

Alesina, Alberto; Giuliano, Paola

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## Divorce, Fertility and the Shotgun Marriage

Alberto Alesina  
Paola Giuliano

June 2006

# Divorce, Fertility and the Shot Gun Marriage

**Alberto Alesina**

*Harvard University, NBER  
and CEPR*

**Paola Giuliano**

*International Monetary Fund  
and IZA Bonn*

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June 2006

IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0  
Fax: +49-228-3894-180  
Email: [iza@iza.org](mailto:iza@iza.org)

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## ABSTRACT

### **Divorce, Fertility and the Shot Gun Marriage<sup>\*</sup>**

Using the birth certificates data from the Vital Statistics of the USA between 1968 and 1999, we construct state level panel data of different measures of fertility and examine the change in divorce laws. Total fertility declined in states that introduced unilateral divorce, which makes dissolution of marriage easier. Most of this effect is due to a decline of out-of-wedlock fertility. We suggest an explanation (and provide supportive evidence for it) based upon the effect of divorce laws on the probability of entering and exiting marriage. Women planning to have children marry more easily with an easier “exit option” from marriage. Thus, more children are born in the first years of marriage, while the total marital fertility does not change, probably as a result of an increase in divorces and marital instability. The effect of changes in divorce laws is greater among whites than African Americans.

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Corresponding author:

Paola Giuliano  
International Monetary Fund  
Research Department  
700 19th Street NW  
Washington, DC 20431  
USA  
Email: [pgiuliano@imf.org](mailto:pgiuliano@imf.org)

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## 1. Introduction

The introduction of “no-fault” divorce has been one of the most significant changes in the structure of the American families of the last thirty years. Unilateral “no fault” divorce laws allowed one spouse to obtain dissolution of marriage without the consent of the other: divorce became much easier. The effect of this change in the law has been widely studied with reference to the frequency of divorce and marriage rates. But not much is known on its effect on fertility: after all, marriage and divorce must have some effects on the number of children.

This is what we find. We first look at the effect of unilateral divorce laws on total fertility, uncovering a significant and large negative effect on fertility rates. If this effect came from fertility in wed lock that might be explained by marriage instability which lower the propensity to invest in children (Becker, 1981; Becker, Landes and Michael, 1977). But, somewhat surprisingly, most of the reduction in fertility, comes from reduction in out of wed lock births.

Our explanation is as follows. Imagine an unmarried woman contemplating child bearing (or in the extreme case already pregnant). Without unilateral divorce, marriage becomes an irreversible investment; couples are “locked in”. With unilateral divorce the risk of entering the “wrong” marriage is lower because the exit option is easier. So a woman contemplating parenthood may choose to enter marriage more easily with unilateral laws; as a result out of wedlock fertility goes down. Obviously this does not imply that couples stay married longer on average with unilateral divorce; on the contrary, some of these matches may be indeed “wrong” and end up in divorce.

We present some supportive evidence for this story. First the number of never married women goes down with unilateral divorce. Second, the number of marriages per person is higher in unilateral states, so people marry more frequently. Third, fertility rates for newly wedded couples (in the first two years of marriage) go up with the adoption of unilateral laws; in a sense this include a sort of “shot gun marriage effect”: with easier divorce, the incentive to fight the shot gun is lower.

These findings are therefore consistent with the view that when divorce is easier, individuals take more chances with marriage, especially at the time of childbearing. This effect makes welfare analysis of divorce laws even more complex than normally thought, and we do not venture into any of it.

We are of course not the first to analyze empirically the effect of divorce laws. Many authors have studied the effects of these laws on divorce rates (Peters, 1986 and 1992; Allen, 1992; Friedberg, 1998; Wolfers, 2006), marriage (Rasul, 2004), children outcome (Gruber, 2004; Johnson and Mazingo, 2000), labor supply (Chiappori, Fortin and Lacroix, 2002) and general well-being of the couple (Stevenson and Wolfers (2005) and Dee (1999)), with mixed results<sup>2</sup>.

The available evidence on divorce laws and fertility is instead scant and here lies the contribution of this paper.<sup>3</sup> We use the legislative history of divorce liberalization across states in the US to identify the effects of this reform on fertility rates. Using births data from the Natality Files of the Vital Statistics of the US between the years 1968-1999, we fully exploit cross state and year variation in the timing of adoption of unilateral divorce to identify the causal effect of a change in divorce laws on fertility rates. The availability of virtually universal Vital Statistics data on fertility provides enough statistical power that could not be obtained relying exclusively on other datasets, including the 5 per cent sample available in the census data. We complement our analysis using census data from 1960 to

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<sup>2</sup> The impact of unilateral divorce legislations on divorce rates remains an open question. Peters (1986, 1992), using a cross-section of data on women, finds no effect. Allen (1992) and Friedberg (1998) obtain the opposite result using an alternative model specification and panel data recording all the divorces by state and year respectively, while Wolfers (2006) finds only a small long run effect of unilateral divorce regulations. In a different line of research, Dee (1999) and Stevenson and Wolfers (2005) examine the impact of unilateral divorce on spousal murders, self-reported domestic violence and suicide, with opposite results. Using a different empirical strategy, both Gruber (2004) and Johnson and Mazingo (2000) find that exposure to unilateral divorce as a youth appears to worsen adult outcomes such as education, labor force participation and family income. Finally Chiappori, Fortin and Lacroix (2002) analyze the impact of divorce law on labor supply, finding substantial evidence of a change in bargaining associated with a change in the laws.

<sup>3</sup> Some papers have been looking at the impact on childbearing for women exposed to unilateral divorce as a youth. Gruber (2004) and Johnson and Mazingo (2000) both found a rise in the number of children. We do not focus on this paper on the exposure to unilateral divorce as a youth, but on current unilateral divorce regime. Focusing on women resident on states that introduced unilateral divorce, Peters finds no impact of a change in the law on fertility; her result is probably driven by data limitation. She compares only one pre-unilateral divorce and one post-unilateral divorce year of treatment.

1990 to confirm that our results can be distinguished from pre-existing trends in fertility, and we combine birth certificates and March CPS data to study the impact of the law on marital versus non-marital fertility and out-of-wedlock ratio, a result never studied in the literature. Finally, we construct a comprehensive series of marriage rates for the period 1956-1995, and use the Census 1980 5% State sample to analyze the fertility history of women in their first two years of marriage.

The paper is organized as follows. After a brief overview of the legislative history of divorce laws in the USA, section two analyzes the relationship between fertility and divorce laws, section three sets up the empirical methodology. Section four contains the main results and specification checks, section five and six investigate more in detail the mechanisms underlying our results on fertility and section seven concludes.

## **2 Divorce Laws and Fertility**

Between 1968 and 1977 the majority of the states in the US passed from divorce with mutual consent to unilateral divorce. In the previous regime, a spouse's desire to end a marriage was not a sufficient reason to be granted a divorce: the spouse petitioning a divorce had to prove not only that the other spouse was responsible for the marital breakdown, but also that him/herself was not even partly at fault for the marriage's failure. Starting in the late 1960's the states began to enact several legal reforms that simplified legal difficulties in obtaining a divorce. At first, with "no-fault" divorce laws, divorce could be obtained upon mutual consent of the parties involved. Immediately after, or contemporaneously, unilateral divorce statutes made it possible for one spouse to obtain a divorce without the consent of the other<sup>4</sup>. Table 1 summarizes the changes in the law in all US states.

There has not been systematic evidence on the impact of divorce laws on fertility. In theory, one view holds that children constitute "marital capital" (Becker, Landes and Michael, 1977.) Thus, a couple produces goods which are more valuable inside than outside

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<sup>4</sup> This paper focuses on unilateral divorce. We do not consider any issue related to the division of property; unilateral divorce was usually accompanied by an equal division of property, but not the other way around.

the relationship. By reducing the value of marriage, due to a higher probability of divorce, unilateral divorce law should imply lower fertility. Bargaining models (Brinig and Crafton, 1994, Mc Elroy and Horney, 1981, and Lundberg and Pollak, 1996) also imply a reduction in fertility: according to these models all family decisions are made in strategic ways that depend on the enforceability of the contract and the outside opportunities of each partner. With unilateral divorce outside options become relevant since the contract is now not-enforceable. The spouse with outside option has a better bargaining position and is able to obtain a larger share of the couple's joint production. For that reason the other spouse will prefer to invest in market activities or in human capital at the expense of marriage specific investments, including children.

All these models predict then a decline in marital fertility, assuming implicitly that the incentives for unmarried people remained unchanged. However, a change in divorce law could imply a change in the composition of individuals in the marginal marriage through a selection into and out of marriage. There are potentially two effects: If the cost of exiting a bad marriage goes down one may choose to enter marriage more easily. On the other hand, if marriage is so easily broken, i.e. the value of commitment is diluted, why marry to begin with?

The existence of selection makes the prediction of the impact of divorce law on fertility harder to identify. Marital fertility could go up or down or stay the same depending upon the relative strength of different forces. First, if there are fewer children in bad marriages, (which are more likely to end sooner when divorce is easier) we should observe an increase in fertility due to a selection out of a bad marriage into a good one. Second, since the cost of exiting marriage is now lower, people will be more likely to marry because they have an easier exit option. In this case the quality of matches can increase or decrease: it is possible to imagine that a higher number of marriages will increase the probability of finding a better match, on the other hand people might be less careful in looking for a partner since they know that the cost of splitting is lower<sup>5</sup>. Third, one may argue that since the "value of

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<sup>5</sup> There is conflicting empirical evidence on this effect. On one hand, Choo and Siow (2003) measure the gains to marriage over time, using the frequency of matches across different types of market participant and find a substantial decline from 1970 to 1980. On the contrary, Weiss and Willis (1997) and Mechoulan (2003) using

(continued)



marriage” declines people choose not to get married, a point made by Rasul (2004). Marital fertility could then increase/decrease or stay the same, depending on the comparative strength of these effects.

Lets’ now turn to out of wed lock fertility. On the one hand, reduction in the cost of exiting marriage will make more people “attempt” a marriage match, especially those who plan parenting. Thus out of wedlock fertility should go down because some of those who had children out of wed lock before may now choose to marry if exit from marriage is easier. This also implies that when unilateral laws are introduced marital fertility rates should go up immediately after wed lock and that the number of never married women should go down. It could also imply that the rate of marriage goes up, because more matches are tried at every point in time. In other words, as divorce become easier, some of those contemplating childbearing will choose to marry, reducing out of wed lock fertility. On the other hand if the value of marriage goes down, people could decide to marry less and, therefore, have children out of wedlock.

We will show below that the first effect vastly dominates.

### **3 Data and Econometric Specification**

#### **3.1. Data**

We use the births certificates of the *National Vital Statistics of the USA* to calculate different measures of fertility. The births certificates data contain individual records on every birth that took place in the United States between 1968 and 1999 to mothers ages 10 and older. Prior to 1968 micro data on birth certificates are not publicly available. Birth certificates contain information on mother’s characteristic including age, race, marital status and education. We aggregate these data into cells defined by state of residence of the mother, race and age, to construct state level panel data of total fertility rates, birth rates, and the ratio of births-out-of-wedlock to total births and marital-non marital fertility from 1968 to

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the National Study of the High School Class of 1972 and the CPS respectively find evidence of better matches associated with the introduction of unilateral divorce.

1999. The total fertility rate (TFR) is the standard way of measuring fertility. It estimates the number of children a cohort of 1,000 women would bear if they all went through their childbearing years exposed to the age-specific birth rates in effect for a particular time. The TFR is calculated using the methodology applied by the National Center for Health Statistics (described in the appendix). We construct state-year cells containing the average number of children for women in all their childbearing period. The birth rate is defined as the total number of childbirths observed per 1,000 women of the appropriate demographic group; it is a crude measure of fertility but it would allow us to study the impact of the law for marital status. The fraction of births out-of-wedlock is defined as the ratio of out of wedlock births over total births<sup>6</sup>.

Population estimates and age and race composition are obtained by the Bureau of the Census for the period 1968-1999.<sup>7</sup> We also combine birth certificates data with the March round of the Current Population Survey (CPS) to construct the number of married-unmarried women by age and race using the CPS weights. CPS data are also used to construct the labor market and education variables at the state level. Since the micro data on birth certificates are available only from 1968, we complement our analysis using four decades of Census from 1960 to 1990, to confirm that our results can be distinguished from pre-existing trends in fertility. Descriptive statistics for adopting and non-adopting states are reported in the appendix (Table A3).

We construct a very comprehensive series of administrative data for marriages in the US from 1956 to 1995. Our data comes from the marriage certificates of the United States for the period 1968-1995 (the marriage certificate data cover roughly 44 states depending on the specific year, see Appendix for more details), moreover we complement the dataset with hand-entered data from the annual editions of the Vital Statistics for 1956-1967 and for those states that are not covered in the marriage certificates dataset for the period 1968-1995. The

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<sup>6</sup> Some states did not report the information on legitimacy status prior to 1979, (See Appendix 1 for details)

<sup>7</sup> Population estimates for the intercensal years are obtained by the U.S. Census Bureau at [www.census.gov/popest/states](http://www.census.gov/popest/states)

count of administrative data is used to construct crude marriage rates- the number of marriages per 1000 of the population<sup>8</sup>. Our checks confirm that our marriage rates almost perfectly match the official numbers reported in the vital statistics. Finally, we use the Census 1980 5% State sample<sup>9</sup> to study the fertility history of women in their first two years of marriage.

### 3.2. Econometric Specification

We consider the following panel data regression of the log of the total fertility rate in state  $s$  at time  $t$ ,  $\log(f_{st})$ , for the period 1968-1999:

$$\log(f_{st}) = \beta U_{st} + \chi_s + \gamma_t + \lambda X_{st} + \eta_s(\delta_s \cdot t) + \varepsilon_{st} \quad (1)$$

where  $U_{st}$  is a dummy equal to one if state  $s$  has a unilateral divorce regime starting from year  $t$ ,  $\chi_s$  and  $\gamma_t$  refer to state and year fixed effects,  $X_{st}$  is a set of controls and  $\delta_s \cdot t$  represents state specific trends, where  $t$  is a year trend.

Prior to 1967, divorce was mutual in almost all the states in the US. Between 1967 and 1987 almost two thirds of the states introduced unilateral divorce. Hence the causal effect of unilateral divorce in our specification is identified from variation across states, time and between adopting and non-adopting states. The impact of a change in divorce law is captured by the coefficient  $\beta$ , which represents the change in fertility rate attributable to the legal change.

Table I gives the year in which these laws were passed by state. We follow Gruber (2004) who codes divorce as unilateral when it requires the consent of only one spouse and is granted on grounds of irreconcilable differences. Since there is some debate in the literature about this coding and how classify a state's divorce laws, as well as the timing of the laws, we have tested our results with different available coding. Our results are robust. We consider two specifications. In the first, we include state and year fixed effects, but ignore state-specific trends ( $\delta_s = 0$ ), in the second state-specific trends are included.

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<sup>8</sup> Data on the state population for the period 1956-1998 is obtained by Wolfers (2006)

<sup>9</sup> The 1980 5% State sample covers approximately 11,337,000 person records. Data can be downloaded from [www.ipums.org](http://www.ipums.org).

Endogeneity is not the primary concern in our specification; we would not think that fertility decisions have an effect on the probability that a state passes a unilateral divorce law and influencing fertility trends did not seem a policy objective in the changes of the divorce laws. The most serious concern is that the introduction of unilateral divorce might capture the effect of coincident underlying social trends or omitted factors that have differential effects in adopting and non-adopting states.

We address this concern by presenting results using age and race composition of the states to control for underlying demographic trends. We also control for availability of abortion, female education and labor force status, and a set of state-level control variables (such as state income per capita and unemployment rates), that capture the socioeconomic environment that vary across states in a nonlinear manner. Finally the identification assumption could also be violated due to political endogeneity. Perhaps states adopting unilateral divorce legislation could be the one whose electorate has stronger preferences for marital dissolution (reflected in higher divorce rates, more unstable marriages and possibly lower fertility). We test for the presence of such pre-trends before the passage of the law including additional dummies for negative years of exposure to unilateral divorce.

## **4 Results**

### **4.1 Basic results**

Table II (columns 1a and 1b) examines our basic regression on the effect of divorce laws on total fertility rates, including state and year effects with and without state specific trends. With (column 1a) and without (column 1b) state-specific trends, we find that a change in divorce laws results in a significant decline in the fertility rates in adopting states. The effects are significant at the 1 percent level and imply a decline in fertility of the order of 3 percentage points.

The impact of divorce law in our regression might be inconsistently estimated because of omitted factors that have differential effects in adopting and non-adopting states. We start adding additional state and time varying covariates, including the log of the per

capita state income (in 1999 dollars) and the unemployment rate.<sup>10</sup> The absolute value of the coefficient of interest actually increases and remains highly significant (Columns 2a and 2b).

The decline in fertility in adopting states could simply reflect the demographic composition of the female population changing in a differential way across adopting and non-adopting states. In Columns 3a and 3b, we control for race and age composition of the state. The effect of unilateral divorce on fertility remains negative and significant at the 1% level.

An important candidate responsible for the decline in fertility in adopting states could be the increase in female labor participation and education, which reduce the gains of marriage and fertility. While these are important determinants of fertility rates, their inclusion in the regression does not alter our estimates of the effects of the divorce law, as shown in Table II columns 4a, and 4b.<sup>11</sup> In fact, the estimated impact of unilateral divorce gets larger (more negative) relative to the baseline specification.<sup>12</sup>

Divorce laws were changed close to the time of legalization of abortion which of course could have an effect on fertility.<sup>13</sup> In fact, Levine et al. (1996) find a reduction in fertility due to the legalization of abortion; interestingly Akerlof et al. (1996) find an increase in out-of-wedlock fertility caused by the disappearance of the “shot-gun-marriage”. We include in our regression a dummy for the introduction of abortion. While we found that, at least with the specification without state specific trends, abortion liberalization has been associated with a 5% decline in fertility (columns 5a, b), consistent with what found by Levine et al. (1996), its inclusion does not reduce neither the significance nor the magnitude

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<sup>10</sup> See Dehejia and Lleras-Muney (2004) on the relationship between unemployment and fertility.

<sup>11</sup> Table A3 in Appendix also shows that there is not much difference in education, labor force status and other demographic characteristics in adopting and non-adopting states before and after 1972, which is the median year of the adoption of the unilateral law.

<sup>12</sup> We construct our controls at the state level using the March CPS data. For that reason, the sample size is smaller because fewer states are identified between 1968 and 1979 in the CPS.

<sup>13</sup> Abortion was legalized in five states in the US in 1970 (Alaska, California, Hawaii, New York and Washington). Following the 1973 Supreme Court decision in *Roe v. Wade*, abortion became legal in all states

of the impact of divorce laws on fertility. We also run a regression including age and race composition, labor market status and education as controls and the results remained unchanged; results are available.

#### **4.2 Robustness**

Next we checked whether the change in fertility followed the change in divorce regime and not the opposite. Perhaps states adopting unilateral divorce legislation could be the one whose electorate has stronger preferences for marital dissolution (reflected in higher divorce, more unstable marriages and possibly lower fertility). If these underlying preferences are responsible for the decline in fertility, then our estimates are amplifying the true impact of divorce law on fertility. To check for this, we include leads dummies to our regression for whether unilateral divorce will be introduced in 2 to 3 years time, or 4 or more year's time (the omitted category is the year before introduction). The estimated coefficients on the lead dummies (reported in Table III, column 1a and 1b) are not significant and are very small, indicating that secular pre-trends are not responsible for the decline in fertility in adopting states. This evidence on timing also buttresses our causal interpretation of our results. The unilateral divorce dummy remains significant at the 1% level and with a coefficient of similar magnitude.

There is also anecdotal evidence supporting the fact that the liberality of the States does not imply a higher marital dissolution. A story in the New York Times (based on an Associate Press report) highlights that the highest divorce rates are in the Bible Belt: "the divorce rates in these conservative states are roughly 50 percent above the national average of 4.2 per thousand people." The 10 Southern states with some of the highest divorce rates were Alabama, Arkansas, Arizona, Florida, Georgia, Mississippi, North Carolina, Oklahoma, South Carolina, and Texas. By comparison nine states in the Northeast were among those with the lowest divorce rates: Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.<sup>14</sup>

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<sup>14</sup> "Bible Belt Couples 'Put Asunder' More, Despite New Efforts", *The New York Times*, May 21<sup>st</sup>, 2001.

In our period of analysis fertility rates decline all over the USA. One possible interpretation is that adopting states started from a higher level of fertility and that what we are capturing in our regression is a convergence in fertility rates between adopting and non-adopting states; in other words, regression to the mean may then simply explain why fertility declined more in adopting states. We control for this possibility in two ways. In Table III, columns 2a, b control for fertility level in 1968 interacted with a linear time trend; while columns 3a, b use the interaction between the fertility level in 1968 and time fixed effects. The effect of a change in divorce law remains negative and significant at the 1% level, even after controlling for the possibility of reversion to the mean.

We finally check the robustness of our results restricting our sample to only adopting states and using alternative law coding for unilateral divorce (Tables IV and V). Dropping from the analysis the non-adopting states will allow us to identify the impact of divorce law only from variation in the timing of adoption among adopting states. We find that estimating only the variation due to the different timing of reform is sufficient to identify the impact of divorce law on fertility. This result is particularly important because it shows that the effect of unilateral divorce on fertility rates is not determined only by differences across adopting and non-adopting states, which could be due, despite our attempts to control for omitted variables, to other factors different than unilateral divorce. When we replicate our analysis with the alternative law coding by Friedberg (1998) and Johnson and Mazingo (2000) we again find that the impact of divorce law is significant at the 1% level, however the magnitude of the results is a bit lower if we follow Friedberg classification (Table V).

We run OLS giving equal weights to each reform state; we control for the role of migration using population as a control (it could be that people who have preferences for lower fertility are concentrated in the most liberal states because of selective migration resulting from the introduction of unilateral divorce legislations), we finally run a specification using state specific quadratic trends. Our specification survives all these robustness checks which are available upon request.

### 4.3. Dynamics

In our analysis we use a unilateral dummy to capture the total impact of divorce laws on fertility. Wolfers (2006) however points out how this simple dummy may not fully account for pre existing trends and post law trends. To resolve these problems he adds variables that model the dynamic response divorce quite explicitly. We follow his strategy imposing a more flexible structure in our specification, consisting of a series of dummy variables, for the first two years of the new law, for years three and four and so on. This specification will be also particularly useful to study the permanent effect of the introduction of unilateral divorce on fertility. To fully capture the entire dynamic response of the introduction of unilateral divorce on fertility we estimate the following regression:

$$\log(f_{st}) = \sum_j \beta_j U_{st}^j + \delta_s + \gamma_t + \lambda X_{st} + \eta_s(\delta_s \cdot t) + \varepsilon_{st} \quad (2)$$

where  $U_{st}^j$  consists of a series of dummy variables equal to one for the first two years of adoption, 3-4 years of adoption, 5-6 years and so on. The estimated effects of unilateral divorce for a series of years after the introduction of the law are presented in Table VI. There is a large and significant reduction in fertility rate following the introduction of divorce and the effect is constant over time and does not disappear until 15 years after the introduction of divorce. While the effect without state specific trends is much higher (in the range of a 4% reduction) with state-specific trends the results are lower in the first two years and consistent with the magnitude found with the unilateral divorce dummy after 3 years.

Another problem outlined by Wolfers (2006) is that if there are only few observations before the policy shock, those observations are not sufficient to identify pre-existing state trends. There are no micro data available to extend our analysis starting from the beginning of the 1960. We solved this problem by using four decades of Census data (from 1960 to 1990) to check that our results are not biased by the lack of a sufficiently long pre-trend. We run a specification collapsing state-year-age cells using as a dependent variable the number of children ever born to women age 15-44 residents in those states that adopted unilateral



divorce.<sup>15</sup> We run the Census regressions with and without state-specific trends; we include state-specific trends for consistency with our previous regressions, however with census data the inclusion of state-specific trends is not a perfect solution since there are only four underlying time series observations (those trends are much better captured using the yearly panel data on fertility we constructed using the Vital Statistics).<sup>16</sup> We run the following regression:

$$fertility_{a,s,t} = \beta U_{st} + \phi race_{a,s,t} + \varphi_a + \chi_s + \gamma_t + \mu \varphi_a \gamma_t + (\delta_s \cdot t) + \varepsilon_{a,s,t} \quad (3)$$

where all the variables are defined as before, plus race representing the percentage of black and white in the age-state-year cells,  $\varphi_a$  and  $\varphi_a \gamma_t$  are age dummies and age year interactions to control for differential time patterns by age. Since the unilateral divorce dummy varies only by state and year, we control for clustering on state of residence\*year. The coefficient of unilateral divorce dummy, with and without the inclusion of state specific trend is still significant at the 5% level (again census data cannot give us the same statistical power provided by the Vital Statistics which record all the births occurred in the US). As for the magnitude, it implies an elasticity of 3.5% of the impact of divorce law on fertility. A regression with fertility using the vital statistics implies an elasticity of 3.6% (but for the period 1968-1999) (See Table VII column 2a and 2b). Overall, our results suggest that the introduction of unilateral divorce led to a significant and robust reduction in fertility rates.

## 5 In and out of wedlock fertility

### 5.1. The impact of divorce laws on marital and non-marital fertility

We start with the impact of divorce law on the out-of-wedlock fertility (the ratio of illegitimate births over total births).<sup>17</sup> Table VIII shows two specifications, one controlling

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<sup>15</sup> Our specification follows Gruber (2004) but we concentrate on women residents in states that introduced unilateral divorce laws and not to women exposed to unilateral divorce as a youth.

<sup>16</sup> We use fertility rather than log fertility because in the Census data fertility is measured as number of children ever born to a woman (zero is then a possible outcome).

<sup>17</sup> Note that the number of observations for the out-of-wedlock regression is lower than the fertility regression, since marital status is missing for some states and years (Table A1 in the Appendix documents the availability of this information for each state and year).

only for state and year effects (with and without state-specific trends) and the other which adds age and race composition of the state, education, labor market status and availability of abortion.<sup>18</sup> Columns 1a and 1b show a significant decline in out-of-wedlock ratio following the adoption of unilateral divorce, with column 1a suggesting an elasticity of the order of 6%. Columns 2a and 2b show that this estimate is robust to adding a rich set of controls.

Note that the left hand side of the regressions of Table VII is defined as out of wedlock births over total births, i.e. out of births in wedlock plus marital births. Thus the ratio could go up if out of wedlock births go down or marital births go up. In order to address this issue we split our sample between marital and non-marital fertility.

State-year level measures of the number of single and married people aged 15-44 are constructed from March CPS data. These measures are available from 1968 to 1999, but only the 12 largest states are covered during the 1970's; this coupled with the lack of information on the marital status information for many states has the drawback of reducing the precision of our estimates compared to our regressions for fertility or out-of-wedlock fertility. Table X presents estimates of the effect of unilateral divorce on marital and non-marital log birth rates. The impact of unilateral divorce laws on the marital log birthrate is always insignificant, with or without the inclusion of state-specific trends. As for the non-marital birth rate, while the impact is not significant without the inclusion of state-specific trends, with the inclusion of state-specific trends is significant at the 1% level and implies a reduction of non-marital birth rates of the order of 7%.

## **5.2. Results by Race**

There are significant differences in the pattern of fertility and marriage between Black and White women (see Neal, 2002). Table XI shows the results by race. The specification follows the one for fertility with the first column including only state and year effects as controls and column two controlling for the demographic shares of the state population, availability of abortion, education and labor market status plus the log of income and

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<sup>18</sup> As before, since we constructed some of the controls using the CPS which does not identify all the states before 1972, we loose a lot of observations with the introduction of additional controls.

unemployment at the state level. Fertility declines significantly up to 7% for white mothers with the introduction of unilateral divorce, but it does not affect black mothers.

The fact that fertility is more responsive to changes in divorce laws for Whites than for Blacks suggests that divorce law leads to a greater selectivity in fertility decision among Whites. Given that blacks have lower marriage rates to begin with, these results indicate that the main difference between Blacks and Whites are driven by marriage selection, rather than by other factors a priori equally important in fertility decisions.

## **6. Choosing marriage to have children**

This is our story to explain the evidence above. When divorce becomes easier, the risk of marriage goes down. So women contemplating child bearing (or even already pregnant) choose to marry to avoid out of wed lock fertility, knowing that an unsuccessful marriage can be more easily broken. In turn, men will be more willing to marry for the same reason.

In this section we provide additional evidence confirming that the decline in fertility could be due to selection into and out of marriage as a result of the introduction of unilateral divorce. First we show that the number of never married women goes down with unilateral divorce. This is consistent with the idea that women try marriage more easily with easier divorce. Second the number of marriages per person is higher in unilateral states, so people marry more frequently. Third fertility rates for newly married women (in the first two years of marriage) go up with the adoption of unilateral laws.

To study the change in the number of never married women we use data from the March supplement of the Current Population Survey from 1962-1999. We construct state-year cells containing the fraction of never married women for the age group 15-49. We regress these cell means on a dummy indicating the presence of unilateral divorce, age and race composition of the states, state and year effects. We also run a specification including education and labor market status as controls. The results show that the number of never married women declines with the introduction of unilateral divorce. Our estimates imply an elasticity of around 4%. The results are robust to the inclusion of a full set of controls; however with the inclusion of state-specific trends the coefficient remains negative but not

significant. This is consistent with the view that with easier divorce fewer women are never married.

In addition, we would expect an increase in the number of marriages per person at every point in time. In order to test this hypothesis, we collect a unique series on the total number of marriages from 1956 to 1995 which we have described in section 3. We define marriage rate as the number of marriages for 1,000 population. We run two panel regressions, one with a dummy for unilateral divorce, the other with dummies for number of years after the adoption. The results of Table XII show that the introduction of unilateral divorce significantly increases the marriage rate (columns 1a, 1b); the dynamic response of marriage to a change in law seems to appear about four years after the passage of the law.

<sup>19</sup>This lag seems a reasonable consequence of learning about a new regime.

If women choose marriage to have children we would expect not only a decline in out-of-wedlock fertility, but also an increase in fertility rates for just married women. To test this hypothesis we use the 5% state sample of the 1980 Census. The 1980 Census contains information on the age at first marriage and on the total number of children ever born to a woman. We can calculate the duration of marriage for women in their first marriage and see whether their fertility rates are higher in states with unilateral divorce. We regress the number of children ever born to a woman on a dummy for unilateral divorce, a quadratic for age and dummies for age in the basic specification, we then add employment status and education as a control. We concentrate on women in their first two years of marriages<sup>20</sup>. As it

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<sup>19</sup> Our results are different from those by Rasul (2004) who reports a decline in the number of marriages as a result of unilateral divorce. Our marriage rates estimates almost perfectly match the official rates from the Vital Statistics. Rasul defines marriage rates dividing by the population between 16 and 65 while we follow the standard practice and divide by total population. Our population data are the same as those by Friedberg (1998) and Wolfers (2006) and we can easily reproduce Wolfers' results on divorces. Rasul uses Friedberg coding we use Gruber's coding.

<sup>20</sup> We run the regression also restricting the sample to women in their first year of marriage and the results do not change

is apparent from Table XIII, fertility is significantly higher in the first two years of marriage for women living in states with unilateral divorce.<sup>21</sup>

An alternative explanation is that when marriages are less secure, children are used as a “commitment device” to keep couples together. But this effect should imply an increase in marital fertility more generally, not only in the first two years of marriage.

## **7. Conclusions**

This is our “story”. As divorce becomes easier, people feel less locked in when they marry. So when women consider having children (or are already pregnant) they are more willing to “try” marriage. Therefore out-of-wedlock fertility declines and marriage rates go up. In more colorful terms, shotgun marriages are less threatening with an easier exit option! Evidence of marital fertility is instead inconclusive. On the one hand, marital fertility may increase as a commitment device to keep couples together when divorce is easier; on the other hand, the lower value of marriage makes investment in children more risky.

The welfare implications of our results are of course very hard to evaluate. Reduction of out-of-wedlock fertility may be a social good, but society may “pay” for it with an increase in bad marriages and more divorces.

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<sup>21</sup> There is a data caveat: the Census data allow us to check whether a woman has had a child before the end of her two-year marriage; it does not allow us to take out children that were born before the marriage.

## Data Appendix

*Birth Certificates* data were obtained from the *National Vital Statistics System of the National Center for Health Statistics*. The births certificates data contain individual records on every birth that took place in the United States between 1968 and 1999. Prior to 1968 micro data are not publicly available.

The total fertility rate (TFR) estimates the number of children a cohort of 1,000 women would bear if they all went through their childbearing years exposed to the age-specific birth rates in effect for a particular time. We calculate the total fertility rate (TFR), using the methodology applied from the National Center for Health Statistics. According to this definition the “TFR is the sum of the birth rates by age of mother (in 5-year age groups) multiplied by 5. It is an age-adjusted rate because it is based on the assumption that there is the same number of women in each age group. A total fertility rate of 2,477 in 1968 for example means that if a hypothetical group of 1,000 women were to have same birth rates in each group that were observed in acute childbearing population in 1968, they would have a total of 2,477 children by the time they reached the end of the reproductive period (taken as age 49), assuming that all of the women survive at that age” (*Vital Statistics of the United States, 1968, Volume I, Natality, Technical Appendix*).

The birth rate is defined as the total number of childbirths per 1,000 women in a certain population group.

The fraction of births out-of-wedlock is defined as the ratio of illegitimate births over total births. The legitimacy status was not reported in several states from 1968 through 1979. The states not reporting legitimacy status are indicated in Table A1.

We use the March Supplement of the *Current Population* survey from 1968 to 1999 to construct our control variables, specifically race and age composition, labor market status and educational levels for women in the age group 15-49. We also use the CPS to construct the number of married and unmarried women by age and race. In 1962 the following states are missing: Alaska, Hawaii, Idaho, Maine, Montana, Nebraska, New Hampshire, North Dakota, South Dakota, Vermont, and Wyoming. From 1968 to 1972 the following states, plus the District of Columbia, are identified: California, Connecticut, Florida, Georgia,

Illinois, Indiana, Kentucky, Louisiana, Maryland, Missouri, New Jersey, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas and West Virginia. Between 1973 and 1976 the following states, plus the District of Columbia, are identified: California, Connecticut, Florida, Illinois, Indiana, Massachusetts, New Jersey, New York, North Carolina, Ohio, Pennsylvania and Texas. After 1976 and between 1963 and 1967 all states can be identified. All monetary variables are indexed at 1999 values.

*Marriage Certificates* data were obtained from the *National Vital Statistics System of the National Center for Health Statistics*. The marriage certificates data contain individual records on every marriage that took place in the United States between 1968 and 1995. The data for 1968-1995 covers around 44 states, depending on the exact year (see Table A2 for details). Marriage certificates data includes date of marriage, state of residency and occurrence, education, previous marital status, number of marriages and age of bride and groom. We calculate the number of total marriages for each state and year from the micro-data, and we complement our series by entering by hand the missing series. Specifically we have hand-entered data from the annual editions of the Vital Statistics for all the States for 1956-1967 and for the states missing from the micro-data for 1968-1995. We construct a very comprehensive series reflecting a total count of administrative data of marriages reported to the NCHS for the period 1956-1995. We then define marriage rate as the total number of marriage per 1,000 population. Data on state population from 1956 to 1995 are obtained by Wolfers<sup>22</sup>

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<sup>22</sup> <http://bpp.wharton.upenn.edu/jWolferss/data.shtml>

**Table A1. States not reporting legitimacy status, by year**

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
California	X	X	X	X	X	X	X	X	X	X	X	X
Connecticut	X	X	X	X	X	X	X	X	X	X	X	X
Georgia	X	X	X	X	X	X	X	X	X	X	X	X
Idaho	X	X	X	X	X	X	X	X	X	X		
Maryland	X	X	X	X	X	X	X	X	X	X	X	X
Massachusetts	X	X	X	X	X	X	X	X	X	X		
Michigan											X	X
Montana	X	X	X	X	X	X	X	X	X	X	X	X
Nevada				X	X	X	X	X	X	X	X	X
New Mexico	X	X	X	X	X	X	X	X	X	X	X	X
New York	X	X	X	X	X	X	X	X	X	X	X	X
Ohio		X	X	X	X	X	X	X	X	X	X	X
Texas										X	X	X
Vermont	X	X	X	X	X	X	X	X	X	X		

Source: Vital Statistics of the United States



**Table A2**  
**States with marriage certificates micro-data available**

State	Micro data available	State	Micro data available
Alabama	1968-1995	Montana	1968-1995
Alaska	1968-1995	Nebraska	1968-1995
Arkansas		Nevada	
Arizona		New Hampshire	1968-1995
California	1968-1995	New Jersey	1968-1995
Colorado	1979-1995	New Mexico	
Connecticut	1968-1995	New York	1968-1995
District of Columbia	1968-1995	North Carolina	1968-1995
Delaware	1968-1995	North Dakota	
Florida	1968-1995	Ohio	1968-1995
Georgia	1968-1995	Oklahoma	
Hawaii	1968-1995	Oregon	1968-1995
Idaho	1968-1995	Pennsylvania	1968-1995
Illinois	1968-1995	Rhode Island	1968-1995
Indiana	1968-1995	South Carolina	1971-1995
Iowa	1968-1995	South Dakota	1968-1995
Kansas	1968-1995	Tennessee	1968-1995
Kentucky	1968-1995	Texas	
Louisiana	1968-1995	Utah	1968-1995
Maine	1968-1995	Vermont	1968-1995
Maryland	1968-1995	Virginia	1968-1995
Massachusetts	1968-1995	Washington	
Michigan	1968-1995	West Virginia	1968-1995
Minnesota	1971-1995	Wisconsin	1968-1995
Mississippi	1968-1995	Wyoming	1968-1995
Missouri	1968-1995		

The micro data on marriage certificates data were obtained from the Vital Statistics of the United States for the period 1968-1995; data is hand-entered for the states with missing data in the period 1968-1995, and for all the states from 1956 to 1967.

TABLE A3  
 DESCRIPTIVE STATISTICS FOR ADOPTING AND NON-ADOPTING STATES,  
 WOMEN 15-44 YEARS OLD,  
 MEANS AND STANDARD DEVIATIONS

<b>Adopting States</b>			
	1962-1972	1973-1999	Difference
Age	28.19 (.7689)	29.12 (1.068)	0.95
Single	.2551 (.0743)	.3388 (.0467)	0.0837
Married	.6716 (.0812)	.5440 (.0494)	-.1276
Separated	.0232 (.0239)	0.0251 (.0104)	0.0019
Divorced	.0420 (.0351)	.0849 (.0216)	0.0429
College and more	.2218 (.0620)	.4186 (.0955)	0.1968
Labor force partic.	.4280 (.0191)	.6382 (.0728)	0.2102
Fertility*	2.41 (.7269)	1.22 (.7140)	-1.19
<b>Non-Adopting States</b>			
	1962-1972	1973-1999	Difference
Age	28.49 (.7287)	28.95 (1.079)	0.46
Single	.2812 (.0512)	.3740 (.0751)	0.0928
Married	.6563 (.0649)	.5086 (.0816)	-.1477
Separated	0.0248 (.0198)	0.0371 (.0153)	0.0123
Divorced	.0272 (.0151)	.0714 (.0221)	0.0442
College graduate	.1748 (.0504)	.3782 (.1018)	0.2034
Labor force partic.	.3915 (.0721)	.5966 (.0824)	.2051
Fertility*	2.15 (.8644)	1.18 (.7298)	-0.97

Source: CPS- March Supplement, authors' calculations; fertility has been calculated using Census data for 1960 and 1990, respectively

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TABLE I  
DIVORCE REGULATIONS ACROSS THE STATES

State	Unilateral Date	State	Unilateral Date
Alabama	1971	Montana	1973
Alaska	1935	Nebraska	1972
Arkansas		Nevada	1967
Arizona	1973	New Hampshire	1971
California	1970	New Jersey	
Colorado	1972	New Mexico	1933
Connecticut	1973	New York	
District of Columbia		North Carolina	
Delaware	1968	North Dakota	1971
Florida	1971	Ohio	
Georgia	1973	Oklahoma	1953
Hawaii	1972	Oregon	1971
Idaho	1971	Pennsylvania	
Illinois		Rhode Island	1975
Indiana	1973	South Carolina	
Iowa	1970	South Dakota	1985
Kansas	1969	Tennessee	
Kentucky	1972	Texas	1970
Louisiana		Utah	1987
Maine	1973	Vermont	
Maryland		Virginia	
Massachusetts	1975	Washington	1973
Michigan	1972	West Virginia	
Minnesota	1974	Wisconsin	1978
Mississippi		Wyoming	1977
Missouri			

Source: Gruber, 2004

TABLE II  
THE IMPACT OF UNILATERAL DIVORCE ON THE TOTAL FERTILITY RATE  
DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

Specification	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)	(5a)	(5b)
Unilateral Divorce	-.0307*** (.0106)	-.0269*** (.0054)	-.0350*** (.0111)	-.0279*** (.0053)	-.0282** (.0102)	-.0348*** (.0071)	-.0248*** (.0107)	-.0335*** (.0073)	-.0332*** (.0109)	-.0248*** (.0053)
Legalized Abortion									-.0516* (.0318)	.0102 (.0087)
Education and Empl. Status										
Up to 12 years of schooling							-.0107 (.0853)	-.0962 (.0704)		
Some college							-.1842** (.0984)	-.2475*** (.0901)		
Fraction Employed							-.3493*** (.0665)	-.0128 (.0521)		
Fraction Unemployed							-.7061*** (.1405)	-.3286*** (.1159)		
State Unemployment			-.0075*** (.0016)	-.0052*** (.0009)	-.0055*** (.0013)	-.0049*** (.0011)	-.0037*** (.0014)	-.0029*** (.0012)	-.0074*** (.0016)	-.0052*** (.0009)
Log(per capita State Income)			.0337*** (.0016)	.0187*** (.0085)	.0814*** (.0128)	.0333*** (.0115)	.0749*** (.0125)	.0268*** (.0112)	.0369*** (.0147)	.0180 (.0087)
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes	yes	Yes
State Effects	Yes	Yes	Yes	yes	Yes	Yes	Yes	yes	yes	Yes
State-specific Trends	No	Yes	No	yes	No	Yes	No	yes	no	Yes
Age and Race Composition	No	No	No	no	Yes	Yes	Yes	No	no	No
Adjusted $R^2$	0.88	0.95	.88	.96	0.92	0.96	.92	.96	0.88	.96
Number of obs.	1632	1632	1632	1632	1320	1320	1320	1320	1632	1632

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. Demographic controls are the shares of the total female population in age group  $a$  and of race  $r$ , in state  $s$  in year  $t$ , where the age groups are 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, and race is white, black and other.

Source: Total fertility rates are calculated using the *Vital Statistics* of the USA. Population estimates are taken from [www.census.org](http://www.census.org) and demographic controls are authors' calculation from the March Supplement of the Current Population Survey. Definition of total fertility rate is in the data appendix.

TABLE III  
 THE IMPACT OF UNILATERAL DIVORCE ON THE TOTAL FERTILITY RATE  
 CONTROLLING FOR REVERSION TO THE MEAN AND PRE-TRENDS  
 DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

Specification	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Unilateral Divorce	-.0456*** (.0185)	-.0332*** (.0071)	-.0348*** (.0110)	-.0278*** (.0053)	-.0482*** (.0116)	-.0302*** (.0057)
Fertility 1968 x time trend			.0781 (.0812)	-.0299 (.0346)		
Fertility 1968 x time dummies					yes	yes
Unilateral Divorce adopted in 2-3 years time	-.0302 (.0217)	-.0086 (.0070)				
Unilateral Divorce adopted in 4 or more years time	.0113 (.0220)	-.0005 (.0109)				
Year Effects	yes	yes	yes	Yes	yes	Yes
State Effects	yes	yes	yes	Yes	yes	Yes
State-specific trends	no	yes	no	Yes	no	Yes
Adjusted $R^2$	0.88		0.88	.095	0.88	.96
Number of observations	1632		1632	1632	1632	1632

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: Total fertility rates are calculated using the *Vital Statistics* of the USA.

TABLE IV  
 THE IMPACT OF UNILATERAL DIVORCE ON TOTAL FERTILITY RATE  
 SUB SAMPLE OF ADOPTING STATES  
 DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

Unilateral Divorce	-.0875*** (.0126)	-.0193*** (.0078)
Year Effects	Yes	Yes
State Effects	Yes	Yes
State-specific trends	No	Yes
Adjusted $R^2$	.87	.95
Number of observations	1088	1088

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. The regression includes state unemployment and log (per capita income) as controls  
 Source: Total fertility rates are calculated using the *Vital Statistics* of the USA.



TABLE V  
 THE IMPACT OF UNILATERAL DIVORCE ON THE TOTAL FERTILITY RATE  
 ALTERNATIVE CODING FOR UNILATERAL DIVORCE  
 DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce Friedberg (1998)	-.0228*** (.0078)	-.0145*** (.0045)		
Unilateral Divorce Johson and Mazingo (2000)			-.0186** (.0100)	-.0223*** (.0052)
Year Effects	yes	yes	yes	Yes
State Effects	yes	yes	yes	Yes
State-specific trends	no	yes	no	Yes
Adjusted $R^2$	.88		.88	
Number of observations	1632	1632	1632	1632

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: Total fertility rates are calculated using the *Vital Statistics* of the USA.

TABLE VI  
 THE IMPACT OF UNILATERAL DIVORCE ON THE TOTAL FERTILITY RATE  
 DYNAMICS  
 DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

Specification	(1)	(2)
Years 1-2	-.0449*** (.0166)	-.0169*** (.0082)
Years 3-4	-.0534*** (.0164)	-.0267*** (.0076)
Years 5-6	-.0547*** (.0136)	-.0303*** (.0072)
Years 7-8	-.0467*** (.0128)	-.0284*** (.0088)
Years 9-10	-.0457*** (.0123)	-.0320*** (.0099)
Years 11-12	-.0373*** (.0116)	-.0283*** (.0114)
Years 13-14	-.0279** (.0113)	-.0259*** (.0130)
Years 15 more	-.0117 (.0050)	-.0115 (.0171)
Year Effects	Yes	Yes
State Effects	Yes	Yes
State Trends, Linear	No	Yes
Adjusted $R^2$	.89	.96
Number of observations	1632	1632

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. Regressions include state unemployment and log per capita income as controls. Source: Total fertility rates are calculated using the *Vital Statistics* of the USA.

TABLE VII  
THE IMPACT OF UNILATERAL DIVORCE ON THE TOTAL FERTILITY RATE  
CENSUS DATA AND VITAL STATISTICS

	Census 1960-1990: number of children ever born to women 15-44 years old		Vital Statistics 1968-1999: Total fertility rate	
	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce	-.0511*** (.0165)	-.0446*** (.0134)	-.0728*** (.0228)	-0.058*** (.0106)
<b>Elasticity</b>	<b>3.5%</b>	<b>3%</b>	<b>3.6%</b>	<b>2.9%</b>
Year Effects	Yes	yes	yes	Yes
State Effects	Yes	yes	yes	Yes
State-specific trends	No	yes	no	Yes
Adjusted $R^2$	.98	.98	.88	.96
Number of observations	6113	6113	1632	1632

For the Census data: regressions based on IPUMS data from the 1960-1990 Censuses (1960 State 1% sample, 1970 Form one 1% state sample, 1980 and 1990 5% state sample). Women aged 15-44. All regressions control for race, state and age dummies and age\*year dummy interaction and are weighted to reflect underlying micro data. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. Standard errors are clustered at the state\*year level.

For the Vital Statistics Regressions: Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. Total fertility rates are calculated using the *Vital Statistics* of the USA.

TABLE VIII  
THE IMPACT OF UNILATERAL DIVORCE ON OUT-OF-WEDLOCK BIRTHS  
DEPENDENT VARIABLE: OUT-OF-WEDLOCK RATIO

Out of wedlock ratio (15-44 years old women)				
Specification	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce	-1.279*** (.2846)	-1.189 *** (.2646)	-1.637*** (.441)	-.7083** (.3675)
Legalized Abortion			8.206*** (1.065)	2.284* (1.381)
<i>Education and Empl. Status</i>				
Up to 12 years of schooling			11.22*** (3.379)	.7246 (3.013)
Some college			8.530** (3.935)	-.2684 (3.409)
Fraction Employed			-2.338 (2.887)	-6.679 (2.989)
Fraction Unemployed			1.019 (6.981)	-4.228 (6.468)
<b>Elasticity</b>	<b>5.9%</b>	<b>5.5%</b>	<b>7.5%</b>	<b>3.25%</b>
<i>Age and Race Composition</i>				
Year Effects	Yes	Yes	yes	Yes
State Effects	Yes	Yes	yes	Yes
State-specific Trends	No	Yes	no	Yes
Adjusted $R^2$	.96	.98	.96	.98
Number of obs.	1481	1481	1233	1233

Out-of-wedlock ratio is defined as the ratio of births out-of-wedlock over total births. Coefficients multiplied by 100.

Panel data regression estimates, sample period 1968-1999. Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels. Demographic controls are the shares of the total female population in age group  $a$  and of race  $r$ , in state  $s$  in year  $t$ , where the age groups are 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, and race is white, black and other.

Source: Birth rates for married and unmarried women are calculated using the *Vital Statistics* of the USA.

TABLE IX  
 THE IMPACT OF UNILATERAL DIVORCE ON THE LOG BIRTH RATE, BY MARITAL STATUS  
 DEPENDENT VARIABLE: LOG (BIRTH RATE), WOMEN AGE 15-44

Specification	Marital				Non-marital			
	(1a)	(1b)	(2a)	(2b)	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce	-.0236 (.0174)	.0098 (.0164)	-.0155 (.0165)	.0007 (.0166)	.0073 (.0278)	-.0756*** (.0294)	.0077 (.0264)	-.0620** (.0286)
Legalized Abortion			-.3375*** (.0399)	-.3516*** (.0370)			.1793*** (.0701)	.0952 (.0896)
<i>Education and Empl. Status</i>								
Up to 12 years of schooling			-.4159*** (.119)	.2115** (.1088)			.1463 (.1961)	-.315* (.1778)
Some college			-.4657*** (.1426)	.1983 (.1277)			-.1753 (.2293)	-.6247*** (.2194)
Fraction Employed			-.3472*** (.0951)	-.0286 (.0921)			.2293 (.1724)	-.1645 (.1768)
Fraction Unemployed			-.3149*** (.2088)	.0601 (.1893)			-.8777** (.3903)	-1.0778*** (.3659)
Age and Race Composition	No	no	yes	yes	no	no	yes	yes
Year Effects	Yes	yes	yes	yes	yes	yes	yes	yes
State Effects	Yes	yes	yes	yes	yes	yes	yes	yes
State-specific Trends	no	yes	no	yes	no	yes	no	yes
Adjusted $R^2$	.81	.89	.83	.90	.81	.89	.91	.94
Number of obs.	1235	1235	1235	1235	1233	1233	1233	1233

Panel data regression estimates, sample period 1968-1999.

Estimated using state population weights. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: Log (birth rates) is calculated using the *Vital Statistics* of the USA. Married and single population is calculated from the March PS using CPS weight.

TABLE X  
THE IMPACT OF UNILATERAL DIVORCE ON THE LOG BIRTH RATE, BY RACE  
DEPENDENT VARIABLE: LOG (TOTAL FERTILITY RATE)

Specification	Whites				Blacks			
	(1a)	(1b)	(2a)	(2b)	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce	-.0690*** (.0118)	-.0188*** (.0071)	-.0782*** (.0134)	-.0321*** (.0102)	.0028 (.0175)	-.0140 (.0142)	-.0461 (.0317)	-.0099 (.0204)
Legalized Abortion			-.0376 (.0530)	.0427*** (.0126)			.0272 (.0278)	-.0036 (.0267)
<i>Education and Empl. Status</i>								
Up to 12 years of schooling			.0961 (.0925)	-.0988 (.0689)			-.0737 (.0528)	-.0398 (.0353)
Some college			-.247*** (.0967)	-.267*** (.0867)			-.1193* (.0653)	-.0490 (.0428)
Fraction Employed			-.857*** (.0882)	-.152** (.0692)			-.0332 (.0385)	-.0201 (.0262)
Fraction Unemployed			-.7874*** (.1763)	-.3621*** (.1326)			-.1144** (.0576)	-.0658* (.0389)
Age and Race Composition	no	no	Yes	yes	no	No	Yes	yes
Year Effects	yes	yes	Yes	yes	yes	Yes	Yes	yes
State Effects	yes	yes	Yes	Yes	yes	Yes	Yes	yes
State-specific Trends	no	yes	No	Yes	no	Yes	No	yes
Adjusted $R^2$	.86	.95	.91	.96	.79	.93	.81	.93
Number of obs.	1530	1530	1282	1282	1530	1530	1217	1217

Panel data regression estimates, sample period 1968-1999.

Estimated using state population weights for white and black. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: Total fertility rates are calculated using the *Vital Statistics* of the USA.

TABLE XI  
 THE IMPACT OF UNILATERAL DIVORCE ON THE NUMBER OF NEVER MARRIED WOMEN  
 DEPENDENT VARIABLE: FRACTION OF NEVER MARRIED WOMEN, AGE 15-44,  
 CPS 1962-1999

Specification	(1)	(2)	(3)
Unilateral Divorce	-.0135*** (.0048)	-.0098*** (.0040)	-.0026 (.0052)
<i>Education and Empl. Status</i>			
Up to 12 years of schooling		-.3037*** (.0462)	
Some college		-.3129*** (.0597)	
Fraction Employed		-.1242*** (.0293)	
Fraction Unemployed		.0452 (.0817)	
Age and Race Composition		yes	Yes
Year Effects	yes	Yes	Yes
State Effects	yes	Yes	Yes
State-specific Trends	no	no	Yes
Elasticity	4%	3%	1%
Adjusted $R^2$	.79	.85	
Number of obs.	1564	1564	1564

Panel data regression estimates, sample period 1962-1999.

Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: Fraction of never married women is calculated using the March Supplement of the Current Population Survey

TABLE XII  
 THE IMPACT OF UNILATERAL DIVORCE ON THE MARRIAGE RATE  
 DEPENDENT VARIABLE:  
 MARRIAGE RATES (NUMBER OF MARRIAGES PER 1,000 POPULATION)

Specification	(1a)	(1b)	(2a)	(2b)
Unilateral Divorce	.2166** (.0922)	.2095** (.0928)		
Years 1-2			.1068 (.1145)	.1392 (.1062)
Years 3-4			.0650 (.1253)	.0748 (.1378)
Years 5-6			.2777** (.1295)	.2690* (.1508)
Years 7-8			.3830** (.1133)	.3832** (.1627)
Years 9-10			.3415*** (.1222)	.3623** (.1878)
Years 11-12			.4034*** (.1373)	.4486** (.2152)
Years 13-14			.4042*** (.1377)	.4698** (.2261)
Years 15 and more			.1362 (.1323)	.2787 (.2796)
Year Effects	Yes	Yes	Yes	Yes
State Effects	Yes	Yes	Yes	Yes
State-specific Trends	No	Yes	No	Yes
Elasticity	2.3%	2.3%		
Adjusted $R^2$	.79	.89	.79	.89
Number of obs.	1986	1986	1986	1986

Panel data regression estimates, sample period 1956-1995. Nevada is excluded from the sample. Robust standard errors in parenthesis. \*\*\*, \*\* and \* respectively denote 1%, 5% and 10% levels.

Source: *Vital Statistics* of the United States



TABLE XIII  
 THE IMPACT OF UNILATERAL DIVORCE ON FERTILITY DURING THE FIRST TWO YEARS OF MARRIAGE  
 DEPENDENT VARIABLE: NUMBER OF CHILDREN EVER BORN TO WOMEN AGE 15-49,  
 CENSUS 1980, 5% STATE SAMPLE

Specification	(1)	(2)
Unilateral Divorce	.2338*** (.0141)	.1692*** (.0136)
Age	-.1199*** (.0045)	.0104* (.0053)
Age squared	.0026 (.0000)	.0006 (.0000)
White	-.0827** (.0392)	-.0335 (.0228)
Black	.5506*** (.0329)	.5372*** (.0249)
<i>Education and Empl. Status</i>		
Up to 12 years of schooling		.4489*** (.0175)
Some college		.1803*** (.0076)
Employed		-.4647*** (.0135)
Unemployed		-.2496*** (.0147)
State Effects	Yes	Yes
Adjusted $R^2$	.10	.22
Number of obs.	204,806	203,496

Source: Census 1980, 5% State Sample  
 Robust standard errors in parenthesis. Corrected for clustering at the state level \*\*\*, \*\*and \* respectively denote 1%, 5% and 10% levels.