ABSTRACT

KHALAF, CHRYSTELLE. The Effect of Divorce Law Change on Divorce Rates: A New Perspective. (Under the direction of Dr Melinda Sandler Morrill.)

Economic literature attempts to explain the effect of divorce law on divorce rates. Mutual consent divorce law was promulgated in the 1970's. Although this amendment was a reflection of the social change occurring in the United States of America, unilateral divorce was still feared because some expected it to increase divorce rate. Friedberg and Wolfers made big contributions in this field of study. Friedberg believed that divorce rates have increased as a result of the law change while Wolfers agrees that an initial spike is clear but argues that the effect of the new legislations dissipates with time. I adjust the data they use to take into account separation requirements which they have not considered or merely thought of as an extra cost. Some states did require individuals to separate for a certain amount of time before granting them divorce. I use the same regressions as Friedberg and Wolfers for the same period of time but with a different dependant variable: divorce initiation rate. My results then differ when aligning divorces with the period when they got initiated. I conclude that Friedberg overestimated the effect but that the effect did persist and did not disappear like Wolfers claimed.

The Effect of Divorce Law Change on Divorce Rates:
A New Perspective

by
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BIOGRAPHY

“Out of suffering have emerged the strongest souls; the most massive characters are seared with scars.” Gibran Khalil Gibran.

Chrystelle Khalaf arrived to the USA, three years ago with clear objectives. She soon discovered though that life often sneers at plans. She was born on December the 14th in 1986, in a little city called Zahle on a mountain top in Lebanon. She was blessed to be raised amongst amazing individuals. Her dad taught her by example what one’s will and hard work would let him achieve. He taught her the meaning of honor, the importance of dreams and what it meant to be good to the core. Her mother comes from a tradition of strong women. She taught her not to waiver on truth, not to give up on people and above all, to love with everything you have. Her baby brother, and yes, he will always be her baby brother taught her that wisdom is not necessarily the fruit of years. He was born with it; probably to accompany his magnificent talent that can bring to life the most banal of scenery. She graduated from Universite Saint Joseph in Beirut with a B.A in Economics in one of the most turbulent periods of the country’s history with weekly bombings and monthly assassinations. She did get to feel a part of history which was always a dream of hers when she participated in the cedar revolution with half of the Lebanese population that took to the streets to demand the rights to free speech, democracy and to not live in fear. She graduates in 2010 with a M.A in Economics. Her journey in the U.S has taught her much but most of all the value of home. She will always look back on this time with nostalgia but knows that ahead lays new adventures and new experiences and there is much much more to learn.

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1 Introduction

During the 1970's, the United States of America was still going through a change process that started during the 1960's. The social revolution that was taking place aimed to reconcile reality with the principles on which the country was built. Norms that became obsolete were replaced by a greater value of individual freedom. Equality was pursued on social, economic and even legal levels. Movements initiated in the earlier decade started obtaining tangible results. The increasing popularity of the pill, the economic liberty of women that came through their higher participation in the labor force and the precedent set by Roe v. Wade, are all examples of the transformation taking place. Law reform aimed to reach less oppressive sexist legislations.

Divorce law was altered to reflect society's new attitudes. Divorce, before the 1970's, required a reason. Sin or crime must have been committed. Divorce was granted on grounds of abandonment, adultery or cruelty. Divorce law, falling under the state government's jurisdiction, was first promulgated by California in 1969. South Dakota was the last state to follow on that trend in 1985. The new law allowed divorce on grounds of incompatibility, irreconcilable differences or the irretrievable breakdown of the marriage.

This legislative change could have been expected to render divorces easier to obtain, thus increasing divorce numbers. Most economists though believed that Coase bargaining is applicable to this market. The theory was that divorce rates would not likely change due to the law transformation since we are already at an efficient equilibrium.

This shift in the law from what was known as mutual consent to unilateral divorce led to an extensive literature on the effect on the number of divorces. I focus on two papers; the first one entitled “Did Unilateral Divorce Raise Divorce Rates? Evidence from Panel Data” by Leora Friedberg (1998) and the second by Justin Wolfers (2006) titled “Did Unilateral Divorce Raise Divorce Rates? A Reconciliation and New Results”. Friedberg’s paper provides evidence that the change to unilateral divorce increased divorce rates. Another extremely popular paper by Wolfers arrives at a rather different conclusion. The common belief became after his contribution that the effect of the law change was temporary and was reversed with time. I try to show that using divorce rate as the dependent variable might not be the best approach. Instead I regress the same regressions in these two widely accepted papers using a divorce initiation rate which is the divorce rate adjusted as to take into account the separation periods depending on the state in question. Divorce rates previously used could distort the data and thus lead to inaccurate results. I start the paper with a literature review then I move to the empirical work. I begin with my replications of Friedberg’s and Wolfers’s regressions. I, then, introduce the concept of the divorce initiation rate and run my own regressions. I compare the outcome, analyze the results and run a final test to insure the robustness of my work. I present my conclusion that includes the limitations that exist in the field of data collection for this subject. Divorce is a process and its starting point turns out to have a bigger role than what was believed previously. I find that Wolfers and Friedberg had upward biased results because they failed to adjust their data. Their data did not reflect an alignment between divorce rates and the time when the corresponding divorces were initiated.

2 Literature review

Becker was a pioneer in broadening the spectrum of economic subjects of interest into an area that was otherwise reserved to sociologists, demographers and historians. His theory explains family behavior in a new light. Choices undertaken by individuals that might seem purely based on emotions such as divorces or mothers staying at home with their kids could actually be predicted through rational economic models. In a paper entitled: ‘‘An Economic Analysis of Marital Instability’’ (1977), Becker lays out his divorce model. The theory is fairly intuitive. Marriage occurs when its expected utility is higher than that of remaining single. Thus divorce takes place once the utility of being separated surpasses that of staying together as a couple. A key concept in this model would be uncertainty. It would explain the difference between the expected utility of being married ex-post and ex-ante. The actual utility of being married turns out to be less than that formerly expected for those who choose to divorce. Another explanation of divorce would be a simple change in the utility of marriage with years, e.g., kids growing up.

Rational individuals seek to maximize their expected lifetime utility. Marriage decisions and later divorce or remarriage choices will depend mainly on that maximization process. Becker states that in a world without uncertainty, the majority of marriage dissolution would not take place.

A couple is made of two people making decisions. If they agree on staying married or getting a divorce, i.e., their perception of their joint utility is the same, then we face no contradicting positions.

If disagreements arise then the general rule is that a couple would separate once their joint utility from staying married is expected to be inferior to theirs once separated assuming that all transactions between spouses are feasible and costless. If one spouse predicted a higher utility from divorce while the couple's joint utility of marriage was higher than that of their joint utility while divorced, divorce will not occur since he/she will get enough compensation from the other spouse to keep the marriage going. One's benefits must cover the other one's losses. Compensation in this model is a perfect example of the "Coase Theorem" since property rights and liability do not affect the allocation of resources being that the cost of dealings is minimal.

This theoretical model was put to the test starting 1970 when states updated their divorce legislations transforming mutual divorce laws into unilateral ones. Elizabeth Peters (1986) conducted an empirical study to analyze the effect of the law change. Her hypothesis was that divorce rates should not be affected and as a consequence the Coase theorem should hold. Legislation would only affect the trade between spouses, the ease with which compensation between them can occur in order to ensure that divorce decisions are efficient. The law change would increase divorce rates if it introduced new constraints to the marriage dissolution market in the form of higher bargaining costs. The data used were from the March/April 1979 Current Population Survey. This study finds no such evidence of an increase in the divorce rates providing us with support to Becker's theory and the Coase Theorem. Douglas Allen (1992) had a comment to make.

The data used by Peters is in the middle of the transition period between the different laws since it took until 1985 for all the states to have switched to the unilateral law of divorce. Allen in his paper entitled "Marriage and Divorce: Comment" tries to fix a few measurement errors and argues that the existence of transaction costs and the vague definition of property rights render the Coase theorem inapplicable in this context. He regressed the probability of divorce on unilateral divorce laws and obtained a positive coefficient, indicating that the law changes did in fact increase divorce rates. Peters replied and offered additional evidence to support her conclusions through aggregate data instead of individual data. Peter and Allen used an identical set of cross-sectional data from the 1979 current population survey. They used a logit to estimate the effect of the unilateral divorce law on the divorce rate. The main dissimilarity in the set up of their equations was the inclusion of state differences in Peter's regression.

A controversy exists around the validity of the Coase theorem usage in the divorce model. Zelder (1993) brings up the case of public goods as being restrictive of transactions between spouses thus the Coase theorem no longer applies. He uses children as an example of public goods in his model where he compares the cases of unilateral and mutual divorce laws. Fault based law implies that in order for a divorce to take place, the person wanting the divorce must compensate the one wishing to stay married while no fault law would entail that the divorce would not occur only if the spouse wanting the marriage to continue is capable of compensating the one wishing to leave.

Thus under transaction limitations imposed by the fact that children are similar to public goods, Zelder gets to the theoretical conclusion that under no fault divorce law, divorce rates will be higher since transfers in a couple become more constrained. This outcome would be inefficient since divorce would occur even in cases where the joint value of marriage is higher than that of divorce. He offers empirical evidence using the Panel Study of Income Dynamics (PSID) over the period 1968-1981. A 23% increase in divorce rates can be explained by the law change.

To resolve these contradictory findings in the literature, Friedberg (1998) tries to answer the following question: did unilateral divorce raise divorce rates? She uses a panel of state level data on divorce rates over a 20 year period to test the Coase theorem and consequently Becker's model. Friedberg starts with Peters's regression and introduces a few changes to fit her data. The regression coefficient on the type of law applied seems to depend on the state and time variables. She reaches the conclusion that a 17 percent rise in divorce rates from 1968 to 1988 is due to the introduction of unilateral divorce laws. The estimations are statistically significant. Friedberg adjusts the model to account for different divorce trends across states as to get more precise estimates, thus pointing out that Peters and Allen' s regressions were misspecified.

One of the issues that this thesis addresses is the fact that some states would only allow for a unilateral divorce after the couple has been separated for a period of time, and that period varies across states and over time. Often the legislation that included provisions for unilateral divorce also made changes to the separation requirement.

Separation in this context could be thought of as a cost introduced by unilateral divorce. Friedberg (1998) finds a small but significant effect of the separation constraint adjunct to the unilateral divorce law on divorce rates. In this thesis, I consider the additional fact that a separation requirement necessarily changes the time lag anticipated between the date of the legislation change and the effect on the divorce rate.

Wolfers, in 2006, presents a criticism of Friedberg; noting that while estimating her difference in difference coefficients, she did not account for already existing trends in divorce, thus misspecifying the effect of the law change. Wolfers replicates Friedberg's study. Friedberg argues for the inclusion of state effects in the regression since she believes social and demographic trends differ across states. She gets to the conclusion that the divorce rate rose as a consequence of the law change with statistical significance. Wolfers relaxes Friedberg's model by allowing for a non-linear effect of time in a non-parametric specification. The effect of the law change becomes smaller over time, implying that it was overestimated in the earlier study. Wolfers makes a distinction between the short term effect of the law which is an increase in divorce rate and a long term effect which is a decrease in the divorce rate due to a better selection process in the marriage market. He also extends the data previously used to earlier years to try to identify already existing trends. Empirically, the result is a huge immediate increase in divorces after the law change followed by a decline in those rates in the following years. The effect of unilateral divorce is minimal in the long run. Wolfers offers an interesting explanation to the Coase theorem dilemma. He predicts that divorces would be much higher if bargaining was not possible between spouses. Couples are able to efficiently reach an agreement on staying married although they have a possibility of unilateral separation which is the equivalent of low transaction costs.

Rasul publishes a paper in 2005 entitled “Marriage markets and divorce laws” where he sheds a new light on the subject. He tries to explain the empirical result through an updated divorce model. He assumes that the Coase theorem does not apply to the marriage and divorce markets. The expected utility of marriage affects divorce through two different channels. Once the utility of divorcing is higher than that of staying married, we can observe a pipeline effect which is simply that the divorce rate would increase. The selection effect that is the characteristic of this model is the fact that new marriages will be more likely to last. Individuals do not rush into marriage. They demand more signals about what to expect in the future before making their decisions. The value of marriage has decreased with time over that of being single. Divorcing though will put them in a worse off situation. Thus, more attention is paid in the selection process when considering marriage. Marriage rates as well as divorce rates are expected to fall. These two effects need to be clearly determined in any empirical study so as not to get biased estimates and as a consequence erroneous conclusions. He argues that the probability of divorcing is higher under the unilateral divorce law. The paper notes that divorce rate trends seem to follow marriage rate ones with a certain lag. Rasul uses state level panel data from 1960 to 2000 and concludes that marriage rates decreased statistically significantly and that Friedberg underestimated the effect of the change in laws on the divorce rate because she did not include the effect on marriage in her regression. This paper offers another interpretation of the divorce market mechanism.

Instead of relying on the Coase theorem, the hypothesis is that couples can not bargain efficiently. The short and long term effects brought up by Wolfers are explained in the heart of this model.

3 Friedberg

I first attempt to replicate Friedberg's model. She used data ranging from 1968 to 1988 for the 50 states and the District of Columbia. The data source was the vital statistics of the United States (National Center for Health Statistics). Friedberg assembled a panel of state – level divorce rates that measures virtually every divorce in the United States over the entire duration of the law changes. The model she uses is the following:

$$DR_{s,t} = C0 + C1*UNILATERAL_{s,t} + C2_s*STATE_s + C3_t*YEAR_t + C4_s*STATE_s*TIME_t + C5_s*STATE_s*TIME_t^2 + U_{s,t}$$

Each observation is subscripted for either the state s or the year t or both. Unilateral is a dummy variable, it is equal to one if the state has a unilateral divorce law and zero if it has a mutual divorce law. Friedberg uses Peters's classification of unilateral where states that allow living separate for a period of time as the only ground for unilateral divorce are considered states that follow mutual divorce law. The dependent variable, *DR,* is the rate per thousand persons of divorces that occur in a state in a certain year. *TIME* is a time trend. The model contains a state specific linear as well as quadratic trend. The equation is estimated using population weighted least squares. Data on population was obtained through the US bureau of the census.

Table 1 shows Friedberg's results, Wolfers's replication of Friedberg's results as well as my own. Wolfers's results are not exactly the same as those he's attempting to regenerate. He explains the difference as due to the revised population estimates and the differences in computational methods. My results are closer to Wolfers's.

The coefficient C1 shows the increase in divorce rates due to the law change. My results are consistent with that of Wolfers and Friedberg in that when we control for state and time fixed effects only, Column 3 of Table 1, the law change is not correlated with divorce rates. It should be noted that the last three regressions have a high explanatory power due to the inclusion of state and year fixed effects. Friedberg introduces a new regression that is more restrictive since it allows state specific linear time trends in an attempt to control for the different cultural, social and demographic changes that occurred through time between states. It becomes obvious in regression (4) that there is a significant effect on divorce rates since the estimated coefficient C1 is now higher than before with a smaller standard error. The divorce law change has raised divorces by almost 10%, the average divorce rate being 4.6 divorces per 1000 people per year.

The coefficient on unilateral does not change much when we add the state specific quadratic trend in Column 5.

In Table 2, I show in detail the coefficients on the year effects from the regressions in Table 1. These coefficients are those presented in Friedberg's paper as well as those I get when I replicate her regressions. The year effects represent certain national influences on divorce rates that change through the years such as cultural shifts or economic conditions, etc.

My coefficients mirror those of Friedberg. They increase with years until 1979 where they start decreasing. Time trend reflects causes that lead to an increase in divorce rates in all the states. State trends illustrate the differences in divorce rates due to many disparities between the US various geographic regions. Couples in western states were most likely to divorce to begin with, but with the law change, the northeastern states that started with lower divorce possibilities saw their willingness to divorce increase. Again, my results from the regression are quite similar to those of Friedberg's; all the signs are the same. Table 3 contains the coefficients on state effects and the trends from regression (4) in Table 1.

4 Wolfers

Wolfers believed that Friedberg's data did not cover a wide enough time range. He wanted more observations that preceded the law changes so it would become possible to identify a preexisting state trend. He extends the sample back to 1956 and he introduces a new variable which represents the duration that the new unilateral law has been in existence. It is basically a dummy variable for the first 2 years that the law has been available and then for the next 2 years and so on. Wolfers using data from 1956 till 1988 runs the following regression:

$$DR_{s,t} = \sum_{k\geq 1} B_k \text{UNILATERAL DIVORCE has been in effect for K periods}_{s,t} + \sum_s \text{STATE FIXED EFFECTS}_s + \sum_t \text{TIME FIXED EFFECTS}_t \left[+ \sum_s \text{STATE}_s * \text{TIME}_t + \varepsilon_{s,t} + \sum_s \text{STATE}_s * \text{TIME}_t^2 \right]$$

Wolfers makes the distinction between short term effects and long term ones. He introduces time distinction in his regression in an attempt to include dynamic patterns in his model. He talks about a pent up demand for divorce right after the law change. Spouses not able to separate under the old divorce law would rush at this opportunity to finally do so. The demand for divorce would decrease with time when the divorce rates reach a new steady state. The adjustment does not immediately happen because of a lack of transparency in the market, information about the new laws would take time to be understood or for people to get used to. Individuals' preconceptions of divorce will require time to adjust to society's new norms. The initial peek in divorce rates will die out with time.

I replicate the regression and I present the results in table 4 as well as Wolfers's results. My findings mirror very closely those from Wolfers. The first regression (1) controls for state and time effects. In the second one, he introduces state specific time trends (2) and for the last one (3), quadratic state specific time trends are present. The conclusion from all three equations is consistent. The divorce rates rose right after the law changes but not for long. They were approximately stable for a while but then they started declining. Figure 1 represents that finding graphically. Wolfers believes Friedberg missed this conclusion because she had a smaller sample. He does admit though that the long results of these regressions, unlike the short run ones, are not always statistically significant.

5 Divorce Initiation Rates

Friedberg and Wolfers both use divorce rates. I try a different approach. I use their regressions although my dependent variable is now the divorce initiation rate (DIR). I define DIR as the divorce rate after adjustment for separation requirements. Different states have different divorce legislations and some of them impose a period of separation for a couple before divorce can be granted. Table 5 illustrates states where separation is not a requirement and states where it actually is as well as the year where some states went from no requirement to a prerequisite of living apart for a certain period of time for divorce to be granted. Table 6 shows the separation period by states as well as the year when it became effective. Utah, per example, adopted a 3 year separation requirement in 1965 so Utah's DIR in 1965 is equal to Utah's DR in 1968. I run all the previous regressions replacing DR by DIR, considering DR=DIR for those states with no separation requirements and for the years prior to instituting a separation period. I expect the results that I obtain to differ from Friedberg's and Wolfers'. The immediate increase in divorce rates would not be as sharp as was previously observed. Divorces initiated before the law change would no longer be considered as part of the divorce demand response to the new legislations. The decrease in divorce rates that follows after the 8th year of the new law regime will also be smoothed. Adjusting divorces to match their actual initiation year will show the real pattern of divorce rates over time making Wolfers' pattern inaccurate for failing to insure that alignment.

Table 7 has the results from replicating Friedberg's regression specifications and table 8 has the results from replicating Wolfers's regression specifications, both now using DIR rather than DR. The coefficients on unilateral are smaller using this following regression than they were using Friedberg's regression. This result was expected since now divorces match their original initiation time which would place some in a period before the introduction of unilateral divorce law. The standard errors are very similar though.

$DIR_{s,t} = C0 + C1*UNILATERAL_{s,t} + C2_s*STATE_s + C3_t*YEAR_t + C4_s*STATE_s*TIME_t + C5_s*STATE_s*TIME_t^2 + U_{s,t}$

The coefficient on unilateral using the basic regression is 1.538 with a 0.086 standard error which makes it statistically significant (Table 7, column 1). It is smaller than Friedberg's coefficient by 0.264. The coefficient with time fixed effect is similar at 1.330 (0.901) (Table 7, column 2). We end up with an interesting result when we add state fixed effect to the Friedberg regression while using DIR instead of DR. We get the first negative coefficient on unilateral. It's -0.005 (0.059) (Table 7, column 3). It is not statistically significant but the adjusted R^2 is 0.937. This emphasizes how using divorce rates without adjusting for separation requirements could have biased the Friedberg regression results upward. Theoretically, that would be due to separation being a cost introduced by the law change. As the state specific linear trend is introduced, we get a coefficient on unilateral equal to 0.358 (0.054) that is statistically significant and that also has a high R^2 (Table 7, column 4). The coefficient from the same regression with DR is equal to 0.447 (Table 1, column 4).

Wolfers compares that earlier result to an average rate of 4.6 divorces per 1000 people per year and states that it's the equivalent of a 10 percent raise in divorce rates. I follow his lead with the same average rate but with the new coefficient, the divorce rate increases by almost 8 percent.

Unilateral divorce laws increased divorce rate on average but Friedberg overestimated that increase. The last coefficient we obtain is 0.377 (0.057) and that is when we add the state specific quadratic trends (Table 7, column 5). DIR presents us with smaller coefficients than those I obtain with DR when running Friedberg's regression.

Adjusting for separation requirements; I run the Wolfers' regression. I use the following equation:

$$DR_{s,t} = \Sigma_{k\geq 1} B_k \text{UNILATERAL DIVORCE has been in effect for K periods}_{s,t} + \Sigma_s \text{STATE FIXED EFFECTS}_s + \Sigma_t \text{TIME FIXED EFFECTS}_t \left[+ \Sigma_s \text{STATE}_s * \text{TIME}_t + \varepsilon_{s,t} + \Sigma_s \text{STATE}_s * \text{TIME}_t^2 \right]$$

For the basic specification, the coefficients are decreasing just like Wolfers' results (and similar to the findings in Friedberg). The coefficients are smaller though and they turn negative after the fourth year compared to the eighth year for Wolfers. I have mentioned earlier that the adjustment of divorce rates to take into account separation requirements will lead to a smoothing of the pattern thus eliminating any sharp spikes or dips in the divorce rate trend. The state specific linear trends added into the regression give Wolfers decreasing coefficients except for the coefficient representing the seventh and eighth year.

My results diverge from those mentioned earlier. Wolfers' results have been so dramatic because he failed to include separation requirements when processing his data. The sharp increase in divorce rates that he explains by the introduction of the new law is an overstatement of the actual pattern in the divorce market.

The pattern turns out to have less sharp deviations than he originally predicted. Figure 2 represents graphically the numbers I acquired. It shows a smooth curve compared to Wolfers' in Figure 1.The coefficients increase up to the eighth year, they decrease until they go back to increasing in the thirteenth year. I obtain increasing results when I add state specific quadratic trends while the results in Wolfers' paper are stable for the first eight year. They decrease afterwards except for the last coefficient that represents state having the unilateral law for more than fifteen years. Wolfers'regression overestimates the effect of adopting the new law if we were just to look at the basic regression. When the state linear trend and quadratic trend are included, the reversal of the law effect that Wolfers addresses disappears and his results seem to be an underestimation. The divorce rates are not negative. They actually just keep increasing. The coefficients are quite large and statistically significant. The coefficients on the first 2 years are very close to those Wolfers presented. Wolfers' coefficient for the first 2 years with the state specific linear trend is 0.34 (0.06) (Table 4, column 2) and 0.30 (0.05) (Table 4, column 3) when the state specific quadratic trends are included. My coefficients for the same two regressions are respectively 0.33(0.06) (Table 8, column 2) and 0.38(0.06) (Table 8, column 3). The divergence in results becomes very clear after the 11th year where Wolfers had a negative coefficient on years 11-12 for his regression including state specific linear trends. It was -0.10 (0.10) (Table 4, column 2). My regression gives me quite the opposite result with a coefficient of 0.32 (0.11) (Table 8, column 2).

The highest coefficient I obtain is on year 15 and onwards in the regression containing state specific quadratic trends and it is equal to 1.32 (0.23) (Table 8, column 3) compared to 0.25 (0.20) that Wolfers presents in his paper for this same regression (Table 4, column 3).

The results confirm my initial hypothesis. The divorce law change did affect divorce rates as predicted by Friedberg. The effect is smaller though than she claims. Wolfers had confirmed that initial effect but had claimed that it decreases with time and that the average effect throughout the period was zero. I believe his results are due to misspecified data. His interpretation omitted separation requirements which are the reason behind the discontinuation in his pattern. I find that the effects as I initially expected are increasing and do not disappear with time.

6 Final Test

The number of observations used for these regressions differ between those run with divorce rates and those run with divorce initiation rates. Certain years for some states lack information. Friedberg had addressed that issue. She introduced a set of dummy variables to account for the irregularities. She has a list of the states and years in question in her paper's appendix. The incomplete data is the reason behind the disparity in the number of observations. This leads me to run one more test to make sure that my results are robust and not due to misspecified data. I run the same regressions using DR again with only the data available for both the DR and the DIR regressions.

I run the original Friedberg and Wolfers regression with divorce rate as the dependant variable with this new series of observations. I also run my regressions that replicated Friedberg's and Wolfers' regression specifications with the divorce initiation rate as the dependant variable. Table 9 shows the coefficients on unilateral. It mirrors Table 7. Table 10 shows the coefficients associated, with the number of years that the unilateral divorce has been in place. It mirrors Table 8.

There is a slight change in the results but to the most part the numbers are fairly close. The signs are the same as well as the movement of the coefficients. I found nothing that would lead me to believe that my findings were simply due to non-randomness in missing data. I came to the same realization graphically. Figure 3 illustrates the effect of unilateral divorce laws on the divorce rate when we use this adjusted series and figure 4 illustrates the effect of the new law on the divorce initiation rate with that same series of observations.

6 Conclusion

The introduction of a new divorce law in the 1970's incited a debate on the expected effect on divorce rates. Some believed it will ensue in a rise of divorce demand since it made acquiring one easier and one sided. Others predicted no effect basing their opinions on the Coase theorem and their confidence in the efficiency of the market in question.

However, the effect of the law change on divorce rates is undeniable which was proven by Friedberg and which this paper confirm. There was an increase right after the new legislations were introduced.

Friedberg and Wolfers both had overestimated results compared to those I got when I introduced the divorce initiation rate. There results were biased upwards because they did not account for separation requirements. Including a divorce that started before the law change in the divorces considered as a response to the new legislation lead them to inaccurate results. Wolfers argued that the increase was temporary and that it diminished with time. Although I infer the same conclusion from the basic regression, in the full model that includes state linear and quadratic trends I find exactly the opposite. The divorce rate increased after the unilateral law was passed and the effect continued to increase over time. The results are contradictory with the Coase theorem and could be explained by constraints to efficient bargaining in the marriage market. Marriage is not a binding contract which makes the marriage market and the divorce market as a consequence inefficient. The societal change that occurred in the past years is irreversible. The new notions that were introduced and the shifts in the cultural norms are a leading factor in the continuing rise of divorce rates long after the unilateral divorce laws have been introduced. Couples might have been considered once as one entity with a single set of preferences. This is no longer the case. Spouses act as individuals first which is no longer looked down upon by society. It is actually encouraged. One is supposed to pursue his/her own well being. There is no factor outside the economic divorce market to suggest a decrease in divorce while the reason for the increase exists clearly.

Another factor to consider is that the children of divorced parents are 4 times more likely to divorce than the children of couples who stayed together. The increase in divorce could have created a self propagating pattern.

The large changes in the divorce rates across the time period studied cannot be explained solely by the law change. There are other factors that should be considered but might be hard to quantify. Social changes and scientific progress cannot go unnoticed.

One limitation of this and other studies of divorce is the available data. The vital statistics have missing values as well as sampling errors and sometimes inconsistent responses and microfilm errors. Divorce rate which is the dependent variable presents these measurement errors. The results might contain some noise as a result. I do not believe that the error term is systematically related to the independent variables so I do not expect biased results. Any interpretation, though, of the results based on these numbers need to take that into account.

This paper attempts to address the importance of separation requirements. Peters believed that they have an insignificant effect on the divorce rate. Friedberg only considered them to be a cost imposed on unilateral divorce. She reached the conclusion that they have a small but yet a significant effect on divorce. Wolfers does not even mention separation requirements in his paper.

I believe that adjusting the data to reflect the actual starting point of the process through time is essential to presenting the actual pattern for divorce rates and thus to establish the effect of the passage from mutual consent divorce law to the unilateral one. The model presents an explanation to Wolfers' peculiar results.

The timing of the divorce plays a key role in demonstrating that the law change had an undeniable effect on the divorce rates that persisted with time.

Tables

Table 1.Friedberg's regression

	Basic regression (1)	+ time fixed effect (2)	+ state fixed effect (3)	+ state specific linear trend (4)	+ state specific quadratic trend (5)
			Friedberg's Results		
C1	1.802 (0.087)	1.509 (0.090)	0.004 (0.056)	0.447 (0.050)	0.441 (0.055)
Adjusted R2	0.314	0.362	0.946	0.976	0.982
			Wolfers's Replication		
C1			0.000 (0.057)	0.431 (0.050)	0.435 (0.055)
Adjusted R2			0.946	0.976	0.981
			My Replication		
C1	1.799 (0.087)	1.511 (0.089)	0.000 (0.057)	0.429 (0.050)	0.433 (0.55)
Adjusted R2	0.314	0.363	0.945	0.975	0.981

Notes: Sample: 1968-1988, n=1043. Standard errors are in parentheses. The dependent variable is divorce rate (divorce per 1000 people).

Table 2. Year effects from Friedberg's regressions and my replications

	Friedberg (1)	My Replication (1)	Friedberg (2)	My Replication (2)	Friedberg (3)	My Replication (3)	Friedberg (4)	My Replication (4)	Friedberg (5)	My Replication (5)
Intercept	3.794	3.786	2.866	2.871	3.207	3.210	3.162	3.119	3.251	3.217
	(0.057)	(0.056)	(0.195)	(0.195)	(0.175)	(0.175)	(0.222)	(0.222)	(0.276)	(0.276)
1969 year effect			0.225	0.225	0.236	0.235	0.221	0.224	0.196	0.195
			(0.275)	(0.274)	(0.080)	(0.080)	(0.057)	(0.056)	(0.076)	(0.075)
1970			0.331	0.324	0.559	0.556	0.483	0.489	0.437	0.436
			(0.276)	(0.276)	(0.081)	(0.081)	(0.066)	(0.066)	(0.123)	(0.123)
1971			0.510	0.417	0.775	0.772	0.682	0.667	0.614	0.590
			(0.274)	(0.274)	(0.080)	(0.080)	(0.078)	(0.078)	(0.169)	(0.169)
1972			0.643	0.636	1.089	1.087	0.931	0.946	0.850	0.851
			(0.274)	(0.274)	(0.081)	(0.081)	(0.093)	(0.093)	(0.211)	(0.211)
1973			0.837	0.798	1.365	1.364	1.163	1.173	1.062	1.056
			(0.276)	(0.275)	(0.082)	(0.082)	(0.109)	(0.109)	(0.247)	(0.248)
1974			0.943	0.936	1.610	1.608	1.354	1.379	1.243	1.249
			(0.275)	(0.274)	(0.083)	(0.083)	(0.126)	(0.126)	(0.279)	(0.279)
1975			1.232	1.183	1.840	1.839	1.574	1.590	1.454	1.449
			(0.275)	(0.275)	(0.083)	(0.084)	(0.143)	(0.143)	(0.305)	(0.305)
1976			1.324	1.317	1.972	1.971	1.683	1.715	1.558	1.568
			(0.273)	(0.273)	(0.083)	(0.083)	(0.160)	(0.159)	(0.326)	(0.326)
1977			1.269	1.262	1.922	1.921	1.623	1.659	1.496	1.508
			(0.273)	(0.273)	(0.083)	(0.083)	(0.177)	(0.177)	(0.341)	(0.341)
1978			1.411	1.404	2.048	2.047	1.741	1.780	1.603	1.618
			(0.271)	(0.270)	(0.083)	(0.082)	(0.194)	(0.194)	(0.352)	(0.352)
1979			1.571	1.564	2.211	2.209	1.895	1.937	1.760	1.777
			(0.271)	(0.270)	(0.083)	(0.082)	(0.212)	(0.212)	(0.358)	(0.358)
1980			1.540	1.533	2.189	2.187	1.866	1.911	1.733	1.754
			(0.270)	(0.270)	(0.082)	(0.082)	(0.230)	(0.229)	(0.360)	(0.360)
1981			1.558	1.550	2.217	2.215	1.889	1.937	1.765	1.789
			(0.272)	(0.271)	(0.083)	(0.083)	(0.247)	(0.247)	(0.358)	(0.358)
1982			1.286	1.278	1.974	1.973	1.639	1.690	1.524	1.553
			(0.270)	(0.270)	(0.082)	(0.082)	(0.265)	(0.265)	(0.353)	(0.352)
1983			1.202	1.194	1.873	1.871	1.528	1.583	1.423	1.455
			(0.269)	(0.269)	(0.082)	(0.082)	(0.283)	(0.283)	(0.345)	(0.345)
1984			1.207	1.200	1.906	1.905	1.481	1.538	1.394	1.431
			(0.272)	(0.272)	(0.083)	(0.083)	(0.301)	(0.301)	(0.336)	(0.336)
1985			1.200	1.193	1.913	1.912	1.476	1.537	1.416	1.457
			(0.272)	(0.271)	(0.083)	(0.083)	(0.319)	(0.319)	(0.328)	(0.328)
1986			1.197	1.190	1.823	1.822	1.386	1.450	1.345	1.392
			(0.270)	(0.270)	(0.083)	(0.082)	(0.337)	(0.337)	(0.323)	(0.322)
1987			1.105	1.098	1.691	1.689	1.337	1.404	1.319	1.371
			(0.268)	(0.268)	(0.082)	(0.082)	(0.355)	(0.355)	(0.3230	(0.322)
1988			1.158	1.150	1.728	1.726	1.227	1.298	1.220	1.278
			(0.280)	(0.279)	(0.085)	(0.085)	(0.373)	(0.374)	(0.330)	(0.329)

Table 3. Friedberg's and My Replication's Coefficients on State Effects and Trends in (4)

State	Friedberg		My Replication		State	Friedberg		My Replication	
	Fixed Effect	Trend	Fixed Effect	Trend		Fixed Effect	Trend	Fixed Effect	Trend
Maine					North Carolina	-1.116 (0.239)	0.081 (0.020)	-1.069 (0.240)	0.077 (0.020)
New Hampshire	-0.080 (0.333)	-0.001 (0.027)	-0.084 (0.334)	-0.0001 (0.027)	South Carolina	-1.572 (0.257)	0.063 (0.022)	-1.525 (0.258)	0.059 (0.021)
Vermont	-1.481 (0.395)	0.086 (0.033)	-1.434 (0.396)	0.081 (0.033)	Georgia	0.451 (0.241)	0.011 (0.020)	0.502 (0.242)	0.007 (0.020)
Massachusetts	-1.741 (0.238)	-0.016 (0.020)	-1.733 (0.239)	-0.017 (0.020)	Florida	2.238 (0.234)	-0.033 (0.019)	2.235 (0.234)	-0.032 (0.194)
Rhode Island	-2.125 (0.317)	0.046 (0.027)	-2.079 (0.318)	0.043 (0.026)	Kentucky	-0.863 (0.251)	0.051 (0.021)	-0.809 (0.252)	0.048 (0.021)
Connecticut	-1.552 (0.253)	0.018 (0.021)	-1.500 (0.254)	0.015 (0.021)	Tennessee	0.633 (0.245)	0.070 (0.021)	0.679 (0.246)	0.066 (0.020)
New York	-2.271 (0.225)	0.076 (0.019)	-2.224 (0.226)	0.072 (0.019)	Alabama	0.773 (0.249)	0.027 (0.021)	0.767 (0.250)	0.027 (0.020)
New Jersey	-2.156 (0.234)	0.067 (0.020)	-2.109 (0.235)	0.062 (0.019)	Mississippi	0.102 (0.266)	0.019 (0.023)	0.148 (0.267)	0.014 (0.023)
Pennsylvania	-1.845 (0.228)	0.028 (0.019)	-1.798 (0.229)	0.024 (0.019)	Arkansas	1.827 (0.271)	0.017 (0.023)	1.873 (0.271)	0.013 (0.229)
Ohio	0.105 (0.230)	0.013 (0.020)	0.151 (0.230)	0.009 (0.019)	Louisiana	-1.600 (0.329)	0.034 (0.030)	-1.543 (0.331)	0.029 (0.029)
Indiana	1.412 (0.345)	-0.014 (0.022)	1.453 (0.346)	-0.016 (0.0219)	Oklahoma	2.150 (0.290)	0.016 (0.023)	2.210 (0.290)	0.011 (0.023)
Illinois	-0.235 (0.229)	-0.014 (0.019)	-0.188 (0.230)	-0.017 (0.019)	Texas	1.043 (0.228)	-0.003 (0.019)	1.092 (0.229)	-0.005 (0.019)
Michigan	-0.276 (0.232)	-0.032 (0.020)	-0.223 (0.232)	-0.035 (0.019)	Montana	0.943 (0.342)	-0.031 (0.029)	0.990 (0.343)	-0.337 (0.028)
Wisconsin	-1.823 (0.243)	0.041 (0.021)	-1.779 (0.244)	0.037 (0.020)	Idaho	1.235 (0.336)	-0.003 (0.028)	1.291 (0.337)	-0.006 (0.027)
Minnesota	-1.539 (0.247)	0.003 (0.021)	-1.490 (0.247)	-0.005 (0.207)	Wyoming	2.214 (0.433)	0.006 (0.035)	2.257 (0.434)	0.003 (0.035)
Iowa	-1.248 (0.257)	0.000 (0.022)	-1.369 (0.257)	-0.003 (0.021)	Colorado	1.114 (0.263)	-0.013 (0.022)	1.170 (0.263)	-0.016 (0.217)
Missouri	0.319 (0.242)	0.010 (0.020)	0.365 (0.243)	0.005 (0.020)	New Mexico	0.973 (0.662)	0.146 (0.063)	1.036 (0.665)	0.141 (0.063)
North Dakota	-2.396 (0.357)	0.035 (0.030)	-2.340 (0.357)	0.031 (0.030)	Arizona	2.289 (0.327)	-0.026 (0.025)	2.348 (0.328)	-0.029 (0.025)
South Dakota	-1.572 (0.349)	0.024 (0.029)	-1.529 (0.351)	0.020 (0.029)	Utah	0.076 (0.301)	0.027 (0.025)	0.122 (0.302)	0.023 (0.024)
Nebraska	-1.416 (0.285)	0.013 (0.024)	-1.362 (0.285)	0.0102 (0.024)	Nevada	16.679 (0.368)	-0.453 (0.029)	16.731 (0.369)	-0.455 (0.029)
Kansas	-0.096 (0.266)	0.012 (0.022)	0.047 (0.286)	0.002 (0.023)	Washington	1.905 (0.249)	-0.047 (0.021)	1.956 (0.250)	-0.049 (0.020)
Delaware	-0.656 (0.368)	0.054 (0.031)	-0.610 (0.370)	0.050 (0.031)	Oregon	1.285 (0.266)	-0.020 (0.022)	1.284 (0.266)	-0.019 (0.022)
Maryland	-1.112 (0.246)	0.010 (0.021)	-1.065 (0.246)	0.005 (0.020)	California	1.171 (0.227)	-0.072 (0.019)	1.230 (0.226)	-0.075 (0.019)
District of Columbia	-0.243 (0.349)	0.047 (0.032)	-0.195 (0.350)	0.042 (0.032)	Alaska	2.120 (0.444)	0.022 (0.035)	2.189 (0.445)	0.017 (0.035)
Virginia	-1.164 (0.241)	0.054 (0.20)	-1.117 (0.242)	0.050 (0.020)	Hawaii	0.046 (0.329)	-0.039 (0.027)	0.044 (0.330)	-0.038 (0.027)
West Virginia	-0.666 (0.275)	0.068 (0.023)	-0.619 (0.276)	0.064 (0.023)					

Table 4. Wolfers's Regression
(Dependent Variable: Annual divorces per 1000 persons)

	Basic Specification (Includes Time and Year FE) (1)		+ State Specific Linear Trends (2)		+ State Specific Quadratic Trends (3)	
	Wolfers	My Replication	Wolfers	My Replication	Wolfers	My Replication
First 2 y	0.27 (0.08)	0.26 (0.08)	0.34 (0.06)	0.34 (0.06)	0.30 (0.05)	0.30 (0.05)
Y3-4	0.21 (0.09)	0.20 (0.08)	0.32 (0.07)	0.32 (0.06)	0.29 (0.06)	0.30 (0.06)
Y5-6	0.16 (0.08)	0.16 (0.08)	0.30 (0.08)	0.30 (0.07)	0.29 (0.08)	0.30 (0.07)
Y7-8	0.16 (0.08)	0.14 (0.08)	0.32 (0.08)	0.31 (0.08)	0.35 (0.10)	0.35 (0.09)
Y9-10	-0.12 (0.08)	-0.12 (0.08)	0.08 (0.09)	0.08 (0.09)	0.16 (0.12)	0.18 (0.11)
Y11-12	-0.32 (0.08)	-0.32 (0.08)	-0.10 (0.10)	-0.09 (0.09)	0.05 (0.14)	0.07 (0.14)
Y13-14	-0.46 (0.08)	-0.45 (0.08)	-0.20 (0.11)	-0.19 (0.10)	0.03 (0.17)	0.07 (0.16)
Y15	-0.51 (0.08)	-0.50 (0.08)	-0.21 (0.12)	-0.19 (0.11)	0.25 (0.20)	0.30 (0.20)
Adj R2	0.9310	0.9309	0.9732	0.9731	0.9822	0.9822

Notes: Sample: 1956-1988, n=1631, Estimated using state population weights.

Table 5. States with DIR=DR or DIR≠DR

	DIR=DR	DIR≠DR
States	AK	AL
	CA	AR
	CO	AZ
	CT <73	CT
	FL	DC
	DE 56	DE
	HI <65	HI
	GA	ID
	IL <84	IL
	IA	KY
	IN	LA
	KS	MD
	MA	NC
	ME	NH
	NJ <71	NJ
	MI	NV
	NY <66	NY
	OH <74	OH
	PA <88	PA
	MN	RI
	SC <69	SC
	TN <77	TN
	MO	TX
	MS	UT
	VA <60	VA
	MT	VT
	ND	WA
	NE	WI
	WV <69	WV
	NM	WY
	OK	
	OR	
	SD	

Table 6. Separation requirement by states where DIR≠DR

States	Separation Period by years	Year when DIR≠DR Became effective	States	Separation Period by years	Year when DIR≠DR Became effective
AL	2	1947	NV	3 1	1939 1967
AR	3 2	1937 1991	NY	1	1966
AZ	5	1931	OH	2 1	1974 1982
CT	2	1973	PA	2	1988
DC	5 1	1935 1965	RI	10 3	1893 1975
DE	2	1957	SC	3 1	1969 1979
HI	2 3 2	1965 1967 1970	TN	2	1977
ID	5	1945	TX	10 7 3	1925 1953 1967
IL	2	1984	UT	2 3	1943 1965
KY	5	1850	VA	3 2 1	1960 1970 1975
LA	4 2 1	1932 1960 1979	VT	3 2 1	1941 1971 1972
MD	3 2 1	1947 1961 1983	WA	5 2	1921 1965
NC	2 1	1933 1965	WI	5 1	1866 1977
NH	3 2	1938 1957	WV	1	1969
NJ	2	1971	WY	2	1939

Notes: Source of this table is Iyavarakul and McElroy (2009). Separation periods were rounded up.

Table 7. Friedberg's equation using DIR

	Basic reg (1)	+ time fixed effect (2)	+ state fixed effect (3)	+ state specific linear trend (4)	+ state specific quadratic trend (5)
Unilateral	1.538 (0.086)	1.330 (0.901)	-0.005 (0.059)	0.358 (0.054)	0.377 (0.057)
Adj R2	0.2638	0.2912	0.9373	0.9691	0.9774

Notes: Sample: 1968-1988, n=1008.

Table 8. Wolfers's equation using DIR

	Basic Specification (1)	State linear (2)	State quadratic (3)
First 2 y	0.10 (0.08)	0.33 (0.06)	0.38 (0.06)
Y3-4	0.03 (0.08)	0.40 (0.07)	0.50 (0.07)
Y5-6	-0.03 (0.08)	0.44 (0.08)	0.62 (0.09)
Y7-8	-0.07 (0.08)	0.49 (0.09)	0.77 (0.11)
Y9-10	-0.27 (0.08)	0.38 (0.10)	0.77 (0.13)
Y11-12	-0.40 (0.08)	0.32 (0.11)	0.83 (0.16)
Y13-14	-0.48 (0.09)	0.33 (0.12)	0.97 (0.19)
Y15	-0.44 (0.08)	0.44 (0.14)	1.32 (0.23)
Adj R2	0.9164	0.9647	0.9726

Notes: Sample: 1956-1988, n=1475.

Table 9. Friedberg's equation using DIR and DR with the same number of observations

	Basic regression (1)	+ time fixed effect (2)	+ state fixed effect (3)	+ state specific linear trend (4)	+ state specific quadratic trend (5)
DR as the dependent variable					
C1	1.572 (0.090)	1.354 (0.094)	0.009 (0.062)	0.387 (0.054)	0.424 (0.057)
Adjusted R2	0.2947	0.3258	0.9440	0.9734	0.9794
DIR as the dependent variable					
C1	1.417 (0.087)	1.252 (0.092)	-0.024 (0.062)	0.305 (0.057)	0.342 (0.059)
Adjusted R2	0.2716	0.2862	0.9378	0.9673	0.9762

Notes: Sample: 1968-1988, n=984

Table 10. Wolfers's equation using DIR and DR with the same number of observations

	No state DR	No state DIR	State DR	State DIR	Quadratic DR	Quadratic DIR
First 2 y	0.22 (0.09)	0.10 (0.07)	0.40 (0.06)	0.33 (0.06)	0.34 (0.05)	0.38 (0.06)
Y3-4	0.15 (0.09)	0.035 (0.08)	0.44 (0.07)	0.40 (0.07)	0.36 (0.06)	0.50 (0.07)
Y5-6	0.09 (0.09)	-0.03 (0.08)	0.47 (0.08)	0.44 (0.08)	0.39 (0.08)	0.62 (0.09)
Y7-8	0.04 (0.09)	-0.06 (0.08)	0.50 (0.09)	0.49 (0.09)	0.45 (0.10)	0.77 (0.11)
Y9-10	-0.23 (0.09)	-0.27 (0.08)	0.31 (0.10)	0.39 (0.10)	0.28 (0.12)	0.76 (0.13)
Y11-12	-0.44 (0.09)	-0.40 (0.08)	0.17 (0.11)	0.33 (0.11)	0.19 (0.14)	0.83 (0.16)
Y13-14	-0.57 (0.09)	-0.47 (0.09)	0.12 (0.12)	0.34 (0.12)	0.20 (0.17)	0.97 (0.19)
Y15	-0.62 (0.09)	-0.44 (0.08)	0.18 (0.14)	0.45 (0.14)	0.43 (0.20)	1.31 (0.22)
Adj R2	0.9169	0.9158	0.9723	0.9644	0.9822	0.9729

Notes: Sample: 1956-1988, n=1465.

Figures

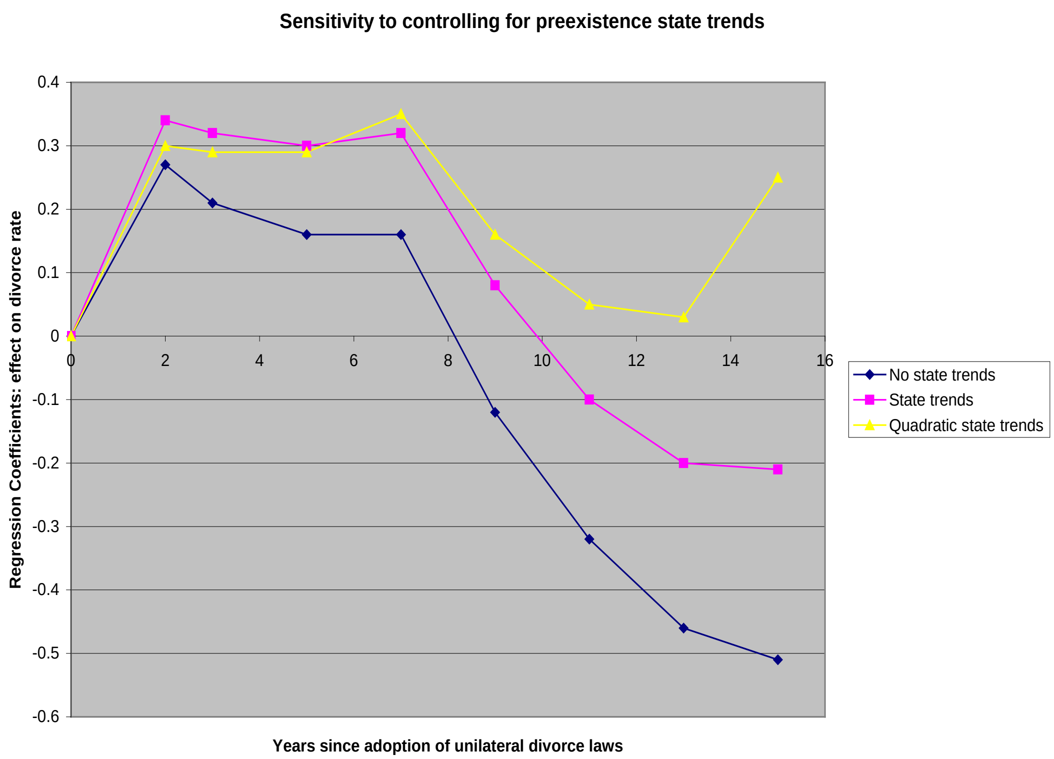

Figure 1. Replication of Wolfers' graph representing the response of divorce rate to unilateral divorce laws.

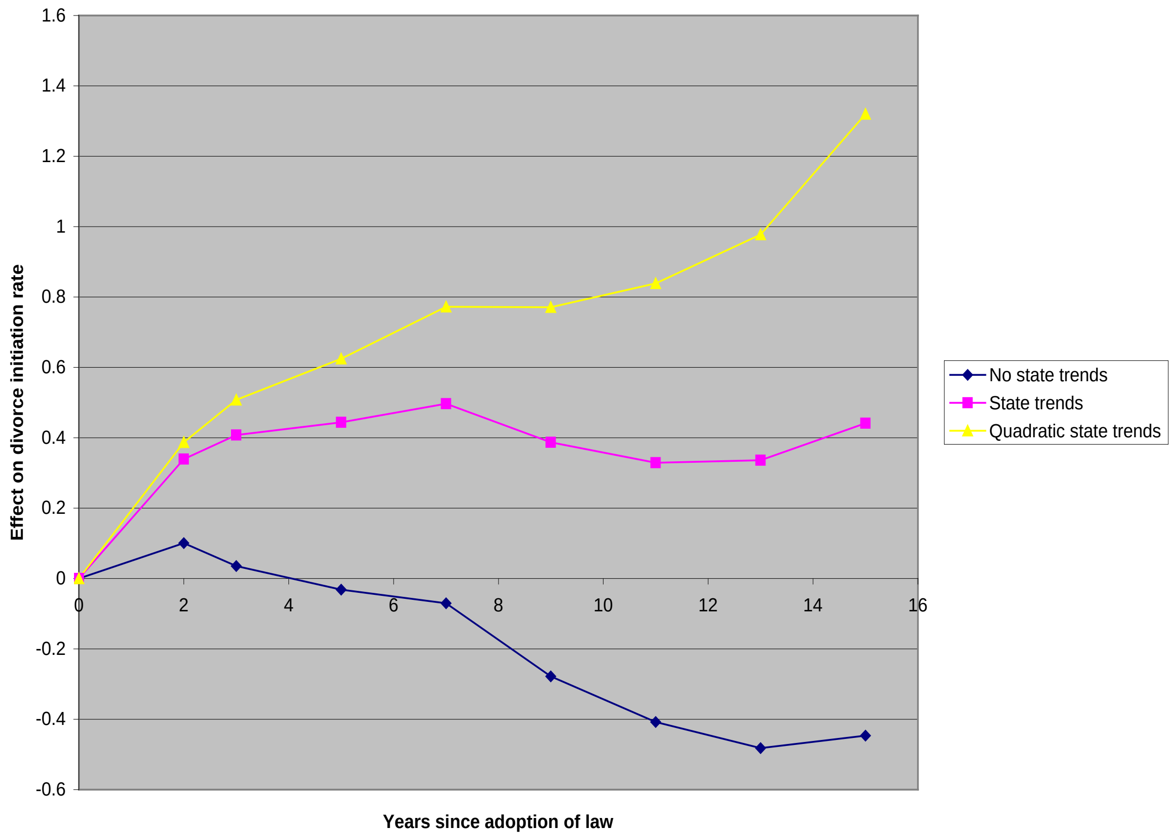

Figure 2. The effect of unilateral divorce laws on the divorce initiation rate

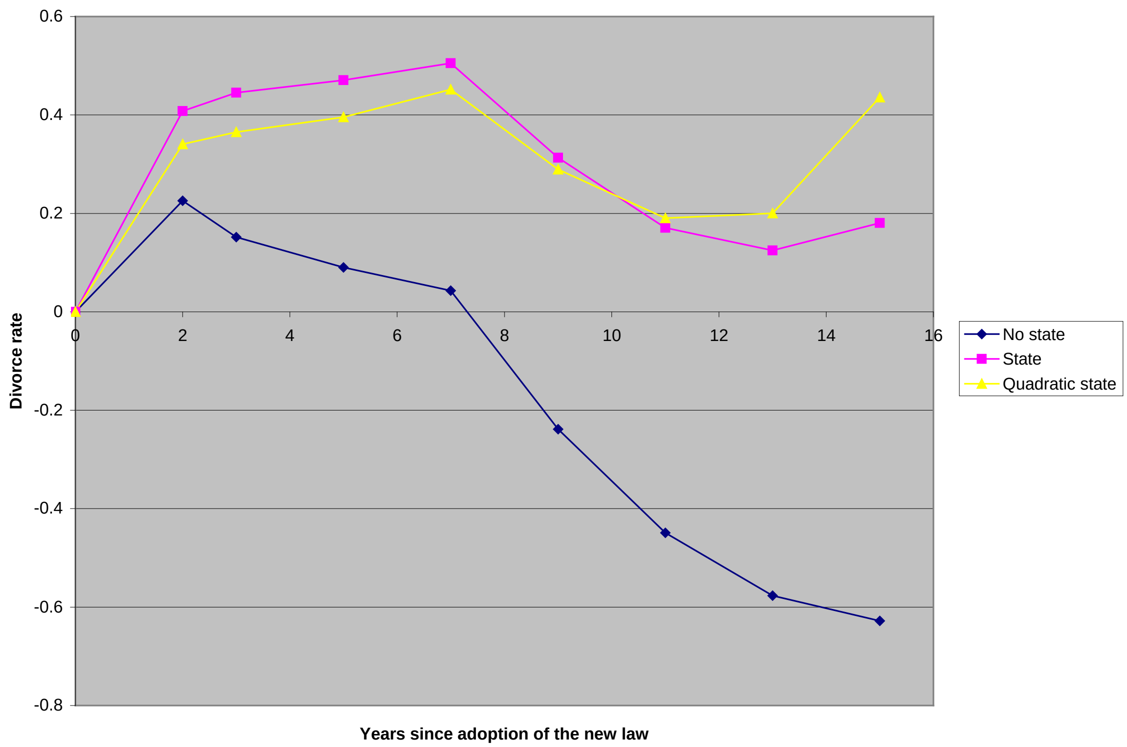

Figure 3. The effect of unilateral divorce laws on the divorce rate after excluding missing observations

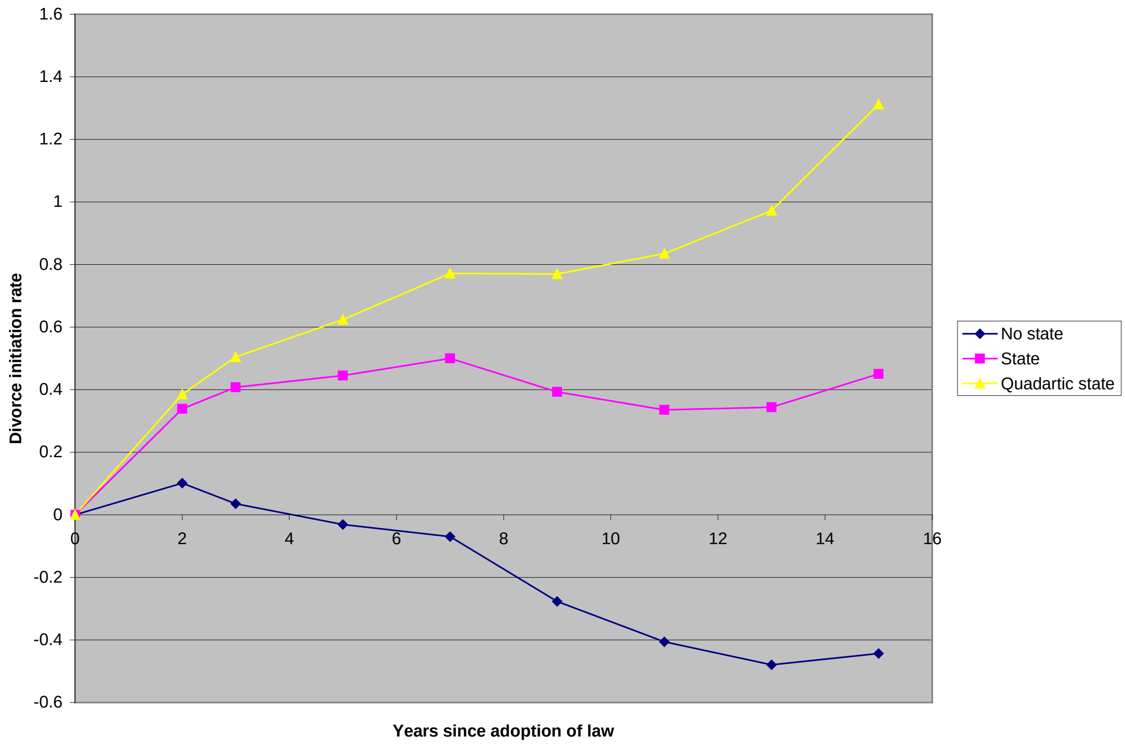

Figure 4. The effect of unilateral divorce laws on the divorce initiation rate after excluding missing observations

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