divorce cases, but it required the alimony provider to actively file an appeal for reduction rather than automatically adjusting existing alimony arrangements. By examining published court opinion files in Massachusetts from 1980 to 2019, Verma found that a predominant percentage (97%) of alimony payers were men, that the majority of alimony granted pre-ARA was for life (73%), and that the average annual alimony payment stood at around $41,156, underscoring the significant financial impact of alimony termination on women. The study also finds a marked shift in alimony case dynamics post-ARA, with a significant increase in appeals for alimony reduction or termination, with almost 60% of the alimony cases in MA demanding a decrease or termination of alimony compared to less than 30% before ARA. This shift was further corroborated by the gender distribution of plaintiffs, with an increased proportion of cases filed by men seeking to reduce or terminate alimony payments. Finally, in a companion paper (Fernández-Kranz & Roff, 2021), we found evidence that alimony reform affects the marital match, indicating some knowledge of the reforms. In particular, consistent with decreased incentives for household specialization, we found significantly higher levels of assortative matching on education among newlyweds.

Our identification strategy therefore relies on state variation in timing of the reform. One may be concerned that state-level factors such as changing gender norms or other factors affect both the timing of reform and women's labor supply and other time use. To examine the extent to which policy endogeneity may affect our results, we estimate a linear probability model of state entry into reform using variables that proxy gender norms in the state to analyze whether gender norms that might also affect labor supply decisions drive alimony reform (see the section "Heterogeneous Effects by the Level of Education and Earnings"). We find no statistically significant effects of state-level variables including these proxies for gender norms on the reform decision. We also show no relation between the political affiliation of the governor with the passing of the reforms.[5] Finally, we employ methods that account for staggered treatment and also use event studies to assess the role of pre-reform trends in time use.

EMPIRICAL STRATEGY

As already mentioned, our identification strategy relies on the different timing of the reforms reducing alimony rights that eight states in the U.S. passed between 2006 and 2018. Our empirical approach examines whether there are systematic differences in the use of time between married couples before and after the reforms in treated states relative to control states (i.e., states that did not pass an alimony reform). More precisely, we estimate the following event study specification using the estimator proposed by Borusyak et al. (2024), which allows for heterogeneous treatment effects in cases in which treatment is staggered. Goodman-Bacon (2021) introduced the DID decomposition theorem. This theory shows that the TWFE DID estimator, used in staggered treatment scenarios, is essentially a weighted average of all simple two-group/two-period DID estimators, some of which rely on bad comparisons.[6] It points out the flawed logic of comparing groups that receive treatments at later stages to those treated earlier, both before and after the later group's treatment commences, which can lead to negatively biased DID estimates. Borusyak et al. (2024) pointed out the "negative weighting" problem in the classical DID and proposes an efficient robust DID estimator using a three-step imputation procedure.

For each individual i in the data, event time k is indexed relative to the year of the passage of the alimony reform. Denoting by Y_{iskt} the outcome for individual i in state s, in year t, we run the following regression:

$$Y_{iskt} = \sum_{j<-5} \propto_j \cdot \mathbf{I}\left[j = k\right] + \sum_k \beta_k \cdot \mathbf{I}\left[k = s\right] + \sum_y \gamma_y \cdot \mathbf{I}\left[y = t\right] + \sum_p \partial_p \cdot \mathbf{I}\left[p = x\right] + u_{ist}, \quad (1)$$

The first term on the right-hand side includes event time dummies, the second term includes state dummies (to control for state fixed effects), the third term includes year dummies (to control for time trends), and the fourth term includes dummies for the age, the level of education and race of individual i and his/her spouse. We omit event time dummies at $k < -5$, implying that the event time coefficients measure the impact of the alimony laws relative to more than 5 years before reforms. In the graphical representation of the results, we normalize the coefficients to value 0 at $k = -1$. We are able to identify the effects of all four sets of dummies because, conditional on state, year, and demographics, there is

[5] The National Governors Association has a website (https://www.nga.org) that provides a list of governors with their party affiliation by year for each state. We used the timing of the reforms combined with this source to generate this information.

[6] Note that with a small number of treated states, one would expect there to be not that many forbidden comparisons. Indeed, after aggregating the data by year, state, gender, and education level, we performed a Goodman-Bacon decomposition on the difference-in-difference estimation of time spent on work, housework/childcare, and personal activities for females. The alimony reforms were found to increase work time by 29.589 minutes, decrease housework/childcare time by 14.391 minutes, and reduce personal time by 12.391 minutes, all statistically significant. The decomposition showed that most of the effect (85%) is due to comparisons between never treated and treated units, while the forbidden comparisons represent only 4.7% of the total. The results of this analysis are available from the authors upon request.

variation in event time driven by variation in the year at which alimony reforms took place in each treated state. We estimate equation (1) separately for men and women, for three main uses of time (time spent on the job, time devoted to housework and childcare, and time for personal care including leisure time), and for the presence of a newborn. To avoid the possibility that the results are driven by changes in the type of couples that are formed after the alimony laws, the analysis focuses on couples that were married before the reforms (i.e., couples surprised by the reforms). The vector x includes a set of demographic control variables meant to be exogenous, that can affect the use of time, and may vary across states and time: age, education, and race for each member of the couple. Controlling for x could be relevant in the case of repeated cross-section data since it ensures that our results are not driven by changes in the composition of our sample of married couples that could be spuriously correlated with the reforms.

Our analysis differs from previous studies of the causal effect of alimony reforms in that we compare women in treated versus nontreated states and take advantage of the different timing of reforms across those states. Previous literature has compared individuals in cohabiting couples with those in married couples. Because some individuals in cohabitating couples are likely to marry at some point, alimony reforms may affect them as well, making the estimates from those studies a lower bound of the true effect (Bredtmann & Vonnahme, 2019). Assuming that most individuals in nontreated states do not consider the alimony reforms a reason to migrate to treated states, our estimates should then be closer to the full true effect.[7]

In addition to our baseline specification, we estimate heterogeneous effects by running separate regressions for each group of women according to their level of education.[8] In this case, we divide the sample in two groups: women with a college degree and with less than a college degree. In all regressions, we account for possible serial correlation in the errors by clustering standard errors at the state level (50 clusters).[9]

DATA

We use the American Time Use Survey (ATUS) waves from 2003 to 2022.[10] The ATUS provides nationally representative estimates of how, where, and with whom Americans spend their time, providing data on market activities as well as the full range of nonmarket activities, from childcare to personal and leisure time. Households are selected that represent a range of demographic characteristics. In each eligible household, one person age 15 or over is randomly chosen to answer questions about his or her time use. ATUS data are collected via telephone interviews. The main part of the ATUS interview is the 24-hour time diary, which is used to collect a detailed account of the respondent's activities, starting at 4 a.m. the previous day and ending at 4 a.m. on the interview day. For each activity reported, the

[7] In any case, the decision to move or not to another state would depend on the bargaining power within the couple since the husband and wife would have opposite incentives in this respect. Given that our sample consists of couples "surprised" by the reforms and given the relatively short time span we analyze, we think that the possibility of significant effects in this regard is small. To test this hypothesis we use data from the Annual and Social Economic Supplement to the CPS (ASEC) and the sample of married couples between 2003 and 2022, and estimate our main specification with an indicator of a change of residence in the past year as the dependent variable. We find a non–statistically significant effect of the alimony reforms on the probability to migrate, with an estimated coefficient of −0.0008 and standard error of 0.0007.

[8] We run separate regressions instead of a specification with interaction terms for two reasons, one practical and the other more conceptual. The practical one has to do with the fact that estimators for staggered treatment effects are generally not well adapted to specifications where the variable of interest is a variable with interactions. The second reason has to do with the fact that estimations through separate regressions allow heterogeneity to also be reflected in the controls and not only in the variable of interest.

[9] Given the small number of treated clusters (eight) one would ideally implement the Wild Cluster Bootstrap method of Mackinnon and Webb (2018). However, this method cannot be implemented within the Borusyak et al. (2024) framework. Instead, we investigate indirect evidence that using standard clustering methods yields conclusions consistent with those from the Mackinnon and Webb (2018) method. After confirming that the results from the standard TWFE specification closely align with those that we obtain from the Borusyak et al. method, we find that our results are robust to applying the Mackinnon and Webb method for standard errors in the TWFE specification. The results of this analysis are available from the authors upon request.

[10] Although the 2020 wave is currently available, we exclude this wave from the analysis because of the exceptional changes that occurred in the distribution of time within households during that year due to the COVID-19 pandemic.

interviewer asks how long the activity lasted. For most activities, the interviewer also asks who was in the room or accompanied the respondent during the activity and where the activity took place.

To obtain accurate results from ATUS data, it is essential to apply predefined weights from the Respondent file, avoiding the distortions of unweighted analysis. These weights adjust for three types of biases. First, stratified sampling biases by ensuring demographics that are intentionally oversampled, such as certain age or ethnic groups, are proportionately represented, maintaining the population's true demographic structure. Second, the sample's non-uniform day-of-week distribution, where weekend days (Saturday and Sunday) are overrepresented compared to weekdays. This adjustment ensures that activities typically done on weekends or weekdays are accurately reflected, preventing skewed time-use estimates. Third, variations in response rates across demographic groups and days. For example, men's lower response rates compared to women's are corrected, as are any discrepancies in response rates for different days of the week, ensuring each group and day is fairly represented despite these differences.

All empirical analyses and tables of descriptive statistics are derived from data appropriately weighted using the weight variable (*TUFNWGPT*) provided by ATUS to ensure consistency across years. Since the reforms under study are applied at the state level, Appendix Table A.2 presents a comparison of the distribution of educational and gender groups in each state for the weighted ATUS data and the CPS data, which are representative at the state level. As shown in the table, both distributions are very similar, with a partial correlation of 0.98 and an average difference of between 1.5 and 1.8 percentage points, which are not statistically significant at the 5% level. As expected, the differences between the two databases are greater for smaller states, which therefore have less weight in the sample.

Because the ATUS is a cross-sectional survey and only one member per household is interviewed, the number of observations in our sample is equal to the number of individuals and to the number of households being interviewed. Our initial sample consists of men and women that were married at the time of the interview and with the spouse present, a total of 111,639 individuals. We drop those cases in which information about the characteristics of the spouse could not be retrieved (586), same sex couples (122), individuals older than 65 (19,236), and residents of Texas (6,738). The reason for dropping the residents of Texas is that this is the only state that during our sample period has passed a legislative reform in the other direction of the rest states, that is, the Texas alimony reform has increased, rather than decreased, the alimony rights of eligible spouses. We drop from our sample couples that we suspect could have married after the reforms were approved. In other words, we retain only couples surprised by the law. Due to the lack of precise marriage dates, we estimate the marital status of each woman and man in the year of the reform based on their ages that year. We assume that both women and men marry before the birth of their first child, which in the US, on average, occurs between the ages of 26 and 27 for women and 28 to 29 for men. Consequently, we exclude from our sample women and men who were younger than 27 and 29, respectively, in the reform year.[11] To ensure the sample from nontreated states closely resembles the sample from treated states, we apply a similar age restriction for the year 2014, the median reform year in treated states. This results in the exclusion of 757 individuals from our sample. After applying these criteria, our sample consists of 84,200 individuals, of whom 53.49% are women and 19.84% reside in treated states.

Table 1 shows the descriptive statistics. It includes the weighted mean of all dependent and independent variables for men and women in control states and in treated states pre-reform. The table also shows for men and women the statistical significance (*t*-test) of the mean difference between treated and control states. We categorize time usage into three groups: time devoted to household and child-care activities, time devoted to personal care, and time devoted to market work. Unless otherwise specified, time spent working for individuals outside the labor force is coded as zero. We see the expected pattern, with men devoting less time than women to house and childcare activities and more time to work. In control (treated) states, men spend on average 150 (149) minutes per day

[11] When we moved the age cutoff 2 years above or 2 years below, the estimated effects remained practically identical. The results of this sensitivity test can be seen in the robustness tests Table 5.

TABLE 1 Descriptive statistics; ATUS 2003 to 2022.

	Mean values of sample characteristics and of outcome variables			
	Non-reform (control) states		Reforming (treated) states pre-reform	
	Men	Women	Men	Women
	(1)	(2)	(3)	(4)
Time house+childcare	149.94	255.57	148.92	270.84
Time personal	932.40	953.65	927.72	943.20
Time work	342.15	210.48	348.86	207.60
Age	45.30	44.27	45.62 ϒ	44.08 ϒ
With children	55.05	52.17	55.89	56.19
White	73.12	73.65	72.38	74.67
Black	7.67	6.96	8.65 ϒ	6.97
Asian	1.74	1.61	1.13 ϒ	1.09 ϒ
Hispanic	13.33	12.45	12.59	11.73
Other	4.11	5.31	5.23 ϒ	5.52 ϒ
Less than high school	9.58	7.79	8.29 ϒ	7.02 ϒ
High school degree	29.70	27.42	29.32	27.59
Some college	23.82	26.13	22.61 ϒ	24.31 ϒ
College degree	36.89	38.64	39.76 ϒ	41.06 ϒ
Full-time worker	81.30	50.25	81.70	48.79
Part-time worker	5.64	18.40	5.49	20.63
Inactive or unemployed	13.04	31.34	12.79	30.57
N. individuals (untreated)	31,270	36,227	5,882	6,626
N. individuals (treated)			2006	2,189

Source: ATUS, waves from 2003 to 2022, weighted using ATUS weights.
Notes: Time spent working for people outside the labor force is coded as zero. ϒ Indicates that the difference between treated and control states is statistically significant at the 10% level or more. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2011), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses.

to house and childcare activities in contrast to women, who devote 256 (271) minutes per day to those activities. When it comes to work time, men devote 342 (349) minutes per day and women 210 (208). The time devoted to personal activities is roughly the same across genders, with approximately 1,000 minutes per day. The mean difference of the three uses of time between treated (pre-reform) and control states is not significantly different from zero. The average age of men in our sample is around 46 and for women 2 years less, 44. A bit more than half of individuals in our sample have children and the majority, and approximately 74%, are White. With respect to the level of education, there are small differences between treated and control states, with between 37% and 41% of the sample with a college degree. Finally, as for the employment status of individuals in our sample, women in treated states and control states are quite similar with approximately 69% actively working.

Given that a central part of our analysis consists of examining the different responses to the law among women with and without a university education, Appendix Table A.3 shows the descriptive statistics but separated by educational groups. The pattern in time use previously described holds for each of the educational groups, with women dedicating more time to household chores and childcare

and less to paid work than men. It is surprising the slight difference between women with and without university education regarding the time dedicated to childcare, with an average of between 250 and 270 minutes per day. Regarding the time dedicated to work, there are statistically significant differences in the expected direction. On average, women with university education spend 40 to 50 minutes more per day on paid work than women without a university education. Likewise, the inactivity rate of women without a university education is about 13 percentage points higher than that of women with university education. Finally, it is worth noting that the differences between the treated and control states in the averages of these variables are relatively small in most cases.

Appendix Table A.4 shows the breakdown of the different uses of time and their weight in the total. In the case of time devoted to personal use, this represents 66% of the total daily time and is concentrated on two activities: sleeping time (54%) and leisure time (31%). In the latter case (leisure), 75% is time spent socializing or relaxing (for example, watching a movie or television), without specifying with whom this socialization or relaxation activity is carried out. The rest of the time defined as leisure is time dedicated to other activities such as doing sports, shopping, etc. Regarding the time devoted to household and dependent care, this represents 18% of the total daily time, with household care being the task that absorbs the most time (68%) and childcare in second place (with 27%). Finally, regarding time devoted to work, 90% is time effectively working at the workplace, while 7% is commute time. In total, the three main uses of time (personal, household and childcare, and work) represent 98.6% of the total daily time, with five main activities that together represent 85% of the total: work, household care, child care, sleeping, and socializing/relaxing.

RESULTS

First-stage results

In this section we explore the effects of the alimony reforms on alimony payments. Unfortunately, data on alimony income is hard to obtain. One of the few exceptions is the Annual Social and Economic Supplement to the CPS (ASEC), which provides information on alimony income until 2014. Appendix Table A.5 shows the results of estimating via Borusyak et al. (2024) OLS regressions of alimony income against an indicator of the post-reform period. The estimates control for age, year, race, level of education, and state fixed effects. These are the same controls as in our main specification except for partner's race and level of education, which are not present in ASEC. We limit the sample to divorced women over 16 years of age. In total, we have information on 123,168 women between the years 2003 and 2014. We also have educational level data, so we estimate the specifications separately by groups of women with and without a college education. Panel (a) shows the results for the average level of alimony income, considering as zero those cases where there is no such income. Panel (b) shows the results for the extensive margin, that is, the probability of receiving an amount greater than zero of alimony income. Finally, panel (c) shows the results for the intensive margin, that is, the average level of alimony income in those cases where the individual receives this type of income. The results of this analysis should be taken with caution given the limitations of the data, specifically the availability of information only up to 2014, which implies that the effects of the alimony reforms are identified only through a small set of states, more specifically those that implemented the reform before 2014 (New Mexico, New Jersey, Massachusetts, and Maine).

Despite the limitations of the data, the table shows a clear pattern of reduction in alimony income after the reforms. This is true for both the extensive margin (panel b) and the intensive margin (panel c). The effects are quantitatively larger and statistically significant for the group of women with a college education; not so for women without a college education, although in this case the economic effects are still large but not statistically significant. For women with a college education, the reforms reduce the probability of receiving alimony income by 1.3 percentage points (36% of the pre-reform average) and the amount of the payment by almost $14,000 annually (55% of the pre-reform

TABLE 2 The impact of reduced alimony on time use (daily minutes post reform).

	Dependent variable: minutes per day					
	Work		Personal care & leisure		House & child care	
	Women	Men	Women	Men	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)
0–5 years post reform	31.192***	−5.965	−14.046***	16.017***	−16.712***	−5.863*
	(3.226)	(4.571)	(3.168)	(4.816)	(2.680)	(2.821)
3–5 years post reform	47.926***	−6.231	−23.570***	17.529**	−23.243***	−6.001*
	(4.720)	(7.342)	(4.027)	(8.164)	(5.102)	(3.466)
Mean of dependent variable	207.60	348.86	943.20	927.72	270.84	148.92
N	45,042	39,158	45,042	39,158	45,042	39,158

Source: ATUS, waves from 2003 to 2022 (excl. 2020).

Notes: Change in daily minutes in the various activities since the reforms passed, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Time spent working for people outside the labor force is coded as zero. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control year and state fixed effects, education, race and gender dummies for the individual and the spouse. All differences between men and women are statistically different from each other at the 10% confidence level. Robust standard errors in parentheses are clustered at the state level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

average). Both effects are statistically significant at standard confidence levels. For women without a college education, the magnitude of the effects is slightly smaller (−24% and −50%) and not statistically significant. Overall, the results of Appendix Table A.5 show significant effects of the reforms, which are the focus of this study, without finding major differences between groups of women based on their educational level.

Main effects of the alimony reforms

Figure 1 shows the results of estimating equation (1) separately for married men and married women and for each of the 3 main uses of time. Panels (a), (c), and (e) present the results for men, and panels (b), (d), and (f) for women. In the case of men's results, we do not see any statistically significant effect on the time they devote to work. However, we do see effects on the time they devote to personal care, which increases, and on the time they spend on household and childcare, which decreases. But in both scenarios, the magnitude of the estimated coefficients is smaller (particularly for the time spent on household and childcare) and more volatile compared to married women. Later on, we will see that these estimates do not hold up well against reasonable violations of pre-trends. In the case of women, a very clear pattern can be observed, according to which, after the reforms, women dedicate more time to paid work at the expense of spending less time on personal care and the care of the home and children. In all cases, the effects are substantial, statistically significant, and increasing over time. This last characteristic is to be expected if, for example, women need time to adjust their work habits, find a new job, or change their schedule to dedicate more hours to work.

To get a sense of the magnitude of the estimated effects, Table 2 presents the results of estimating a modified version of equation (1), where the post-reform effect is measured through a dummy variable that takes the value of 1 for all post-reform periods (rows 1 and 2), or through two dummy variables for the effects from 0 to 2 years post-reform, and from 3 to 5 years post-reform (rows 3 and 4). Consistent with Figure 1, the estimated coefficients for men are not statistically significant in the case of work time. Personal time displays an increase of between 16 and 17.5 minutes per day (between 1.7% and 1.9% of the total time dedicated to personal care), which is statistically significant. Finally,

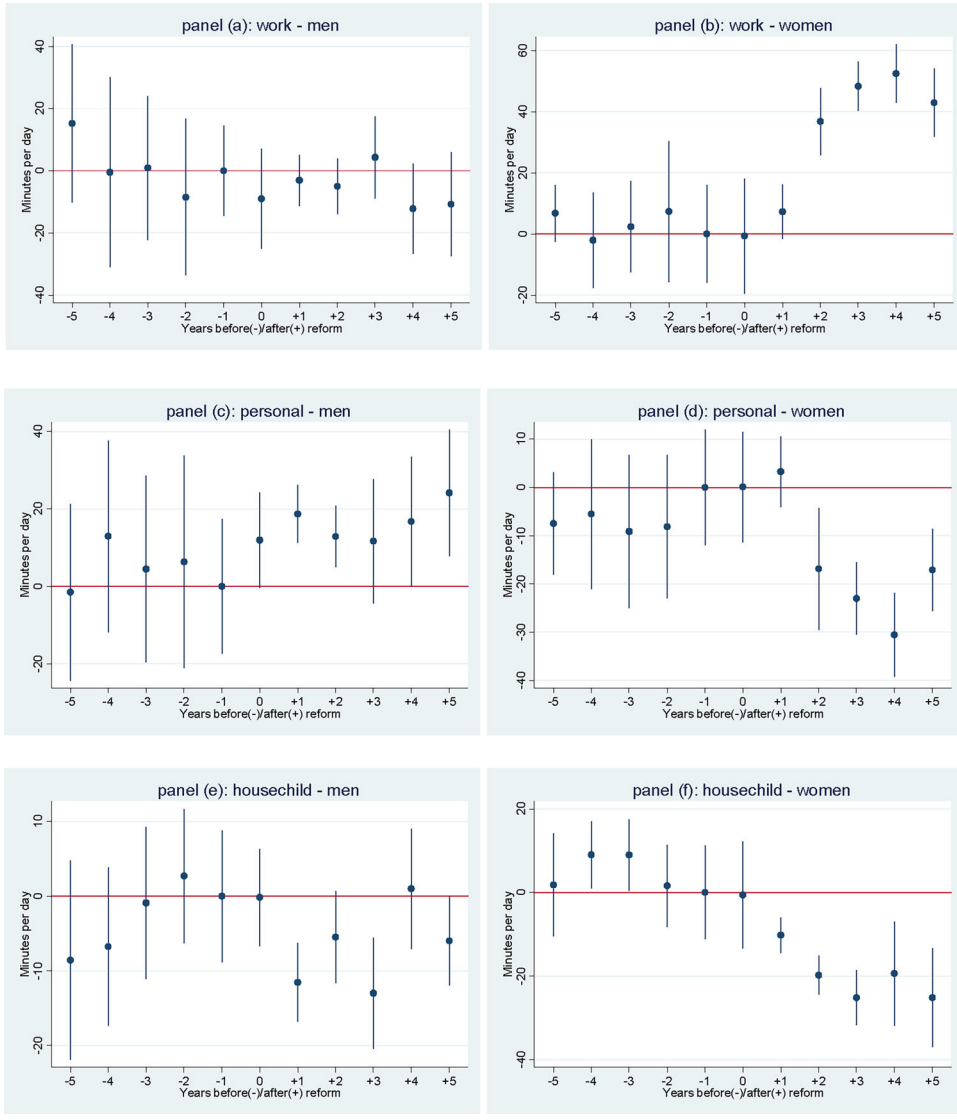

FIGURE 1 The impact of reduced alimony on time use.
[Color figure can be viewed at wileyonlinelibrary.com]
Source: ATUS 2003 to 2022.
Notes: Event study coefficients for time use (minutes per day), estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control for state and year fixed effects, age, education, and race dummies of the individual and the spouse. Values normalized to 0 at t−1. Robust standard errors clustered at the state level.

in the case of the time devoted to house and childcare, we see a small decrease of 6 minutes (4%), which is statistically significant at the 10% level. In the case of women, the reforms for the reduction of spousal support lead to an increase in the time dedicated to work of between 32 and 48 minutes per day (14% to 23% of the total), a decrease in the time dedicated to personal uses of between 14 and 24 minutes (1.5% to 2.5%), and a decrease in the time dedicated to the care of the home and children of between 17 and 23 minutes per day (6.3% to 8.5%). The magnitude of our estimate for time dedicated to work (14%) is in line with those of previous studies that have analyzed changes in

alimony laws in the United States and Canada. Verma (2021) found that the partial reform in the state of Massachusetts led to an increase in the time dedicated to work and, as a consequence, in the labor income of married women by 9%. Chiappori et al. (2017) found that extending the right to alimony to common-law partners in Canada decreased the likelihood of working full-time by 9.2% for women who were already married when the law was passed. Although this latter study analyzes the impact of a reform on the extensive margin, it is necessary to consider that the dependent variable (the decision to work full-time) does not capture the entire potential effect on the number of hours worked.

The main assumption of our identification strategy is that, conditional on all the control variables, the uses of time in treated and control states would have followed the same trends if the reforms had not been implemented. Panels (a) to (f) in Figure 1 generally support this hypothesis, although less decisively in the case of the results for the time dedicated to personal use and the care of the home and children. To ensure that our results are not due to pre-existing trends, we perform a sensitivity analysis implementing the honest DiD procedure of Rambachan and Roth (2023). The robust inference approach in Rambachan and Roth (2023) formalizes the intuition that pre-trends are informative about violations of parallel trends, and they provided two main ways of formalizing what this means. One approach relies on bounds on relative magnitudes. The idea is to test the robustness of previous estimates to the condition that the violations of parallel trends in the post-treatment period cannot be bigger than some multiple of the maximum violation of parallel trends in the pre-treatment period. In this approach, the value of $M = 1$, for example, imposes that the post-treatment violation of parallel trends is no longer than the worst pre-treatment violation of parallel trends (between consecutive periods). The second approach, called smoothness restrictions, tests the robustness of previous estimates to the condition that the post-treatment violations of parallel trends cannot deviate too much from a linear extrapolation of the pre-trend. Table 6 shows the results of implementing both sensitivity tests for the estimates of the treatment effect 3 to 5 years post reform shown in Figure 1 (Table 2). Row 1 shows the "breakdown value" of M for a statistically significant effect (95% confidence level) using relative magnitudes restrictions, and row 2 shows the estimate assuming a linear extrapolation of the pre-trend based on smoothness restrictions, together with the upper and lower bounds of 95% confidence intervals. Note that by focusing on the estimated effect for 3 to 5 years after the reform, the robustness test is more demanding because the accumulated effect of a deviation from parallel trends is greater the longer the time horizon after the reform. Even so, in the case of the results for women, our estimates are robust to allowing a deviation from parallel trends between 20% and 50% of the maximal deviation between two consecutive years pre-reform, depending on the outcome (columns 4 to 6 of panel a, Table 6). The female estimates are also robust to allowing a linear extrapolation of pre-trends, except in the case of house and childcare time, that continues to be statistically significant but only at the 10% level. In the case of the results for men (columns 1 to 3 of panel a), none of the previously statistically significant effects holds up to both tests.

Heterogeneous effects by the level of education and earnings potential

We now turn to the disaggregated results by educational level. The goal is to see if the response pattern to the reforms we have previously described holds for different groups of women according to their educational level. Figure 2(a) shows the results of estimating equation (1) separately for two groups of women: those with university degrees (panels a, c, and e) and those with education levels lower than university (panels b, d, and f). In both cases, there is a statistically significant increase in time devoted to work after the reforms (panels a and b), ranging from 25 to 35 minutes for women with university education and from 40 to 64 minutes for those with education lower than university level (columns 1 and 2 of Table 3). The differences between both groups of women arise in other uses of time. For women with university education, the increase in time devoted to work comes at the expense of time spent on household and childcare, which decreases between 31 and 39 minutes after the reforms (panel e of Figure 2a and column 5 of Table 3). On the other hand, for women without university education,

TABLE 3 The impact of reduced alimony on time use of wives by their level of education.

	Dependent variable: minutes per day									
	Work		Personal care & leisure		House & child-care		Housework		Childcare	
	Women with a college degree	Women with less than a college degree	Women with a college degree	Women with less than a college degree	Women with a college degree	Women with less than a college degree	Women with a college degree	Women with less than a college degree	Women with a college degree	Women with less than a college degree
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0–5 years post reform	25.258***	39.886***	8.527	−35.207***	−30.860***	−5.323	−16.789***	−9.406***	−18.479***	4.491***
	(8.101)	(5.444)	(7.774)	(3.912)	(3.211)	(4.484)	(3.295)	(3.184)	(1.814)	(1.490)
3–5 years post reform	32.651***	64.565***	10.562	−54.069***	−38.558***	−11.763	−20.477***	−17.232***	−23.709***	5.199***
	(7.452)	(9.546)	(6.766)	(6.472)	(3.961)	(8.308)	(4.017)	(6.446)	(2.010)	(1.565)
Mean of dependent variable	231.79	190.74	918.74	960.25	270.51	271.08	161.65	200,86	108.89	70.22
N	19,508	25,534	19,508	25,534	19,508	25,534	19,508	25,534	19,508	25,534

Source: ATUS, waves from 2003 to 2019.

Notes: Change in daily minutes in the various activities since the reforms passed, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Time spent working for people outside the labor force is coded as zero. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All regressions include state and year fixed effects, respondent controls (age, education and race) and spouse's controls (age, education, race). Robust standard errors in parentheses are clustered at the state level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

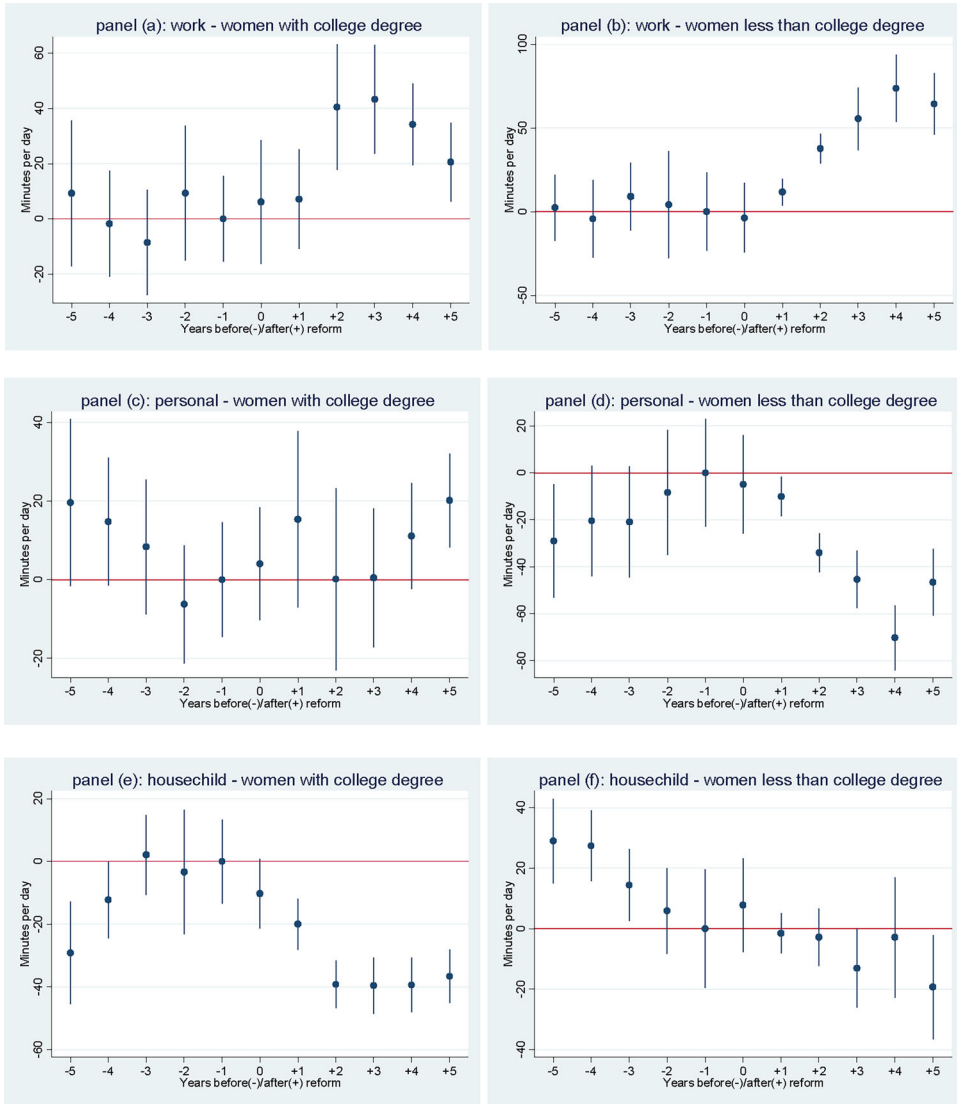

FIGURE 2a The impact of reduced alimony on time use of wives by their level of education.
[Color figure can be viewed at wileyonlinelibrary.com]
Source: ATUS 2003 to 2022.
Notes: Event study coefficients for time use (minutes per day), estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control for state and year fixed effects, age, education, and race dummies of the individual and the spouse. Values normalized to 0 at t−1. Robust standard errors clustered at the state level.

the increased dedication to paid work comes at the expense of personal care time, which decreases between 35 and 54 minutes (panel d of Figure 2a and column 4 of Table 3).

These results hold across the Honest DiD sensitivity tests based on relative magnitudes restrictions (Table 6, panel b). The same occurs in the case of the test based on smoothness restrictions, although in this case, we find a slight increase in time dedicated to personal care in the case of women with university education (column 5 of panel b) and in the time dedicated to household and childcare in the case of women without university education (column 3 of panel b of the table).

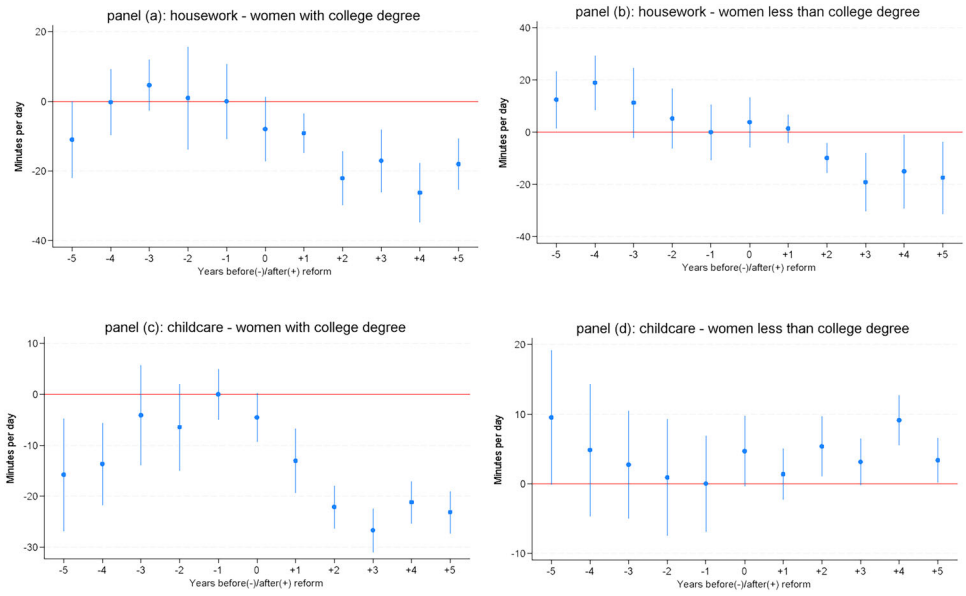

FIGURE 2b The impact of reduced alimony on time use of wives by their level of education – housework time and childcare time.

[Color figure can be viewed at wileyonlinelibrary.com]

Source: ATUS 2003 to 2022.

Notes: Event study coefficients for time use (minutes per day), estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control for state and year fixed effects, age, education, and race dummies of the individual and the spouse. Values normalized to 0 at t−1. Robust standard errors clustered at the state level.

In Figure 2(b), we break down the analysis of time devoted to home and childcare by these two components and by the educational level of the woman. As can be seen in the figure, the lesser time that women with university education dedicate to home and childcare is due to both factors. These women dedicate, on average over the 5 years following the reform, 17 minutes less per day to household chores (panel a of Figure 2b and column 7 of Table 3) and 18 minutes less per day to childcare (panel c of Figure 2b and column 9 of Table 3). Both effects are statistically significant and hold up well against the Honest DiD tests in panel (e) of Table 6. In contrast, in the case of women without university education, there is a small but statistically significant increase in the time dedicated to childcare (+4 minutes; panel d of Figure 2b and column 10 of Table 3) and a reduction of 9 minutes in the time dedicated to household chores, which however does not pass the Honest DiD tests. In summary, the results of breaking down the time at home reveal a contrast between women with and without university education. While the former tend to spend less time on childcare after the reforms, the latter increase their commitment by a small amount of time. As we will see later, this contrast is consistent with the different impact that alimony reforms have on the fertility of both groups of women.

In Figure 3 and Table 4, we look at the heterogeneous effects of the reform across different types of couples. We want to check whether the effects of the reforms are greater, as might be expected, for those couples for whom alimony would be greater in the event of divorce. Specifically, we would expect a greater impact of the reforms for couples in which the wife has lower labor income than the husband. But, as we have shown previously, legal reforms have a significant impact on the labor supply of wives, and therefore we cannot use the current income level of each household member. And since our data are cross-sectional, we cannot use the income level of each household member prior to the reforms either. Instead of this, in Figure 3 and Table 4 we approximate the earnings potential of

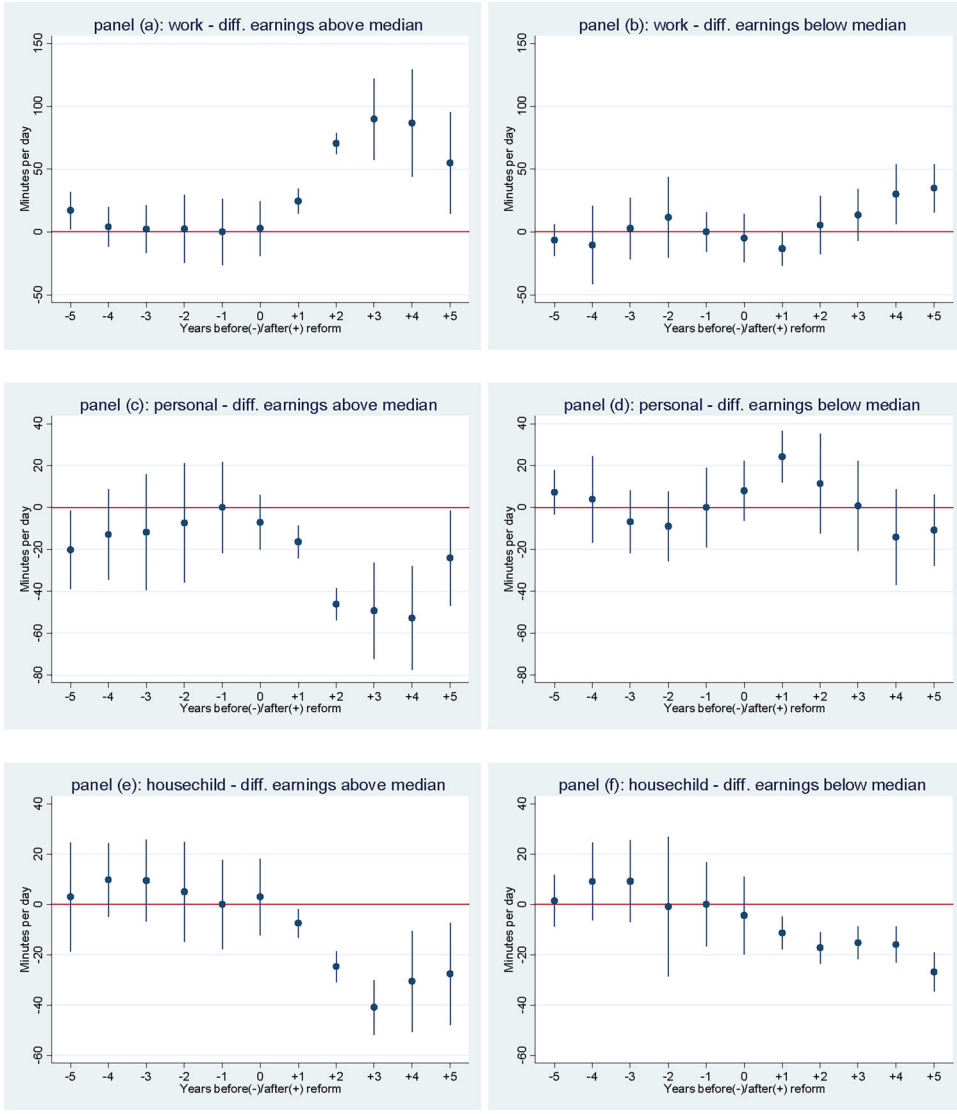

FIGURE 3 The impact of reduced alimony on time use of married women by the difference in earning potential between the members of the couple.

[Color figure can be viewed at wileyonlinelibrary.com]

Source: ATUS 2003 to 2022.

Notes: Event study coefficients for time use (minutes per day), estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control for state and year fixed effects, age, education, and race dummies of the individual and the spouse. Values normalized to 0 at t−1. Robust standard errors clustered at the state level.

each individual by using mincer regressions in which we estimate the labor earnings of each individual against their educational level and a quadratic age term, after removing fixed effects by year and state.

We run these regressions using nontreated observations and we use the estimated coefficients of the education dummies and the quadratic age term to impute the earnings potential of individuals in all states and time periods. This exercise aims to impute to each household member an income measure as exogenous as possible, dependent on variables that are not affected by the alimony reforms, namely,

TABLE 4 The impact of reduced alimony on time use of married women by the difference in earning potential between the members of the couple.

	Dependent variable: Minutes per day					
	Work		Personal care & leisure		Housework & child-care	
	Earnings gap >median	Earnings gap <median	Earnings gap >median	Earnings gap <median	Earnings gap >median	Earnings gap <median
	(1)	(2)	(3)	(4)	(5)	(6)
0–5 years post reform	54.845***	10.919	−32.678***	3.209	−21.412***	−15.190***
	(9.113)	(9.254)	(6.302)	(7.741)	(4.371)	(2.793)
3–5 years post reform	77.131***	26.117**	−42.104***	−8.087	−33.070***	−19.377***
	(19.443)	(10.619)	(11.782)	(10.211)	(8.495)	(3.344)
Mean of dependent variable	211.96	203.38	938.47	947.78	271.81	269.90
N	21,816	23,226	21,816	23,226	21,816	23,226

Source: ATUS, waves from 2003 to 2022.

Notes: Change in in the probability of childbirth since the reforms passed, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Time spent working for people outside the labor force is coded as zero. The earnings potential of each member of the couple is estimated from Mincer regressions on year and state fixed effects, age and education dummies. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2011), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in the opposite direction, that is, augmenting the alimony rights of ex-spouses. All regressions include state and year fixed effects, respondent controls (age, education and race) and spouse's controls (age, education, race). Robust standard errors in parentheses are clustered at the state level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

the individual's level of education and age. Columns 1, 3, and 5 look at the results of estimating equation (1) using couples in which the difference in imputed earnings between the spouses (husband minus wife) is above the sample median. Columns 2, 4, and 6 show the results for the rest of couples. Again, we would expect to see larger effects of the alimony reforms on the first group of couples.

Turning now to the results of Figure 3 and Table 4, we confirm the expected pattern. The alimony reforms have much greater and more statistically significant effects on couples in which the imputed earnings gap between the spouses is larger than the sample median (panels a, c, and e of Figure 3 and columns 1, 3 and 5 of Table 4). More specifically, wives in couples with a high income differential in favor of the husband increase their time dedicated to work after the reforms by 55 minutes per day, compared to just 11 minutes (not statistically significant) in the case of wives with an income level more similar to their husbands. Likewise, wives in couples with a high-income differential reduce time for personal use by 33 minutes per day compared to a statistically insignificant increase of 3 minutes in the case of wives from other couples. In the case of time dedicated to childcare and household, a statistically significant decrease is observed in both types of couples, but greater in the case of couples with a high-income differential (−21 minutes versus −15 minutes). This pattern holds up against the sensitivity tests of the Honest DiD (panel d of Table 6), although in this case there is no statistically significant difference between the two groups of couples in relation to the decrease in time dedicated to household and childcare, which ranges between 24 and 27 minutes per day.

The effects of alimony reforms on fertility

In Figure 4 and Table 5, we explore the effects of the alimony reforms on the fertility rate. In this case, we estimate equation (1) but use the probability of a newborn at each point in time as the dependent variable. We focus the analysis on this variable and not on the total number of children since this has the advantage of being able to capture the effect of the reforms more directly on the decision to have

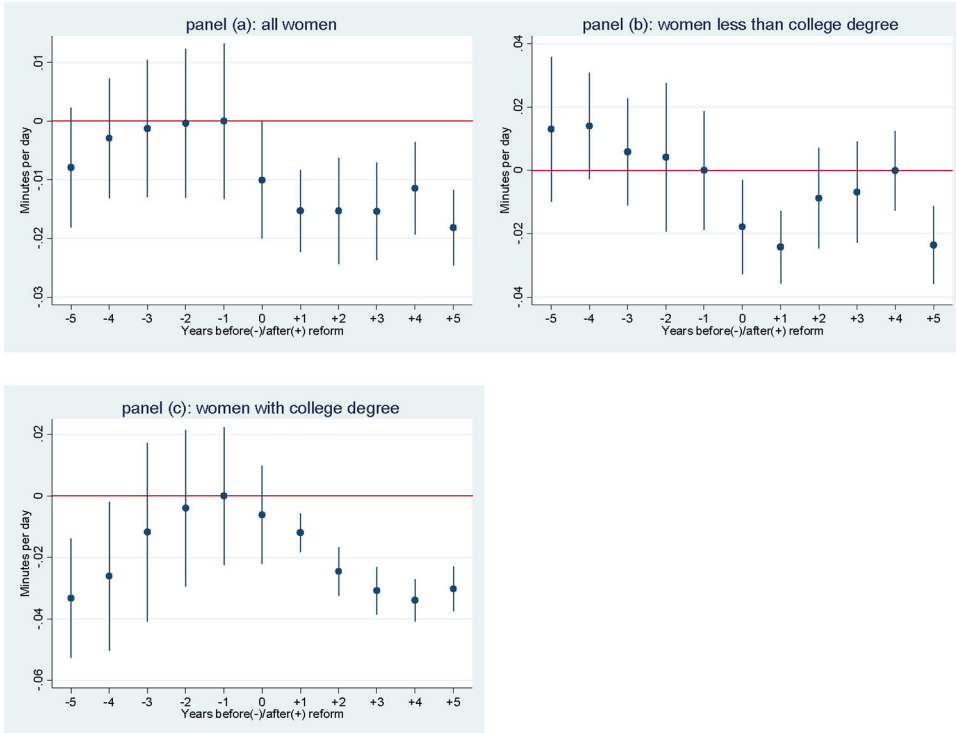

FIGURE 4 The impact of reduced alimony on fertility (childbirth).
[Color figure can be viewed at wileyonlinelibrary.com]
Source: ATUS 2003 to 2022.
Notes: Event study coefficients for childbirth, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All specifications control for state and year fixed effects, age, education, and race dummies of the individual and the spouse. Values normalized to 0 at t−1. Robust standard errors clustered at the state level.

TABLE 5 The impact of reduced alimony on fertility (probability of childbirth).

	All women	Women with less than college degree	Women with a college degree
	(1)	(3)	(5)
0–5 years post reform	−0.014***	−0.014**	−0.023***
	(0.004)	(0.006)	(0.003)
3–5 years post reform	−0.015***	−0.010*	−0.032***
	(0.004)	(0.006)	(0.003)
Mean of dependent variable	0.068	0.054	0.085
N	45,042	25,534	19,508

Source: ATUS, waves from 2003 to 2022.
Notes: Change in in the probability of childbirth since the reforms passed, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All regressions include state and year fixed effects, respondent controls (age, education and race) and spouse's controls (age, education, race). Robust standard errors in parentheses are clustered at the state level. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

children, something that will gradually translate to the total number of children at each point in time. To avoid our results being affected by past fertility decisions and changes in the composition of our sample over time, our regressions control for the number of children born before the reform, and we assign the previous number of children as the value in the case of couples in states without reform or in the case of couples observed before the reform. That said, our results are virtually identical when we exclude this control variable from our regressions.

In principle, as discussed in the section "Theoretical Framework," the decreased incentive for marriage-specific investment and the fact that the wives affected by the alimony reduction change towards a less traditional model of household specialization, would suggest negative effects of the reforms on fertility. However, lower expected spousal support upon divorce has the potential to increase incentives for children among women, since child support may act as a substitute form of income, and since children may be viewed as a marital commitment device in lieu of alimony. Moreover, since children are a public good within the household, the final impact of the reforms will depend both on the bargaining power of the husband and wife, as well as on their preferences for children and the possibilities to pay for childcare.

Moving on to the results, in Figure 4 we see that the alimony reforms cause a decrease in the probability of a newborn, an effect that is much more pronounced in the case of women with university education (panel c). In Table 5, we see that after the reforms, the probability of a newborn decreases by an average of 1.4 percentage points (statistically significant). Likewise, we also see that the effect is much greater in women with university education (−2.3 percentage points; −3.2 percentage points, 3 to 5 years post reform) than in the case of women without university education (−1.4 percentage points). However, as can be seen in Figure 4, there are trends prior to the reform in the case of both groups of women. More specifically, there is a negative trend prior to the reforms in the case of women without university education and, conversely, an increasing trend is observed in the case of women with university education. Bearing this in mind, the results of the Honest DiD test based on smoothness restrictions (linear extrapolation of pre-reform trends, shown in panel d of Table 6) show a much greater decrease in the probability of a newborn in the case of women with a university degree (−5.6 percentage points) and reduce this effect to zero in the case of women without university education. Again, these results are consistent with a linear extrapolation of trends pre-treatment. Taking into account the set of results, we can conclude that the reforms have a clear and statistically significant effect in the case of women with university education and a lesser or even null effect in the case of the rest of the women.

The fact that the fertility rate decreases for college educated wives but not for wives without a college degree, suggests that the heterogeneous response in time use of wives with high and low educational level to reduced alimony is due at least in part to different preferences and costs between the two groups for children. Finally, since children are a marital public good, our results imply that the husband shares part of the welfare loss to the wife in college educated households, but not in other households, generating larger gender differences in welfare among the group with less than a college degree.

The effects of reduced alimony on time spent with the partner

In this section, we ask ourselves whether reduced alimony has had an impact on investment in the partner. To this end, we analyze the impact of reduced alimony on the time dedicated to the partner. We focus on women (the time women spend with their partner), as they are the ones who show greater effects due to legal reforms. Note that from a theoretical perspective, the effect of reduced alimony on the time a woman dedicates to her partner is ambiguous. On one hand, legal reforms imply for the woman a reduction in the value of a possible marital dissolution since, in that situation, the available income would be lower than before the reforms. This would lead women surprised by the reforms to want to invest more in the relationship by, for example, spending more leisure time with their partner or sharing more time in joint tasks.

TABLE 6 Honest DiD sensitivity analysis.

Panel (a) – Baselines estimates of the effect of reforms on time use 3–5 years post reform						
	Men (work time)	**Men (personal time)**	**Men (house and childcare time)**	**Woman (work time)**	**Woman (personal time)**	**Woman (house and childcare time)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Relative magnitude restrictions—"breakdown value" of M	none	0.0	none	0.5	0.3	0.2
Smoothness restrictions—estimate under linear extrapolation of pre-trends	5.139	−1.166	−8.211	32.281	−28.400	−8.655
95% lower bound	(−14.253)	(−16.336)	(−16.892)	(23.142)	(−39.655)	(−17.817)
95% upper bound	(24.531)	(14.004)	(0.469)	(41.420)	(−17.146)	(0.506)
Panel (b) – Estimates of the effect of reforms on time use 3–5 years post reform by the level of education of the woman						
	Woman less than college (work time)	**Woman less than college (personal time)**	**Woman less than college (house and childcare time)**	**Woman with college (work time)**	**Woman with college (personal time)**	**Woman with college (house and childcare time)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Relative magnitude restrictions—"breakdown value" of M	0.5	0.4	none	0.1	none	0.3
Smoothness restrictions—estimate under linear extrapolation of pre-trends	56.605	−74.325	14.872	60,870	18,022	−53,888
95% lower bound	(40.314)	(−93.826)	(1.134)	(43.085)	(6.558)	(−65.216)
95% upper bound	(72.897)	(−54.825)	(28.610)	(78.655)	(29.487)	(−42.561)

(Continues)

TABLE 6 (Continued)

Panel (c) – Estimates of the effects of reform on time use by the difference in the earnings potential of the couple						
	Earnings gap >median (work time)	**Earnings gap >median (personal time)**	**Earnings gap >median (house and childcare time)**	**Earnings gap ≤median (work time)**	**Earnings gap ≤median (personal time)**	**Earnings gap ≤median (house and childcare time)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Relative magnitude restrictions—"breakdown value" of M	0.6	0.3	0.2	0.0	none	0.1
Smoothness restrictions—estimate under linear extrapolation of pre-trends	81,759	−58.395	−24.348	24.690	−1,238	−27,036
95% lower bound	(59.109)	(−75.171)	(−37.607)	(2.874)	(−18.229)	(−38,275)
95% upper bound	(104.410)	(−41.620)	(−11.089)	(46.507)	(15.753)	(−15,797)

(Continues)

TABLE 6 (Continued)

Panel (d) – Estimates of the effect of reforms on the presence of a newborn			
	All women	**Women with a college degree**	**Women with less than a college degree**
	(1)	**(2)**	**(3)**
Relative magnitude restrictions – "breakdown value" of M	0.1	0.2	none
Smoothness restrictions – estimate under linear extrapolation of pre-trends	−0.020	−0.056	0.003
95% lower bound	(−0.027)	(−0.067)	(−0.012)
95% upper bound	(−0.013)	(−0.045)	(0.018)

Panel (e) – Estimates of the effects of reforms on house and childcare time of wives by their level of education				
	Woman with college (housework time)	**Woman less than college (housework time)**	**Woman with college (childcare time)**	**Woman less than college (childcare time)**
	(1)	**(2)**	**(3)**	**(4)**
Relative magnitude restrictions—"breakdown value" of M	0.2	0.1	0.3	0.1
Smoothness restrictions—estimate under linear extrapolation of pre-trends	−20.509	−5.084	−39.093	18.760
95% lower bound	(−28.391)	(−15.901)	(−47.304)	(13.710)
95% upper bound	(−12.627)	(5.732)	(−30.883)	(23.810)

Note: Sensitivity analysis implementing the honest DiD procedure of Rambachan and Roth (2023).

On the other hand, the greater dedication of women to paid work following legal reforms leaves them less time for other activities or uses, including the care and attention of the partner. However, considering the results we have obtained so far, we would expect a different effect for women with and without a university education. In the case of wives with a university education, since much of the extra effort in time dedicated to paid work is offset by less dedication to home care and childcare, we would expect that "quality" time with the partner (e.g., leisure time) would not be adversely affected or might even increase to compensate for the lesser time dedicated to household tasks and contribute to maintaining the relationship. However, in the case of women without a university education, since their increased dedication to paid work is almost exclusively compensated by less personal time, we would expect a more reduced impact on time with the partner, whether it be leisure time or time spent on household tasks in the company of the husband.

Table 7 shows the results of the analysis of data on time spent with the partner, obtained by estimating specification (1). To facilitate the interpretation of the results, total time spent with the partner has been divided into three categories: the time they both spend together on leisure activities; the time they spend together dedicated to household chores and childcare; and finally, the "other" category, which includes uses of time such as eating together (not during leisure activities) or shopping at the supermarket.

As can be seen in the table, the lion's share of time with the partner is leisure time (one of the most relevant components is time spent watching TV together). The results show that for both groups of women, there is no statistically significant effect of reduced alimony on the total time that wives spend with their husbands, although in the case of wives with a university education, there is a substantial reduction in the last 3 years of the sample that is, however, not estimated precisely. However, when we look at the different components of time with the partner, we do observe clear differences between the two groups of women. In the case of wives without a university education, the effects are small in magnitude and statistically not significant in all cases, likely showing the tradeoff mentioned earlier. In contrast, women with a university education spend more time with their partner in leisure activities (12 minutes per day on average in the 5 years following the reforms) but less time sharing household chores and childcare (−12.6 minutes). Both effects are statistically significant at the 1% level.

Largely, these results are consistent with those obtained so far and also show the different bargaining power of women with and without a university education. In the case of women with a lower educational level, we already saw that a significant part of the adjustment in time use after the legal reforms occurs through a reduction in time for personal care and leisure. Now we see that this reduction occurs in activities that either the wife did alone or with other people, but not with her husband, as the joint leisure time remains unchanged. In contrast, women with a university education, who presumably have greater bargaining power, continue to invest in the relationship but in a different way than before, prioritizing leisure time with their partner in exchange for less time together dedicated to household care and childcare.

ROBUSTNESS TESTS, SELECTION ISSUES AND POLICY ENDOGENEITY TESTS

Robustness tests

In Table 8 we show the results of several analyses to test the robustness of our results. For comparison purposes, column 1 shows the results of our baseline specification. Columns 2 and 3 show the results of progressively adding controls to our specification. In column 2, only fixed effects by year and state are included, while in column 3, controls for the interviewed individual are added. Comparing these results with those in column 1—baseline specification with all controls, including spouse controls—it is observed that both the controls for the interviewed individual and those for the spouse have little impact on our estimates. The only exception occurs in the case of the fertility analysis for

TABLE 7 The impact of reduced alimony on wife's time with the husband.

	Dependent variable: minutes per day							
	Total		Leisure		Housework & child-care		Other	
	Wife has college degree	Wife with less than college degree	Wife has college degree	Wife with less than college degree	Wife has college degree	Wife with less than college degree	Wife has college degree	Wife with less than college degree
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0–5 years post reform	−2.120	−2.691	12.014***	−1.464	−12.688***	0.852	−1.447	−2.079
	(9.430)	(5.001)	(4.386)	(3.083)	(2.694)	(2.105)	(3.375)	(1.737)
3–5 years post reform	−16.535	2.227	9.566***	−2.912	−18.027***	3.450	−8.073*	1.689
	(11.219)	(8.284)	(4.211)	(4.328)	(3.355)	(3.099)	(4.833)	(2.773)
Mean of dependent variable	271.33	275.76	117.49	133.93	64.97	61.19	88.86	80.63
N	19,508	25,534	19,508	25,534	19,508	25,534	19,508	25,534

Source: ATUS, waves from 2003 to 2022.

Notes: Change in the time spent with the husband (minutes per day) obtained from estimating equation (1) using Borusyak et al. (2024). 'Other' time includes time spent with the husband doing things like eating (non-leisure) and shopping. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2011), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in the opposite direction, that is, augmenting the alimony rights of ex-spouses. All regressions include state and year fixed effects, respondent controls (age, education and race) and spouse's controls (age, education, race). Robust standard errors in parentheses are clustered at the state level. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

TABLE 8 Robustness tests. Effect of alimony reforms 0–5 years post reform.

	Baseline specification	Only year and state fixed effects	(2) + individual controls	Year FE interacted with treatment	Without New Mexico (state = 35)	Age cutoff for women set at 25	Age cutoff for women set at 29	Placebo: single women	Controlling for the number of children pre-reform	Texas versus non-reforming states	State time-varying controls
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Work-all women	31.192***	28.315***	30.756***	30.893***	32.377***	26.781***	30.383***	5.876	29.525***	−10.193***	33.773***
	(3.226)	(3.190)	(3.469)	(3.317)	(3.355)	(3.243)	(3.600)	(18.148)	(3.365)	(3.049)	(3.555)
Personal-all women	−14.046***	−8.889***	−13.985***	−18.746***	−16.090***	−13.781***	−12.407***	3.524	−15.383***	12.166***	−14.259***
	(3.168)	(3.295)	(3.287)	(3.050)	(3.299)	(3.185)	(3.864)	(18.151)	(3.067)	(2.331)	(3.401)
HouseChild-all women	−16.712***	−18.867***	−16.350***	−12.411***	−15.600***	−13.524***	−17.249***	−6.071	−13.843***	1.920	−18.881***
	(2.680)	(2.868)	(2.579)	(2.344)	(2.800)	(2.630)	(2.709)	(4.093)	(2.692)	(1.944)	(2.852)
Work-less than college	39.886***	37.223***	39.635***	41.450***	40.746***	35.523***	40.370***	5.889	38.867***	−5.070	42.733***
	(5.444)	(4.728)	(5.325)	(4.548)	(5.689)	(5.635)	(5.346)	(21.174)	(5.513)	(3.712)	(5.717)
Personal-less than college	−35.207***	−27.522***	−34.800***	−39.750***	−37.474***	−34.714***	−30.891***	4.478	−36.363***	11.987***	−33.792***
	(3.912)	(3.979)	(3.786)	(2.776)	(4.056)	(3.924)	(3.831)	(17.470)	(3.785)	(2.810)	(4.261)
Housechild-less than college	−5.323	−10.042**	−5.526	−1.794	−3.452	−3.166	−10.050**	−7.571	−3.269	−3.674	−9.903
	(4.484)	(4.216)	(4.250)	(3.989)	(4.816)	(4.509)	(4.363)	(13.428)	(4.410)	(3.294)	(4.702)

(Continues)

TABLE 8 (Continued)

	Baseline specification	Only year and state fixed effects	(2) + individual controls	Year FE interacted with treatment	Without New Mexico (state = 35)	Age cutoff for women set at 25	Age cutoff for women set at 29	Placebo: single women	Controlling for the number of children pre-reform	Texas versus non-reforming states	State time-varying controls
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Work-college	25.258***	21.957***	25.493***	21.719***	27.318***	20.775***	22.900**	6.531	21.776***	−16.150***	27.940***
	(8.101)	(7.350)	(7.923)	(6.190)	(8.343)	(8.331)	(9.400)	(23.569)	(7.981)	(5.622)	(8.443)
Personal-college	8.527	9.128	7.941	4.475	6.252	8.656	7.730	4.455	6.350	10.183***	6.013
	(7.774)	(7.699)	(7.927)	(4.881)	(7.999)	(7.758)	(9.439)	(25.208)	(7.649)	(3.725)	(8.570)
Housechild-college	−30.860***	−28.414***	−30.427***	−25.520***	−30.551***	−26.728***	−27.128***	−5.918	−25.324***	11.639***	−−0.198***
	(3.211)	(3.495)	(3.217)	(2.342)	(3.263)	(3.232)	(3.203)	(11.356)	(2.686)	(2.782)	(3.227)
Newborn-all women	−0.014***	−0.014***	−0.015***	−0.008***	−0.014***	−0.015***	−0.014***			0.003	−0.013***
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.004)			(0.003)	(0.004)
Newborn-less than college	−0.014**	−0.002	−0.014**	0.001	−0.010*	−0.014**	−0.015***			0.004	−0.012**
	(0.006)	(0.004)	(0.006)	(0.003)	(0.006)	(0.0069	(0.003)			(0.003)	(0.006)
Newborn-college	−0.023***	−0.027***	−0.023***	−0.015***	−0.024***	−0.023***	−0.021***			−0.000	−0.022***
	(0.003)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.006)			(0.004)	(0.004)

Source: ATUS, waves from 2003 to 2022.

Notes: Time spent working for people outside the labor force is coded as zero. Column (3): Specification with Texas as the only treated state versus the non-reforming states. Treated states, except in column (3), are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2011), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. Robust standard errors in parentheses are clustered at the state level. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

women without a university education, whose results are sensitive to the inclusion of controls. More specifically, the lack of inclusion of individual and spouse controls results in an estimated effect that is not statistically different from zero. In all other cases, the results shown in column 1 are maintained, although there are small variations in their magnitude, depending on whether individual controls are included or not.

Column 4 shows the results of adding to our main specification year fixed effects interacted with treatment. This allows us to control for treatment specific time trends which might be correlated with our outcomes of interest. The estimated effects are generally close to those of our baseline specification (5.02% per year), with the largest changes in the case of the fertility analysis. Although the pattern of estimated effects across groups of education is maintained, the magnitude of the estimated effects is now smaller, with alimony reforms reducing the probability of newborn by 1.5 percentage points in the case of women with a university degree, versus 2.3 percentage points in our baseline specification, and bringing the estimate down to zero in the case of women without a university education. In column 5 we show the results of an analysis that excludes New Mexico from the sample. This is to ensure that our sample of treated and untreated states is consistent across years. Since New Mexico passed its alimony reform in 2006, this treated state is not part of the estimates of treatment effects prior to 3 years before reforms. As can be seen from the table, excluding New Mexico from the sample of treated states has barely any effect on the estimates. Columns 6 and 7 analyze the sensitivity of our results to changes in the age cutoff of women in our sample. The estimates are unaffected by that choice.

In column 8 we run a placebo test using single women as our "fake" treated group. To avoid the use of cohabiting couples who may foresee a future marital union and therefore may be affected by the reforms, we restrict the group of single women to those who do not live with a stable partner. Additionally, and given that a very small number of these couples have children, we do not perform this placebo test for the fertility analyses. As expected, we do not find statistically significant effects of the reforms.

In column 9, we estimate equation (1) controlling for the number of children in the household. The aim is to see if the differences in the results by educational level are due to women with different levels of education having different household responsibilities because of having more or fewer children, and if this leads them to react differently to the reduction in alimony. Note that in this analysis, no distinction is made between children born before or after the reforms. The rationale behind this approach is that the analysis aims to understand the extent to which reactions to the alimony laws differ, once the effect on the uses of time attributed to varying childbearing patterns among women of different education levels is accounted for, even though these differences in childbearing may be partially attributed to the reforms themselves. As can be seen in the table, controlling for the number of children in the household explains part of the estimated effects, especially, and logically, in terms of the reduction in time for childcare and household duties. For example, after controlling for the number of children in the household, the impact of legal reforms on the time dedicated to household and childcare is −25 minutes in the case of women with university education, compared to −31 minutes in the specification without controlling for the number of children. This lesser effect is explained by the impact of the reforms on the fertility rate, reducing the number of children. Even so, the majority of the estimated effect persists and, more importantly, the pattern of responses to the legal reforms that we found earlier is maintained, with the same differences between women of different educational levels persisting.

In column 10, we show the results of an analysis that compares Texas with nontreated states. As explained earlier, Texas is the only state that during our sample period passed a pro-alimony reform, that is, Texas increased the alimony rights of eligible spouses. We are comparing only one treated state, before and after the reform, against the nontreated states, hence the results of this analysis must be taken with caution. In all cases, except for personal time of college graduates, the estimated effects are null or have the opposite sign of those that we found the rest of treated states, although in general they are of a much smaller magnitude, confirming our previous results and suggesting a non-symmetric effect of the alimony reforms.

TABLE 9 The impact of reduced alimony on the probability of divorce among women.

	All women	Women with less than college	Women with college degree	Women without children	Women with children
	(1)	(2)	(3)	(4)	(5)
0–5 years post reform	−0.001	−0.016	0.015	−0.013	0.005
	(0.009)	(0.015)	(0.012)	(0.014)	(0.010)
3–5 years post reform	0.003	−0.006	0.018*	−0.000	0.007
	(0.010)	(0.015)	(0.011)	(0.017)	(0.011)
N	45,042	25,534	19,508	24,372	37,555

Source: ATUS, waves from 2003 to 2022.

Notes: Change in in the probability of divorce since the reforms passed, estimated using the estimator by Borusyak et al. (2024) for staggered treatment effects. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2012), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. All regressions include state and year fixed effects and respondent controls (age, education, and race). Robust standard errors in parentheses are clustered at the state level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

Finally, in column 11, we estimate equation (1) while incorporating the following time-varying state-level controls: female unemployment, statutory minimum wage, earned income tax credit (EITC), and paid sick leave mandate.[12] This ensures that our results are not influenced by concurrent changes in the labor market due to labor market and regulatory shocks. As shown in column 11, the estimates remain quite similar to the previous ones, if not slightly larger in magnitude.

Selection issues

To make sure that our analysis is not affected by changes in the composition of married couples due to divorce, we perform two analyses shown in Tables 8 and 9.[13] Note that alimony reforms could change the composition of the sample of married women through selection into marriage and selection into divorce. However, selection into marriage is irrelevant in our case because we focus on couples surprised by the reforms. In Table 9, we use linear probability models to estimate the change in the probability that a woman remains married due to the alimony reforms. For this analysis we pool the sample of married and unmarried women, and we estimate the probability of being married using the entire sample (column 1), splitting the sample by the level of education (columns 2 and 3) and by motherhood status (columns 4 and 5). We selected these subgroups since our findings differ by level of education and are partly explained by a change in fertility rates. In all cases, the estimated effects are small and statistically insignificant.

As an additional test, Table 10 shows the results of estimating multinomial logistic regressions of the characteristics of married couples on alimony reform to examine whether alimony reforms affect the composition of couples who remain married. In columns 1, 2, and 3 we run the test for the level of education of each member of the couple. Columns 4, 5, and 6 analyze the age composition of the couple. Finally, in columns 7, 8, and 9 we show the results of an analysis that checks whether couples race composition has changed with the alimony reforms. In all 9 cases, there is no statistically

[12] Sources for these data are as follows. For the minimum wage data: https://www.dol.gov/agencies/whd/state/minimum-wage/history. For the level of unemployment: U.S. Bureau of Labor Statistics. For EITC: National Welfare Data from the University of Kentucky Center for Poverty Research. For paid sick leave mandate: https://nationalpartnership.org/wp-content/uploads/2023/02/paid-sick-days-statutes.pdf. For the EITC variable we use the state EITC rate as percentage of federal credit, that is, the additional percentage of the federal Earned Income Tax Credit that a state provides to its residents.

[13] Recall that our sample is made of women that, based on their age, were married when the reforms were passed, hence eliminating any bias due to entry into marriage.

TABLE 10 The impact of reduced alimony on the characteristics of married couples.

	Multinomial Logit Regression								
	Type of couple defined by the education level			Type of couple defined by age			Type of couple defined by race		
	Husband has more education	Husband and wife have the same level of education	Wife has more education	Husband is older	Husband and wife have the same age	Wife is older	Husband is White and wife is non-White	Husband and wife are of the same race	Wife is White and husband is non-White
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in the probability post reform	−0.014	0.012	0.002	0.010	−0.010	−0.000	−0.000	0.007	−0.007
	(0.010)	(0.012)	(0.008)	(0.012)	(0.013)	(0.006)	(0.005)	(0.005)	(0.005)
Mean probability of that type of couple	0.13	0.69	0.18	0.31	0.62	0.07	0.05	0.90	0.05

Source: ATUS, waves from 2003 to 2022.

Notes: The table shows the change in in the probability of each type of couple per year since the reforms passed. Treated states are Alabama (2018), Colorado (2014), Illinois (2015), Maine (2013), Massachusetts (2011), New Jersey (2014), New Mexico (2006), and New York (2016). Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. Robust standard errors in parentheses are clustered at the state level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

TABLE 11 LPM of state alimony reform by measures of state gender norms.

Unemployment rate	−0.008
	(0.006)
Female labor force participation	1.051
	(0.780)
Wage gap	0.009
	(0.006)
Governor party affiliation	0.016
	(0.013)
Observations	561

Sources: Wage gap data, Bureau of Labor Statistics 2007 to 2017, female labor force participation 2007 to 2017, Current Population Survey, and Annual Social and Economic Supplement. State year level population data comes from the U.S. Census Bureau, Population Division. Governors' party of affiliation comes from: National Governors Association, https://www.nga.org/.

Notes: LPM of entry into state alimony reform estimated using equation (2), with state-year level data weighted by the population level of each state. Texas is excluded from the sample for having passed a reform in opposite direction, that is, augmenting the alimony rights of ex-spouses. Robust standard errors in parentheses are clustered at the state level. An alternative specification with bootstrapped standard errors also generated statistically insignificant effects. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

significant change in the composition of couples due to alimony reforms. All in all, the results of Tables 8 and 9 suggest that our results are not affected by selection bias.

Policy endogeneity tests

We examine whether state-level gender norms may be driving alimony reform. To do so, we estimate a state-level (weighted by state population)[14] linear probability model of states' entry into alimony reform by a vector of time varying, state level characteristics, as well as measures that proxy gender norms in the state, including the gender wage-gap and female labor force participation (Fortin, 2015) as follows[15]:

$$Reform_{st} = \propto_0 + \propto_1 Unemployment_{s,t} + \propto_2 wage\ gap_{s,t-1} + \propto_3 female\ LF\ participation_{s,t-1} + \propto_4 Gov_{s,t-1} + \propto_s + \tau_t + u_{st} \quad (2)$$

where $Reform_{st} = 1$ if the state undertook reform in year t and 0 otherwise, and the gender norm variables are measured the year preceding reform, since the reform may affect these variables. $\text{Gov}_{\text{s,t-1}}$ indicates the Governor's party of affiliation in state s at time $t-1$ and is meant to capture the effects of political ideology on the probability of reform. Finally, $\propto_s$ and τ_t indicate state and year fixed effects. We report the results in Table 11. We see no statistically significant effects of our state-level gender variables on entry into alimony reform.

Lastly, Figure 5 illustrates that both Republican and Democratic states have embraced alimony reforms, indicating no distinct political trend in reform adoption.

CONCLUSION

In this study, we provide evidence of the impact of a series of alimony reforms in various states across the United States since the early 2000s, which limited the amount and duration of alimony

[14] The estimation results are qualitatively the same without weighting by state population.

[15] We also estimated equation (2) using a probit model, which also showed no statistically significant effects.

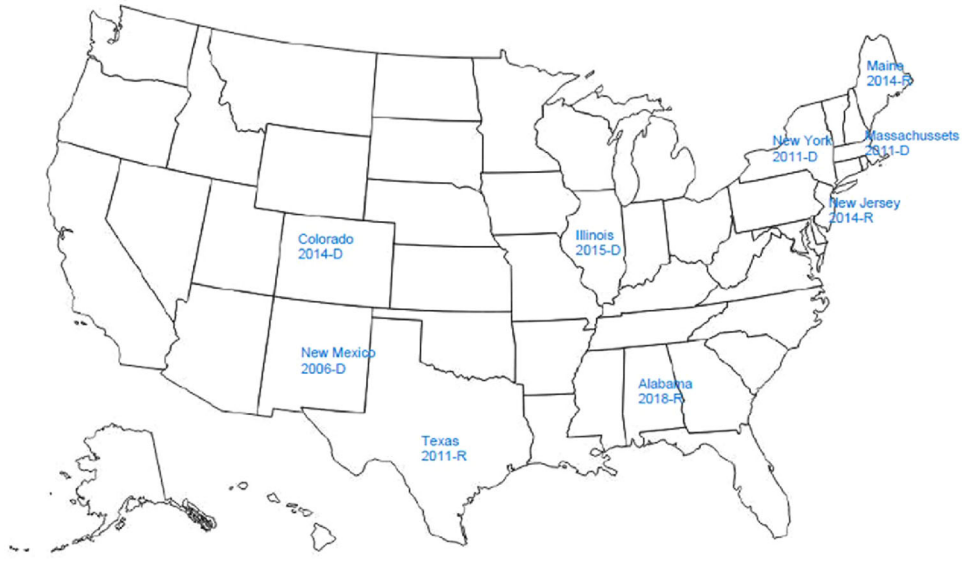

FIGURE 5 Party affiliation of Governor in year of reform.
[Color figure can be viewed at wileyonlinelibrary.com]

payments. We utilize the ATUS database, which contains detailed information on individual time use, allowing us to identify changes in daily activities not only related to work but also to domestic chores, childcare, and leisure, among others. We discuss potential effects of these reforms within the context of household bargaining models. Since the alimony reforms reduce the bargaining power of the beneficiary (usually the wife), a pertinent question is whether the legal reforms result in changes in wives' habits and time use consistent with this loss of bargaining power within the couple, worsening gender equality inside the household. Another overarching theme of our study is the impact of the alimony reforms on what we might call the traditional model of division of labor and tasks within the household. According to this traditional model, men specialize in paid work outside the home, while wives bear the brunt of household and childcare responsibilities. Since this agreement between the parties disappears in the event of a divorce, alimony serves as restitution and compensation to the party who has set aside their career for the sake of taking care of the home and its members. It is for this reason that we would expect a reduction or limitation in the use of alimony to lead to at least a partial dismantling of this traditional specialization model within the home. That is, reforms like those studied here could contribute to greater gender equality regarding paid work. This would be the case if married women, facing a higher or lower probability of divorce, are now less willing to sacrifice their professional careers than before the reforms and strive to maintain greater and more consistent work activity, thus reducing the gender employment gap.

And what do our results say? Our findings are generally consistent with these hypotheses. We find very consistent evidence supporting the prediction that the reduction of alimony will lead to greater participation by the wife in paid work. We are not the first to find this effect, and our results in this respect serve as a validation test. Regarding equality or inequality within the home, we find mixed effects depending on the group of wives analyzed, defined by their educational level. For wives without a university education, we find evidence indicative of a deterioration in the well-being of these women and greater inequality within the home. Thus, these women manage to increase the time they devote to paid work at the expense of time for themselves (personal time, leisure time, etc.), while maintaining or even slightly increasing the time devoted to childcare. However, for women with university education, the results indicate that these wives also devote more time to paid work, but without any reduction in their personal or leisure time. The adjustment comes from a reduction in time

spent on household chores and childcare. Although the reason behind this different adjustment may be the higher purchasing power of these households and therefore the possibility of outsourcing services for home and childcare, the fact is that these women seem to advance in gender equality both outside and inside the home. Moreover, another of our findings suggests that the differential adjustment of university-educated women is due not so much to purchasing power as to a more favorable bargaining position or even different preferences than those of non-university-educated women. We refer to the fact that after the reforms reducing alimony, we find a reduction in the fertility rate for university-educated wives but not for the other wives.

Our study also suffers from some limitations worth noting, which could serve as a guide for future research. First, our work focuses on couples who were already married at the time of the legal reforms (couples "surprised" by the reforms). However, the outcomes may not be the same for couples formed after the reforms, as there could be an entire pre-marital negotiation process. Related to this point, in another ongoing study (Fernández & Roff, 2021), we found that these reforms lead to a change in pairings, intensifying assortative matching. Second, our data do not capture all the time dedicated to childcare, only that provided by the parents. Therefore, an unanswered question is whether these legal reforms lead to less total time dedicated to childcare (considering all options together). In relation to this, we also do not analyze the effects this may have on the well-being of the children. Previous studies on the effects of extra time with a young child tend to find some heterogeneity according to families' socioeconomic status (SES), with higher benefits for children with high SES (see, for example, Danzer & Lavy, 2018). It is precisely the wives of these families who show the greatest drop in the time they spend at home as a consequence of the alimony reforms. Finally, another limitation of our study is that the ATUS data do not specify who accompanies the respondent during most activities. In this regard, we do not know if these reforms in any way alter the time both partners dedicate to each other, thus contributing to strengthening or weakening the relationship.

In summary, our findings suggest that legal reforms, such as reducing-alimony laws, that go against the traditional model of specialization within the household can end up having opposing effects on gender equality both outside and inside the home, favoring the former but harming the latter. This seems more likely in the case of women with limited bargaining power, that is, those with few employment opportunities. On the other hand, in the case of households with university-educated wives, these types of laws lead to greater gender equity in employment while also increasing equality in the distribution of household tasks. And assuming that children are a marital public good, in these households, both husband and wife also share the costs of the other adjustment mechanism to the new situation created by the legal reforms: the lower fertility rate.

DATA AND CODE AVAILABILITY

The data and replication code supporting the findings of this study are available in Dropbox through the following link: https://www.dropbox.com/scl/fo/qa2dc3nxao55s86ragknn/AE3_MAgFTxc338lPFQDgHVo?rlkey=rslkilquq9tznokk5xovlmxc2&st=pcanan0u&dl=0

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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