

The Death of Marriage? The Effects of New Forms of Legal Recognition on Marriage Rates

Marcus Dillender^{*†}

Abstract

Many people argue that allowing same-sex couples to marry reduces the value of marriage to opposite-sex couples. This paper examines how the recent changes in legal recognition laws designed to include same-sex couples have altered marriage rates. Using a difference-in-differences strategy that compares how marriage rates change after legal recognition in states that alter legal recognition versus states that do not, this paper finds no evidence that allowing same-sex couples to marry reduces the opposite-sex marriage rate. Although the opposite-sex marriage rate is unaffected by same-sex couples marrying, it does decrease when domestic partnerships are available to opposite-sex couples.

1 Introduction

Does the value of an institution depend on who else participates in that institution? Many people argue that this is the case with marriage and that allowing same-sex couples to marry reduces the value of marriage to opposite-sex couples.¹ Marriage is of interest because it serves as both a social and legal contract that facilitates family decision-making and provides legal and cultural safeguards.² In economic models of marriage, people choose

^{*}W.E. Upjohn Institute for Employment Research, 300 S. Westnedge Ave., Kalamazoo, MI 49007-4686 (269)385-0435, dillender@upjohn.org

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¹For example, in June 2011, then presidential candidate Rick Santorum stated that allowing same-sex couples to marry would “cheapen marriage and make it into something less valuable” (The Des Moines Register (2011)). In 2004, James Dobson stated “[Gay people] want to destroy the institution of marriage. [Same-sex marriage] will destroy marriage” (Snyder (2004)). The end-of-marriage argument was largely the rationale behind Proposition 8, the California Constitutional amendment that restricted marriage to being a union between a man and a woman.

²Much of the work on marriage and economics stems from Becker (1973) and Becker (1974).

to marry when the benefits of being married outweigh the costs. As a result, if marriage becomes less valuable, marriage rates will decline. In this paper, I analyze the effects of changing legal recognition laws on marriage rates in the United States.

The potential effect on opposite-sex marriage of allowing same-sex couples to marry is theoretically ambiguous. Allowing same-sex couples to marry could lower opposite-sex marriage rates if part of the value of marriage comes from its exclusivity. Alternatively, allowing same-sex couples to marry could increase opposite-sex marriage rates by increasing interest in the institution of marriage or by reducing the pressure on employers to provide marriage-like benefits to cohabiting couples (Rauch (2004) and Trandafir (2012)).

Few papers have studied how allowing same-sex couples to marry affects marriage rates. Langbein and Yost (2009) use data on the stock of marriages and find the number of married people in a state does not change when same-sex couples are allowed to marry. However, the stock of marriages may be slow to change even if marriage rates change immediately. Another issue is that Langbein and Yost use data through 2004, which is when states began allowing same-sex couples to marry. This means the effect on marriage is identified by very few state-year observations.

Trandafir (2012) studies the effects of a Netherlands law that allows same-sex couples to marry and a separate law that allows all couples to enter into registered partnerships, which provide similar benefits to marriage. Trandafir finds suggestive evidence that marriage rates rise after all couples can enter into registered partnerships but fall after same-sex couples can marry. Although women are less likely to be married after same-sex couples can marry, Trandafir concludes the experience of the Netherlands suggests no major effects of changing legal recognition laws on overall marriage rates since controlling for heterogeneity greatly reduces the coefficient. Since both of these laws changed for the country as a whole with only a few years in between, Trandafir has difficulties disentangling the effects of the two laws. Furthermore, people in the United States, who are culturally very different than residents of the Netherlands, may react in a different manner.

The advantage of studying legal recognition changes in the United States is that it provides a variety of policy experiments happening at different points in time over the last decade. In some states, same-sex couples are allowed to marry, while in other states they are allowed to enter into newly created forms of legal unions instead of marriage. These new forms of unions are intended to mimic marriage but under a different name. Only same-sex couples can enter into the new forms of unions in some states, while in others all couples can enter into the non-marriage legal recognition.

Opening new forms of legal recognition to opposite-sex couples could result in lower marriage rates if some couples prefer an alternate form of legal recognition to marriage. An issue with this is that domestic partnerships do not offer the federal benefits of marriage, so people entering into domestic partnerships instead of marriage have fewer legal benefits than they would if they were married. This would suggest increasing the benefits of domestic partnerships may make couples better off, although it might also cause more couples to choose to enter into domestic partnerships instead of marriage.

To analyze the effects of the changes in legal recognition, I use two data sources. The first is a state-level panel data set that I construct that contains marriage rates, legal changes, and other state characteristics. The advantages of this data set are that the marriage rates come directly from the states and account for every marriage occurring in the state in a given year. As a result, I am able to consider how these laws affect both overall marriage rates and opposite-sex marriage rates. However, there are a few disadvantages of using this type of data. The first is that people often marry in states other than where they reside, which would confound any estimation strategy using marriage rates in a state. To the extent that marrying in a state other than where one resides is random, this would bias the estimates towards zero. Second, testing for heterogeneous responses is difficult without knowing individuals' characteristics. Finally, the legal changes could affect the stock of marriages without affecting the flow if couples exit marriage after the legal changes. This would be missed if only data on marriage rates were used. To deal with these issues, I use

individual-level data from the Current Population Survey and examine how the stock of married couples changes in response to legal recognition laws.

With both data sets, I estimate difference-in-differences models as well as models with flexible time effects, which allow the effects of legal recognition changes to vary over time. Allowing the effects of these laws to vary over time is important for several reasons. First, marriage decisions are typically made years in advance, meaning we might not see the effects of these laws immediately. Second, we can test for effects before changes in legal recognition. This allows us to examine if differing time trends before the legal changes are a concern and to see if there is any evidence that people respond after the laws are passed but before they are enacted. Finally, the number of same-sex couples marrying is likely to be at its highest in the first few years because of pent-up demand. Time-flexible specifications can help us compare immediate effects to longer run effects.

I find that allowing same-sex couples to get married increases the overall marriage rate, but this increase appears to be driven entirely by same-sex couples marrying. Regardless of the identification strategy used, there is no evidence that allowing same-sex couples to marry has altered marriage for opposite-sex couples. Opposite-sex couples do, however, take advantage of the new forms of legal recognition when they are available to them. Marriage rates fall by about 5 to 10 percent whenever non-marriage legal recognition is available to opposite-sex couples. These results are robust to a number of specifications, and I find no evidence that national marriage rates were affected after the first state began allowing same-sex couples to marry in 2004.

2 Changes in Legal Recognition

2.1 Background

Table 1 shows state changes in legal recognition for couples classified into three different categories. The first category is those states that allow same-sex couples the right to be

married. The second category of laws allows same-sex couples but not opposite-sex couples to enter into domestic partnerships or civil unions.³ The third category is states that allow both same-sex couples and opposite-sex couples the right to enter into either domestic partnerships or civil unions.⁴ For ease of discourse, I will refer to all of the new forms of unions as domestic partnerships, as there are no systematic differences between civil unions and domestic partnerships.

Although the rights granted to couples through these different types of unions vary by state, these new forms of legal recognition are designed to provide the same state-level benefits as marriage. Common rights include the ability to inherit a partner's estate in the absence of a will, immunity from testifying against a partner in court, hospital visitation rights, family leave for a sick or dying partner, and the right for partners to share a nursing home room. States generally require fully-insured employers to provide health insurance to employees' partners for couples in these new forms of unions if the employers provide health insurance to married opposite-sex spouses.⁵

The 1996 Defense of Marriage Act denied all federal benefits of marriage to same-sex couples during the time period studied. Similarly, domestic partnerships and civil unions are recognized only at the state levels, meaning same-sex and opposite-sex couples taking advantage of them do not have federal benefits. The federal benefits of marriage include social security benefits for surviving spouses, the ability to file income taxes jointly, which may reduce the overall tax rate the couple faces, no estate taxes on inheriting a deceased

³A few states in the third category allow opposite-sex couples to enter into civil unions and domestic partnerships if at least one member of the couples is at least 62 years old. Results are robust to the inclusion of the laws separately. I combine the laws because the coefficients on the two types of laws are similar if I estimate the effects separately, likely because marriage rates are driven by young people.

⁴Colorado allows people to designate beneficiaries. Since these types of unions do not imply a romantic relationship—any two unmarried people can enter into designated beneficiary agreements including friends and siblings—and do not offer most of the benefits of marriage, I do not code Colorado as providing alternate recognition. All results are robust to dropping Colorado or estimating a separate coefficient for the effect of designated beneficiary agreements. As of May 2013, Colorado offers more comprehensive civil unions exclusively to same-sex couples.

⁵For a detailed example of a law, see the American Civil Liberty Union's guide to civil unions in Illinois at <http://civilunions.aclu-il.org/>.

spouse's assets, and the ability to petition for a spouse to immigrate to the United States.⁶ In June 2013, the Supreme Court ruled that the Defense of Marriage Act was unconstitutional. Because of that ruling, same-sex couples are now able to experience all of the federal benefits of marriage.

While the fact that these new unions are not recognized by the federal government may hurt same-sex couples who cannot always enter into marriage, it is a possible advantage for many opposite-sex couples. Widows and widowers are eligible to receive the social security benefits their spouses would have received if they don't remarry by the age of 60. Thus, civil unions and domestic partnerships can provide opposite-sex couples with state-level protection while not jeopardizing their social security survivor benefits. This may induce older widows and widowers to choose domestic partnerships instead of marriage. Marriage rates are, however, driven by first marriages by young people. According to Survey of Income and Participation data, 91.3 percent of men and 93.3 percent of women who married in 2008 were younger than 55 (Kreider and Ellis (2011)). Although the data on marriage rates will not allow for examining heterogeneity based on age, we would expect the effects coming from older people to be relatively small since marriage rates are so low for older people.

2.2 Conceptual Framework

Theoretical Impact on Marriage Rates

The effect of allowing same-sex couples to marry is unclear *ex ante*. Allowing same-sex couples to marry could lower the value of marriage for opposite-sex couples if it severs the link between marriage and childbearing or if it reduces any value of marriage that comes from its exclusivity (Kurtz (2004)). Reducing the value of marriage would induce couples on the margin to choose to remain unmarried instead of entering into marriage, which would result in lower opposite-sex marriage rates. On the other hand, some opposite-sex couples may

⁶For a complete listing of federal benefits of marriage, see the Government Accounting Office's website, <http://www.gao.gov/new.items/d04353r.pdf>.

value marriage more when marriage is available to all couples if they feel excluding couples makes marriage a discriminatory institution. Additionally, allowing same-sex couples to marry could increase the value of marriage to opposite-sex couples by increasing interest in the institution of marriage or by reducing pressure on employers to provide marriage-like benefits to cohabiting couples (Rauch (2004) and Trandafir (2012)). Increasing the value of marriage would induce marginal couples to marry who would not have married otherwise, which would increase opposite-sex marriage rates.

The effect of allowing same-sex couples but not opposite-sex couples to enter into domestic partnerships is theoretically ambiguous as well. If opposite-sex couples in these states view domestic partnerships as equivalent to marriage, then any value of marriage coming from its exclusivity would be diminished. On the other hand, other opposite-sex couples could see the value of marriage rise in ways similar to when same-sex couples are allowed to marry.

Opening new forms of legal recognition to opposite-sex couples could result in lower marriage rates if some couples prefer an alternate form of legal recognition. This could occur for people who are not religious if they feel marriage has religious meaning. People may also feel a domestic partnership has a lower dissolution, which could be the case if a failed domestic partnership is less emotionally costly than a failed marriage. This would make entering into a domestic partnership less risky than marriage.

We would expect any changes in marriage rates to lead to eventually changes in marriage stocks. However, marriage stocks would be slow to change since marriage stocks are already high. We may not be able to detect changes to marriage stocks for many years. Marriage stocks could also change if people are more or less likely to exit marriage after any legal changes for any of the reasons outlined above.

The effects of changing legal recognition may vary based on demographic characteristics since certain groups of people tend to be more supportive of providing legal recognition to same-sex couples than others. For example, young people tend to be more supportive of allowing same-sex couples to marry and to enter into other forms of legal recognition (Jones

(2013)). Likewise, support for allowing same-sex couples to marry rises with education, while Democrats tend to be more supportive than Republicans (Pew Research Center (2003)). We might expect the effects of allowing same-sex to marry to have a positive impact on groups that tend to be more supportive of marriage and a negative impact on groups that are less supportive of marriage. Similarly, we might expect people who are not religious to be more likely to choose to enter into domestic partnerships instead of marriage. Testing this is not possible with the marriage rate data, but when I consider marriage stocks, I will be able to test for differences based on education and age.

Welfare Implications

If allowing same-sex couples to marry or to enter into other forms of legal recognition reduces the value of marriage for opposite-sex couples, opposite-sex couples would be worse off as a result of these laws. Same-sex couples would be better off, so the overall welfare impacts would depend on the size of the relative impacts on each group.

Allowing opposite-sex couples to enter into the new forms of unions weakly improves their welfare because they can still enter into marriage but now have a new option as well. These non-marriage forms of unions provide fewer rights than marriage, meaning people are choosing to enter into legally inferior unions. This might suggest that non-marriage legal unions should be strengthened; however, this may result in even more people shifting from marriage into non-marriage recognition.

3 Data Sources and Identification Strategy

3.1 Data

To examine the impact of legal recognition changes on marriage, one can look at either stock or flow measures. The stock measure is the total number of marriages, and the flow measure is the number of people entering into marriage. I construct a state-level panel to

examine the flows of marriage and use the March CPS to examine the stocks of marriages.

The data containing the marriage rate per 1,000 individuals for each state in a given year come from the Centers for Disease Control and Prevention (CDC) for 1995 to 2010. As is common in the literature, I use the log of state-level marriage rates, which will allow us to interpret the coefficients as percent changes in marriage rates.⁷ All states have reported marriage rates for all years except for Oklahoma and Louisiana, which did not report marriage rates for a few of the years studied.

Marriage rates from the CDC are formed using all marriages in a given state and year. For states that allow same-sex couples to marry, I obtain the number of same-sex marriages happening in a year from the state health departments, which keep data on same-sex marriages but do not report this data to the CDC. I then subtract this number from the total number of marriages occurring to calculate the opposite-sex marriage rate.⁸

I supplement the data on marriage rates with various state-level controls calculated using the March CPS. For each state during each year of the data, I calculate the percentage of people 25 and older with high school degrees, the percentage who have completed some college, and the percentage who have completed college. I also calculate the percentage of people in the labor force who are unemployed. I control for the percentage of people in three broad age groups, ages 21 to 40, ages 41 to 60, and people older than 60. Additionally, I calculate the percentages of people who are white and black and the percentage of people who are female.

One possible concern is that states may change their definitions of legal recognition as a result of shifting attitudes towards the gay and lesbian community. If these attitude changes are correlated with changes in the value of marriage, the estimation strategy would falsely attribute the effects of changing attitudes to providing legal recognition for same-sex couples. To account for this, I control for the percentage of the state population that voted for the

⁷For examples, see Bitler et al. (2004) and Brien et al. (2004). The results are not sensitive to this specification choice; results are similar if I use the marriage rates.

⁸Washington, D.C. does not keep statistics on the number of same-sex marriages; as a result, Washington, D.C. is dropped in the analysis of opposite-sex marriages.

Democratic candidate in the previous presidential election since Democrats have tended to be more supportive of providing legal recognition to same-sex couples than Republicans. Although this measure is coarse, it serves as a rough proxy for changing attitudes.

The descriptive statistics are shown in Table 2. States that change their definitions of legal recognition look similar to states that do not in terms of basic demographic characteristics. Of the control variables, only the percent of people voting for the Democrat candidate in the last presidential election appears to be statistically different. States that change their definitions of legal recognition have a higher percentage of people voting for Democratic presidential candidates. I control for demographic characteristics in certain specifications to make sure that changes in demographic characteristics are not driving any of the results.

In addition to using the March CPS to account for demographic changes in the construction of the state-level panel data set, I also use the March CPS from 1995 to 2011 to examine the stock of marriages. With this dataset, I control for race, gender, and a cubic in age. I cannot identify the same-sex couples who enter into marriage in the CPS because the CPS codes all same-sex couples as being unmarried partners, so I focus only on the stock of opposite-sex marriages.⁹

3.2 Identification Strategy

Figure 1 shows national marriage rates for the time period studied. The downward trend in marriage rates during this time period started in the early 1980s, meaning we cannot simply compare what happens in a state after legal recognition and necessitates that we account for a national time trend by having a control group that would be subject to the same time trend.

I estimate both simple difference-in-differences models as well as models that allow the effects of legal recognition changes to vary over time. An issue with the time-flexible models

⁹I drop same-sex couples from the sample as well as any couples who have had their marital status or gender changed. Before 2010, the CPS changed the sex of the spouse if two people of the same sex report being married. Beginning in 2010, the CPS changed the marital status. The results are very similar if I do not try to account for same-sex couples.

is that many of these laws have been passed only recently and many states have not expanded their definitions of legal recognition, which results in large standard errors. By examining the more aggregated difference-in-differences estimator, we can better identify the average effects over time even though we no longer have estimates at each point in time.

I estimate two main equations. The first provides us with the difference-in-differences estimator:

$$y_{st} = \phi_t + v_s + X_{st}\alpha + \sum_{j \in J} \beta_j L_{st}^j + \epsilon_{st}, \quad (1)$$

where y is the log of the marriage rate per 1,000 people, s indexes the state, t indexes the year, ϕ is a vector of time effects, v is a vector of state effects, X is a vector with the average demographic characteristics for each state in a given year, L_{st}^j is an indicator variable equal to 1 in a state after a law of type j was passed, and ϵ is the state-level error term. Again, there are three potential types of laws: 1) those allowing same-sex couples to marry, 2) those allowing same-sex couples and only same-sex couples to enter into new forms of recognition, and 3) those allowing all couples to enter into new forms of recognition. The β coefficients provide us with the effect of legal recognition changes averaged over time.

We also want to be able to distinguish immediate effects of the laws from later effects. To do this, I estimate a model of the following form:

$$y_{st} = \phi_t + v_s + X_{st}\alpha + \sum_{k \in K} \sum_{j \in J} \beta_{jk} L_{st}^{jk} + \epsilon_{st}, \quad (2)$$

where L_{st}^{jk} is an indicator variable equal to 1 in the k th period after a law of type j was passed and the other variables are defined as before. The laws were passed in the year $k = 0$. We can interpret β_{jk} as being the effect of a law change of type j k years after its passage.¹⁰ Estimating this model requires more from the data than the difference-in-differences model. For high values of k , only one state identifies the effects in some cases, meaning we should exercise caution with these estimates, especially for high k . This also means standard errors

¹⁰A similar econometric model was used by Wolfers (2006) to study the effects of divorce laws.

will be too high to distinguish most of the coefficients from zero. I will graph the coefficients to provide an idea of how the effects may vary over time.

4 Results

4.1 Marriage Flows

The results from estimating Equation 1 with the state level data are shown in Table 3. In the first two specifications, the dependent variable is the log of the overall marriage rate. In the next two specifications, the dependent variable is the log of the opposite-sex marriage rate. The first and third specifications control for demographic characteristics of the states, while the second and fourth do not. The top panel reports the unweighted estimates, while the bottom panel reports the estimates weighted by population.

The unweighted estimate on marriage in column 1 suggests that allowing same-sex couples to marry has increased the overall marriage rate by about 13.7 percent. Controlling for demographic characteristics in column 2 causes the unweighted coefficient to decrease by less than 1 percentage point to 12.8 percent. With the mean of marriages per 1,000 people being 8.98, these estimates suggest there is about 1.2 additional marriages per 1,000 people per year. Weighting the estimates by population size causes them to fall to 0.103 and 0.076 in specifications 1 and 2, respectively, but they remain significantly different from zero. The weighted estimates suggest an increase of 0.7 to 0.9 marriages per 1,000 people per year.

We must be careful in interpreting these results. States do not have residency requirements for marriage, and reports of same-sex couples in states where same-sex couples cannot marry travelling to states where they can marry are common.¹¹ We would not expect marriage rates to increase by this much nationally if same-sex couples were allowed to marry across all states. Similarly, we would not expect the increases to be this high as more states

¹¹These marriages would typically not be legally recognized in non-same-sex-marriage states because of the Defense of Marriage Act.

allow same-sex couples to marry.

The coefficient on marriage for same-sex couples in column 3 where the dependent variable is the log of the opposite-sex marriage rate is statistically indistinguishable from zero. Controlling for demographics in column 4 changes the coefficient very little as does weighting the estimates. The point estimates range from -0.007 to 0.021. Although the power is limited because of the small treated sample sizes, these results suggest that there is no evidence that allowing same-sex couples to marry has had an effect on opposite-sex marriage rates.

Since the marriage rates are defined per 1,000 people, the estimates on opposite-sex marriage would all be biased downward if allowing same-sex couples to enter into legal recognition resulted in same-sex couples moving into a state. Dillender (2013) considers migration of same-sex couples and finds no effects of the laws on the numbers of same-sex couples in a state.¹²

The results presented in Table 3 suggest that allowing opposite-sex couples to enter into domestic partnerships decreases marriage rates between 9 and 11 percent. The coefficients on domestic partnerships for all couples are significant at the ten percent level in three of the four specifications. This represents a decrease of roughly 1 marriage per 1,000 people per year. The weighted point estimates range from -0.095 to -0.130 and are significant in all four specifications. These results suggest that some opposite-sex couples enter into new forms of unions when they are available instead of entering into marriage. This is important for two reasons. The first is that domestic partnerships are legally inferior to marriage because domestic partnerships do not include any federal benefits. The second is that these results suggest that opposite-sex couples may enter into marriage in the absence of alternate recognition when they would really prefer a non-marriage form of legal recognition.

The coefficients on domestic partnerships for same-sex couples only are slightly positive and significant in one of the specifications. Weighting the estimates causes the estimates of the effect on domestic partnerships for all couples to rise. This suggests that there may

¹²The results are very similar if the dependent variable is adjusted so that it no longer accounts for population and is instead the log of marriage rates in a state and year.

be a positive effect of allowing only same-sex couples to enter into domestic partnerships; however, these results are not robust to controlling for demographic characteristics or to the robustness checks presented later.

Figure 2 shows the unweighted coefficients from estimating Equation 2, which allows for time-varying effects of the law changes. Note that the coefficients are not cumulative and that the size of all of the effects are relative to the years more than six years before a law is passed.¹³ Likely because of the large standard errors, all of the coefficients are statistically indistinguishable from zero except for when same-sex marriages are included. The coefficients on overall marriage rates after same-sex couples can marry are statistically different than zero but not from each other.

Allowing for time-varying effects reveals that the number of same-sex couples marrying is at its highest in the first year that same-sex couples can marry and then decreases in the following years. After two years, the increase in marriage rates remains at about 9 percent. The coefficients on domestic partnerships for all couples move around before the laws are passed and begin to fall after the law is passed. When the dependent variable is the opposite-sex marriage rate, there is no evidence that the coefficients on allowing same-sex couples to marry are different from zero or that they vary over time. The same is true for the effect of domestic partnerships for same-sex couples only. The coefficients appear to spike for years 11 and 12, but these are each identified from one observation each. Although it is difficult to draw strong conclusions from these coefficients, there appears to be no evidence that allowing same-sex couples to marry or to enter into domestic partnerships has had a negative effect on opposite-sex marriage.

Two things are important to note with the results presented in this section. The first is that the standard errors are too large to rule out positive or negative effects of allowing same-sex couples to marry on marriage rates. However, the paper uses a variety of tests to see if there is any evidence that same-sex couples marrying reduces the number of opposite-

¹³These estimates do not control for demographic characteristics. The graph looks similar when demographic controls are included.

sex couples marrying and consistently finds no evidence to support the claim that allowing same-sex couples to marry reduces opposite-sex marriage rates. The second caveat is that the results shown here are the immediate effects of changing legal recognition. To the extent that marriage rates or the value of marriage may change gradually over time as a result of these laws, this paper will not be able to detect this.

4.2 Marriage Stocks

I next use data from the March CPS to examine the stock of marriages. There are a number of advantages of using the CPS data. The first is that I am able to test for heterogeneous responses because people's marital status is directly matched to their demographic characteristics. Second, I can address another potential concern of the earlier analysis that stems from the fact that many people do not get married in the states in which they reside. This may be because certain states are marriage destinations or because people want to marry in the state where their family lives. If seeing same-sex couples marrying really does lessen the value of marriage, we would technically expect the number of people living in the state who choose to get married to go down and not necessarily a change in the number of marriages that take place in the state. Third, marriage stocks may change even if rates do not if people are more or less likely to exit marriage after legal recognition. Data on marriage stocks allows for examining this. A limitation of this data, however, is that I am only able to look at opposite-sex marriages due to the coding procedure of the CPS.

Columns 1 and 2 of Table 4 show the difference-in-differences results. The sample in these two columns contains everyone sixteen years and older. The first column does not control for demographics, while the second one does. In both specifications, all of the coefficients are indistinguishable from zero. About 56 percent of the sample is married so an estimate of 0.005 on allowing same-sex couples to marry would indicate a 0.009 percent increase in the likelihood of being married.

As stated earlier, we might expect older people to be negatively affected by same-sex

couples marrying since they tend to be less supportive of providing legal recognition to same-sex couples. We might also expect older opposite-sex couples to be more likely to enter into domestic partnerships since marrying may cause widows and widowers to lose their social security survivor benefits. Columns 3 through 8 contain results for the sample restricted to include various age groups. The restrictions are people younger than the age of 30, people at least 30 but younger than 60, and people at least 60 years old. The results provide no evidence of this. In all cases, the coefficients are insignificantly different from zero.

People of different education levels may be affected differently as well. In columns 9 and 10 of Table 4, the sample is restricted to be only people who have attended at least some college. In columns 11 and 12, the sample is restricted to be only people who have not attended college. Only the coefficient on domestic partnerships for all couples is significant in any of the specifications. The coefficient of -0.015 suggests a -0.027 percent decline in the likelihood of being married for people who have attended some college. This could indicate that more educated people are more likely to enter into domestic partnerships, perhaps because education is negatively correlated with religion (Sacerdote and Glaeser (2001)). However, it should be noted that the significance of the coefficient is not robust to controlling for demographic characteristics.

Figure 3 plots the estimates from the time-flexible models. The point estimates appear to rise slightly after same-sex couples can marry, but there seems to be no evidence that the stock of marriages fall after some time, which the death-of-marriage argument would imply.

The insignificant coefficients on domestic partnerships for all couples may seem at odds with the estimates from the previous section that suggest that allowing opposite-sex couples to enter into alternate forms of recognition lowers the opposite-sex marriage rate. Two factors would minimize the estimated effects of domestic partnerships for all couples on the stocks of opposite-sex married couples from the CPS. The first is that the stock of married people is already high, so even if changes in flow measures take place immediately, the stock

measures would be slow to change. The second is that it is not clear how people who enter into domestic partnerships would report their relationship status in the CPS since the only two relationship statuses are unmarried partner and spouse. People reporting that they are spouses if they are domestic partners would mean we would find no effect of extending new forms of legal recognition to opposite-sex couples.

5 Robustness

I now verify the robustness of the main results to various specifications as well as test for national effects of allowing same-sex couples to marry. I focus on the opposite-sex marriage rates results since rates would change before stocks and because I did not find evidence of changes in marriage stocks. However, the marriage stock results are similar to the previous estimates as well.

5.1 Are There National Effects of Allowing Same-Sex Couples to Marry?

The previously described identification strategy makes the key assumption that legal changes will only impact behavior in states where the laws have been passed. This may be more reasonable with domestic partnerships than same-sex marriage. With domestic partnerships, opposite-sex couples may choose not to enter into marriage and instead take up this new type of legal union only when it is available to them, suggesting state variation should be sufficient. With same-sex marriage, this may not be the case. It could be that same-sex marriage anywhere affects the value of marriage and thus marriage rates everywhere. We cannot identify these types of effects using state variation.

To consider the idea that same-sex marriage in any state may have national ramifications, I look at state trends in marriage rates over the last fifteen years. If national marriage rates suddenly drop after same-sex couples begin marrying, we would be concerned that allowing

same-sex couples has national ramifications, thus causing the identification strategy used earlier to be wrong. The solid line in the top graph of Figure 4 shows the year coefficients in Equation 1 estimated without controlling for the passage of the laws but with the controls previously described. The dashed line shows how these coefficients differ from the year before. The solid line mirrors the shape of the national rates shown earlier. The dashed line hovers around slightly below zero for most of the time period. The bottom graph in Figure 4 shows the equivalent only using opposite-sex marriage rates. In both figures, there seems to be no change in the trend when Massachusetts began allowing same-sex couples to marry in 2004. Marriage rates continue to fall after Massachusetts began allowing same-sex couples to marry but at a similar rate as before. In the past few years, opposite-sex marriage rates have actually risen nationally. Although examining trends can provide no definitive evidence that allowing same-sex couples to marry has no national ramifications, these results do suggest that allowing same-sex couples to marry has not drastically altered marriage rates at a national level.¹⁴

5.2 Dropping Observations before the Year 2000

The main results use data from 1995 onward. The reason for starting with 1995 is that it is a few years before the earliest law is passed. Most law changes, however, do not happen until the 2000s, which makes the pre-treatment period very long for several of the states studied. In columns 1 and 2 of Tables 5 and 6, I drop all years before 2000. Table 5 shows the unweighted estimates, while Table 6 shows the weighted estimates.

Regardless of whether or not demographic controls are included, the coefficients are statistically indistinguishable from the previous coefficients. There remains no evidence that allowing same-sex couples to marry results in the death of marriage, but there is still evidence

¹⁴As discussed in Section 2.2 we might expect different responses based for people with different political attitudes. In other results, I test for different reactions to the Massachusetts ruling for more liberal and more conservative states as measured by the percent of the state population that voted for George Bush in 2004, which is the year Massachusetts began allowing same-sex couples to marry and when one of the main issues in the presidential election was a Constitutional ban on allowing same-sex couples to marry. Bush supported the ban, while his opponent, John Kerry, did not. I find no evidence of differences.

that some marriage rates fall when opposite-sex couples can enter into domestic partnerships.

5.3 Unobserved Changes over Time

A second key assumption is that states that alter legal recognition would be changing in similar ways as states that do not alter legal recognition in the absence of legal recognition changes. The identification strategy controls for state heterogeneity that is fixed over time, but a potential concern is that states that offer legal recognition may be changing in unobserved ways differently from states that do not offer legal recognition and that these unobserved changes confound the estimation strategy. In this section, I verify the robustness of the results to two additional ways to account for unobserved heterogeneity that changes over time. The first involves being more careful in choosing the control group. The second allows states that alter legal recognition to have different time trends than other states.

Choice of Control Group

Legal recognition can only be extended to same-sex couples in states without Constitutional bans on legal recognition, meaning states without bans on legal recognition might be a better control group than all states without legal recognition. Columns 3 and 4 of Tables 5 and 6 replicate the results using states that have neither legal recognition for same-sex couples nor Constitutional bans on same-sex marriage as the control group.¹⁵

We would be concerned that unobserved state trends were confounding the estimation strategy if the results changed after choosing a more narrowly defined control group. All of the coefficients are similar to the original estimates. This exercise indicates the choice of

¹⁵The new set of control states is Delaware, Illinois, Indiana, Minnesota, New Mexico, New York, North Carolina, Pennsylvania, Rhode Island, West Virginia, and Wyoming.

using all of the non-treatment states as the control group is not driving the results.¹⁶

State-Specific Time Trends

I next supplement Equation 1 with linear state-specific time trends for those states that extend legal recognition. This means identification comes from how marriage rates change apart from the state-specific trends as well as national trends after legal recognition is extended.

The new estimating equation is

$$y_{st} = \phi_t + v_s + X_{st}\alpha + \gamma_s M_{st} + \sum_{j \in J} \beta_j L_{st}^j + \epsilon_{st}, \quad (3)$$

where M is the linear time trend for state s and the other variables are defined as before.¹⁷

The estimates for the main coefficients and for the state-specific linear time trends are shown in columns 5 and 6 of Tables 5 and 6. None of the states that allow same-sex couples to enter into marriage have a time-trend that is statistically different from the national time trend. As with the original estimates, there remains no evidence that allowing same-sex couples to marry results in opposite-sex couples marrying less.

Two states that have passed domestic partnerships for all couples have time trends that appear to differ from the national time trend in both the specifications with and without demographic controls. Nevada has a negative linear time trend, while Maine has a positive time-trend. The coefficients on domestic partnerships for all couples do appear to fall slightly when these state-specific time trends are included in the estimating equation. However, they are statistically indistinguishable from the previous estimates and still statistically different

¹⁶An alternate method of choosing the control group is to use the synthetic control method from Abadie et al. (2010), which selects control groups that do not violate the parallel trends assumption. In results not shown, I implement the synthetic control method for each state that has changed its legal recognition laws. The results from the synthetic control method are consistent with the results presented throughout this paper. I find no evidence that allowing same-sex couples to marry reduces the opposite-sex marriage rates, but I do find evidence that marriage rates fall when opposite-sex couples can enter into the new forms of recognition. The synthetic control analysis is available from the author upon request.

¹⁷Similar strategies have been used by Besley and Burgess (2004), Bitler et al. (2004), and others.

from zero.

Of the states that allow only same-sex couples to enter into new forms of recognition, California and Oregon have trends that are statistically different from the national time trend. They are both positive compared to the national time-trend. When state-specific time-trends are included in the estimation, the coefficients on domestic partnerships for all couples are statistically indistinguishable from zero.

6 Conclusion

There has been much debate about what allowing same-sex couples to marry will do to the institution of marriage. This paper considers several possible avenues for how the legal changes that occurred during the first decade of the twenty-first century could have affected marriage. I find that allowing same-sex couples to marry increases overall marriage rates and that the effect on marriage rates is highest for the first few years after same-sex couples are allowed to marry. This increase is accounted for entirely by same-sex couples marrying. I find no effect of allowing same-sex couples to marry on opposite-sex marriage rates, which suggests that allowing same-sex couples the right to marry does not affect the value of marriage for opposite-sex couples. This is inconsistent with the end-of-marriage argument.

The evidence does suggest, however, that allowing opposite-sex couples to enter into new forms of legal recognition decreases marriage rates. This means in the absence of domestic partnerships, many opposite-sex couples may enter into marriage even though they would actually rather enter into non-marriage legal recognition. Strengthening these domestic partnerships may make opposite-sex couples better off on average; however, strengthening the partnerships would also likely induce more people to enter into the partnerships instead of marriage.

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Table 1: Extensions of Legal Recognition by State

Same-Sex Marriage	Alternate Recognition for Same-Sex Couples Only	Alternate Recognition for All Couples
District of Columbia, 2010	California, 1999	District of Columbia, 2002
Connecticut, 2008	Connecticut, 2005	Illinois, 2011
Iowa, 2009	New Hampshire, 2008	Maine, 2004
Massachusetts, 2004	New Jersey, 2004	Maryland, 2008
New Hampshire, 2010	Oregon, 2008	Nevada, 2009
New York, 2011	Rhode Island, 2011	
Vermont, 2009	Vermont, 2000	
	Washington, 2007	
	Wisconsin, 2009	

Laws through 2011.

Table 2: Descriptive Statistics

	All States		States Changing Legal Recognition		States Not Changing Legal Recognition	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Marriage Rates	8.98	8.16	10.10	13.51	8.41	2.72
Unemployment Rates	0.06	0.02	0.06	0.02	0.05	0.02
% Female	0.52	0.01	0.52	0.01	0.52	0.01
% of High School Graduates	0.86	0.04	0.87	0.04	0.86	0.05
% of People with Some College	0.52	0.07	0.55	0.05	0.51	0.07
% of College Graduates	0.26	0.06	0.30	0.06	0.24	0.04
% Black	0.11	0.12	0.10	0.15	0.12	0.11
% White	0.82	0.15	0.83	0.15	0.81	0.14
% Age 21 to 40	0.27	0.02	0.27	0.03	0.27	0.02
% Age 41 to 60	0.26	0.02	0.26	0.02	0.25	0.02
% Age 61 and above	0.14	0.03	0.14	0.02	0.14	0.03
% Voting for Democrat President	0.47	0.10	0.56	0.10	0.43	0.07
n	811		272		539	

Table 3: Effects on Marriage Rates

Unweighted Estimates				
	Overall Marriage Rates		Opposite-Sex Marriage Rates	
Marriage	0.137**	0.120**	0.018	0.003
	(0.039)	(0.039)	(0.020)	(0.024)
DP for all couples	-0.106†	-0.116*	-0.089	-0.098†
	(0.058)	(0.054)	(0.055)	(0.049)
DP for same-sex couples	0.026	0.016	0.027†	0.017
	(0.016)	(0.019)	(0.016)	(0.019)
Demographic Controls	No	Yes	No	Yes
n	811	811	810	810
Weighted Estimates				
	Overall Marriage Rates		Opposite-Sex Marriage Rates	
Marriage	0.103**	0.076**	0.021	-0.007
	(0.022)	(0.026)	(0.017)	(0.024)
DP for all couples	-0.102†	-0.129*	-0.095†	-0.124*
	(0.053)	(0.049)	(0.053)	(0.048)
DP for same-sex couples	0.047**	0.023	0.047**	0.023
	(0.016)	(0.015)	(0.016)	(0.015)
Demographic Controls	No	Yes	No	Yes
n	811	811	810	810

Notes: †, *, and ** indicate significance at 10%, 5%, and 1% respectively. Standard errors are clustered by state and are shown in parentheses.

Figure 1: National Marriage Rates

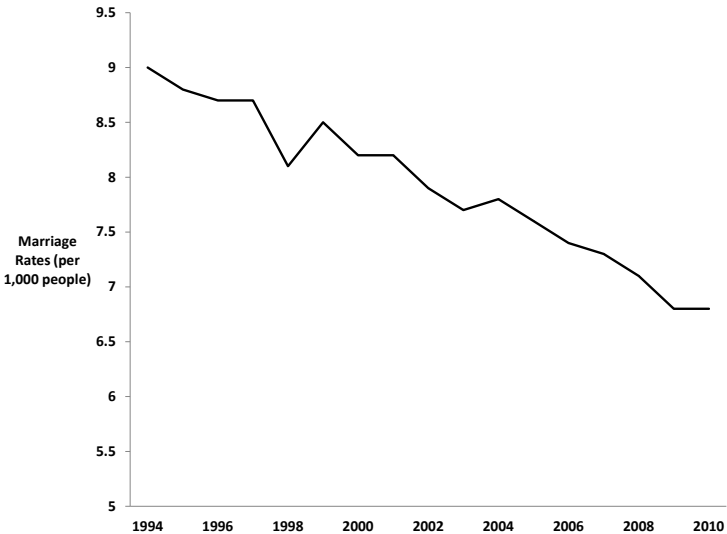


Table 4: Effect on Probability of Being Married

	Full Sample		Age < 30		30 ≤ Age < 60		60 ≤ Age		At Least Some College		No College	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Marriage	0.005 (0.009)	0.004 (0.007)	0.007 (0.009)	0.013 (0.009)	0.012 (0.010)	0.007 (0.008)	-0.002 (0.008)	-0.005 (0.008)	0.002 (0.011)	0.004 (0.008)	-0.001 (0.006)	0.001 (0.005)
DP for all couples	-0.004 (0.005)	0.001 (0.003)	-0.006 (0.011)	0.004 (0.008)	0.005 (0.005)	0.004 (0.005)	0.000 (0.007)	0.006 (0.005)	-0.015* (0.007)	-0.004 (0.004)	0.005 (0.009)	0.007 (0.006)
DP for same-sex couples	0.002 (0.003)	-0.001 (0.003)	-0.003 (0.006)	0.004 (0.004)	0.004 (0.004)	0.000 (0.003)	-0.001 (0.006)	-0.004 (0.005)	-0.005 (0.007)	-0.003 (0.004)	0.007 (0.005)	0.001 (0.004)
n	2,191,447	2,191,447	507,735	507,735	1,249,339	1,249,339	434,373	434,373	1,114,938	1,114,938	1,076,509	1,076,509
Demographic controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: †, *, and ** indicate significance at 10%, 5%, and 1% respectively. Standard errors are clustered by state and are shown in parentheses.

Table 5: Robustness - Unweighted Estimates

	Dropping Observations before 2000		Control Group Choice		State-Specific Time Trends	
Marriage	0.036 (0.022)	0.030 (0.025)	0.003 (0.026)	0.022 (0.027)	0.031 (0.023)	0.034 (0.026)
DP for all couples	-0.087† (0.051)	-0.092† (0.046)	-0.104† (0.053)	-0.081† (0.040)	-0.052* (0.023)	-0.044† (0.023)
DP for same-sex couples	0.026 (0.019)	0.029 (0.021)	0.011 (0.020)	0.035† (0.021)	0.011 (0.019)	0.013 (0.019)
California Time Trend					0.011** (0.002)	0.011** (0.004)
Connecticut Time Trend					0.001 (0.003)	-0.003 (0.003)
DC Time Trend					-0.007* (0.003)	-0.008 (0.005)
Iowa Time Trend					0.000 (0.002)	-0.002 (0.002)
Maine Time Trend					0.010** (0.003)	0.006† (0.003)
Maryland Time Trend					-0.002 (0.002)	-0.006* (0.003)
Massachusetts Time Trend					-0.003 (0.003)	-0.006 (0.004)
Nevada Time Trend					-0.028** (0.002)	-0.029** (0.003)
New Hampshire Time Trend					0.003 (0.002)	0.000 (0.003)
New Jersey Time Trend					0.000 (0.003)	-0.003 (0.003)
Oregon Time Trend					0.006* (0.002)	0.006* (0.003)
Vermont Time Trend					-0.004 (0.003)	-0.004 (0.004)
Wisconsin Time Trend					-0.001 (0.002)	-0.001 (0.003)
Washington Time Trend					0.004 (0.002)	0.001 (0.003)
Demographic controls	No	Yes	No	Yes	No	Yes
Years before 2000 excluded	Yes	Yes	No	No	No	No
Limited control group	No	No	Yes	Yes	No	No
State-specific time trends	No	No	No	No	Yes	Yes
n	555	555	383	383	810	810

Notes: †, *, and ** indicate significance at 10%, 5%, and 1% respectively. Standard errors are clustered by state and are shown in parentheses.

Table 6: Robustness - Weighted Estimates

	Dropping Observations before 2000		Control Group Choice		State-Specific Time Trends	
Marriage	0.036*	0.013	-0.017	-0.025	0.029†	0.026†
	(0.017)	(0.027)	(0.020)	(0.030)	(0.015)	(0.015)
DP for all couples	-0.096†	-0.113*	-0.130*	-0.136**	-0.053*	-0.054**
	(0.050)	(0.053)	(0.052)	(0.044)	(0.022)	(0.020)
DP for same-sex couples	0.011	-0.004	0.016	0.015	-0.018	-0.018
	(0.020)	(0.022)	(0.019)	(0.018)	(0.015)	(0.016)
California Time Trend					0.014**	0.014**
					(0.002)	(0.002)
Connecticut Time Trend					0.003	-0.001
					(0.002)	(0.002)
DC Time Trend					-0.006*	-0.005
					(0.003)	(0.004)
Iowa Time Trend					0.001	-0.000
					(0.002)	(0.002)
Maine Time Trend					0.010**	0.006*
					(0.003)	(0.003)
Maryland Time Trend					-0.001	-0.006*
					(0.002)	(0.002)
Massachusetts Time Trend					-0.002	-0.006*
					(0.002)	(0.003)
Nevada Time Trend					-0.029**	-0.028**
					(0.002)	(0.003)
New Hampshire Time Trend					0.005*	0.000
					(0.002)	(0.003)
New Jersey Time Trend					0.004†	-0.000
					(0.002)	(0.003)
Oregon Time Trend					0.009**	0.010**
					(0.002)	(0.003)
Vermont Time Trend					-0.002	-0.004
					(0.002)	(0.003)
Wisconsin Time Trend					0.001	0.000
					(0.002)	(0.003)
Washington Time Trend					0.007**	0.005
					(0.002)	(0.003)
Demographic controls	No	Yes	No	Yes	No	Yes
Years before 2000 excluded	Yes	Yes	No	No	No	No
Limited control group	No	No	Yes	Yes	No	No
State-specific time trends	No	No	No	No	Yes	Yes
n	555	555	383	383	810	810

Notes: †, *, and ** indicate significance at 10%, 5%, and 1% respectively. Standard errors are clustered by state and are shown in parentheses.

Figure 2: Time-Flexible Effects on Marriage Rates

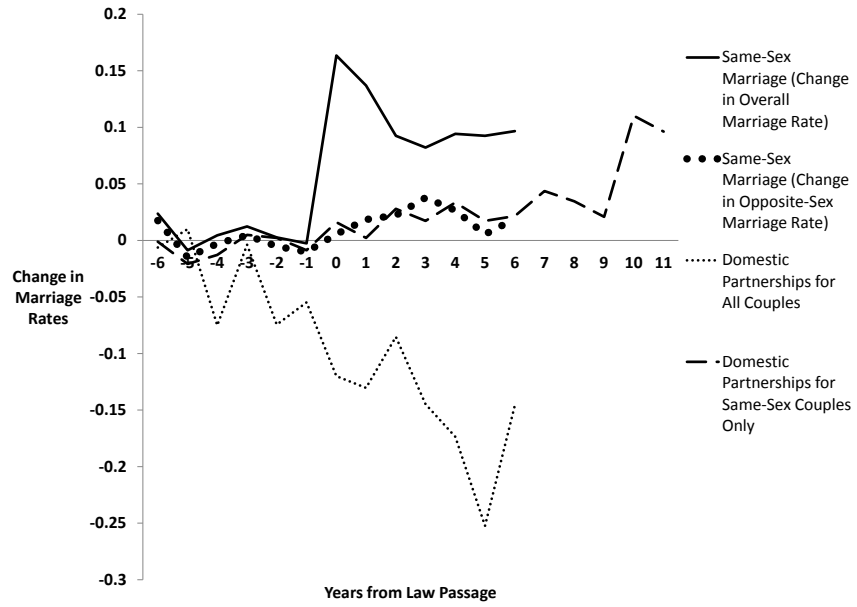


Figure 3: Time-Flexible Effects on Marriage Stocks

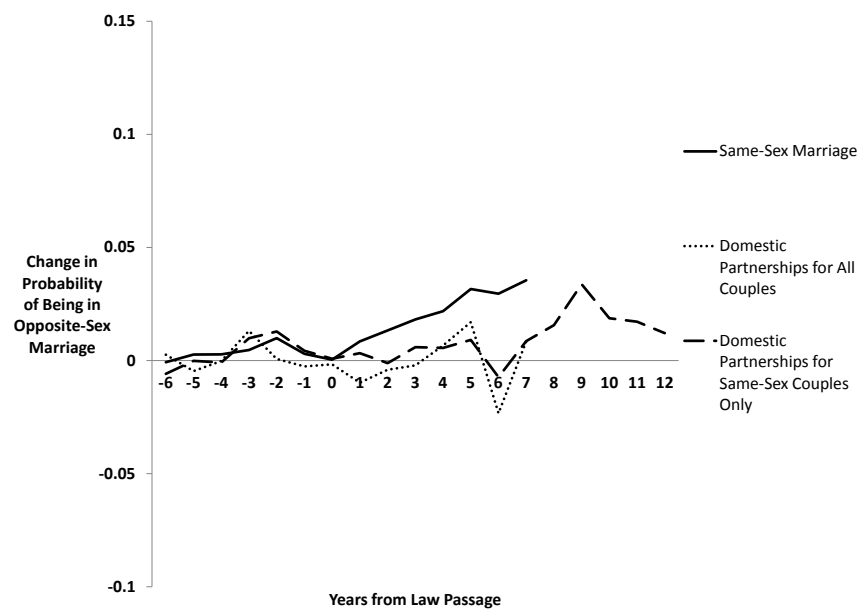


Figure 4: Trends in State Overall and Opposite-Sex Marriage Rates

