Same-Sex Marriage Recognition and Taxes: New Evidence About the Impact of Household Taxation*

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Abstract

The U.S. income tax code encourages marriage for some and discourages marriage for others, but same-sex couples were only recently exposed to these marriage incentives. We estimate marriage responses by exploiting variation in the recognition of same-sex marriages for tax purposes, versus earlier papers that leverage smaller tax code changes. Using the American Community Survey, which reports cohabitation and marriage, we estimate a significant though small marriage elasticity relative to research on different-sex couples, with further analysis suggesting a higher elasticity for low-earning households. The 2018 Tax Cuts and Jobs Act is predicted to increase marriage among high-earning cohabiting couples.

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1 Introduction

The United States uses a progressive, family-based system of income taxation, which necessarily creates unequal tax burdens between unmarried and married couples (Rosen 1977).[1] In other words, two couples with the same total earnings between them can face very different tax liabilities upon marriage depending on how those earnings are split between the partners. Many but not all couples in the U.S. currently face a tax-induced marriage subsidy, but the tax consequence of marriage is known colloquially as the "marriage tax."[2]

The non-neutrality of tax and welfare policy with respect to marriage has generated substantial public debate, not only about inequity based on marital status for otherwise identical households but also about marriage incentives. For example, Stevenson (2012) notes that the 2001 and 2003 "Bush tax cuts" substantially increased the average marriage subsidy.[3] The recent 2018 Tax Cuts and Jobs Act increased the marriage subsidy further for many high-earning couples by reducing progressivity of the tax schedule. Figure 1 shows the marriage subsidy in 2017 (on the left) and 2018 (on the right) for different types of filers; increases in the marriage subsidy are evident for childless filers earning above roughly $100,000 and filers with children earning above roughly $150,000.[4]

In this paper, we estimate the effect of the marriage subsidy on the probability of being married. Two key features differentiate our analysis from most previous research, which we summarize in Table 1 and discuss below. First, our focus on same-sex couples enables a new identification strategy. While earlier studies incorporated variation in the tax code arising from tax reforms, these often induced small average changes in marriage subsidies, or were local to particular earnings ranges, for example involving the Earned Income Tax Credit. Our key variation depends on the

1. Rosen (1977) demonstrates that it is not possible for any income tax system to be simultaneously progressive, equal across family income, and equal across marital status. Most developed countries use progressive tax schemes, necessitating the choice between an individual-based system (equal across marital status) or a household-based system (equal across household income).

2. Our empirical specification uses the subsidy measure, and we will refer to it throughout the paper as the marriage subsidy.

3. The "Bush tax cuts" refers to the 2001 Economic Growth and Tax Relief Reconciliation Act (EGTRRA) and the 2003 Jobs and Growth Tax Relief Reconciliation Act (JGTRRA).

4. The figures show the marriage subsidy calculated for hypothetical couples as a function of earnings, assuming no other income nor tax expenditures. Some quirks related to phase-outs in the TCJA generated a marriage penalty for households in narrow ranges of earnings and earnings splits below these amounts.

recognition of same-sex marriage for tax purposes.[5] Tax recognition of marriage began as some states legalized same-sex marriage, and then followed as the federal government was required by *United States v. Windsor* in 2013 to recognize legal marriages in those states, and finished as the remaining states allowed couples to marry (because of additional state laws and finally *Obergefell v. Hodges* in 2015). The legal and judicial sources of variation that we exploit, combined with conventional variation over states and years in tax progressivity and cross-sectionally in (predicted) household earnings and earnings splits, yield heterogeneous and sometimes quite large changes in the marriage subsidy. This paper is the first, to the best of our knowledge, to leverage variation arising from a switch in tax regime (from individual to joint taxation) to identify marriage effects.

The second feature that distinguishes our analysis from many previous studies is our use of the American Community Survey (ACS), which reports both cohabitation and marriage, allowing us to define a sample exclusively of couples in a relationship. We use the 2012–2017 waves, which are the first of the U.S. Census Bureau Surveys to explicitly identify same-sex married couples.[6] Thus, we consider the margin between cohabitation and marriage, which should be more responsive, compared to past studies that either use samples including married, cohabiting, and single individuals (Alm and Whittington 1995a; Sjoquist and Walker 1995; Dickert-Conlin and Houser 2002; Herbst 2011; Isaac 2019a) or that use data in which cohabitation is not measured (Alm and Whittington 1997, 1999; Eissa and Hoynes 2003; Fisher 2013) or must be inferred (Ellwood 2000). Some of those studies use cross-sectional data, and therefore measure marriage stocks (Alm and Whittington 1995a; Sjoquist and Walker 1995; Ellwood 2000; Eissa and Hoynes 2003; Fisher 2013), which should be less responsive than marriage flows. Ours is closer to a flow approach, since, immediately following marriage legalization, the stock and flow of married couples is identical. The analysis we undertake is not possible using administrative data because,

5. Along with earlier studies, ours also relies on progressivity of the tax code at a point in time, variation in state tax codes, and cross-sectional variation in the earnings split across couples. We employ an instrumental variables strategy and, at times, a control function approach, that we describe shortly to account for the possible endogeneity of the latter.

6. Oreffice (2016) uses the ACS in a descriptive study of demographic characteristics associated with marriage among same-sex cohabiting couples. The Decennial Census and pre-2012 ACS suffered from substantial data editing problems, making it impossible to reliably identify same-sex married couples in earlier data (Black et al. 2007; Gates and Steinberger 2010). In the 1990 census, for example, if a couple appeared to be a same-sex married couple then one partner's sex was *changed* so that the couple appeared to be a different-sex married couple. In the 2000 and 2010 censuses and in pre-2012 waves of the American Community Survey, if a couple appeared to be a same-sex married couple then their marital status was changed to "unmarried partner," sometimes without an accompanying data quality flag (U.S. Census Bureau 2009).

for example, all same-sex couples would appear to be unmarried in federal tax return data through 2012.[7]

As in other studies, our empirical approach involves quantifying the size of the marriage subsidy. We use self-reported household income from the ACS and impute income in the counterfactual marital state in order to calculate the marriage subsidy. This calculation largely rests on the assumption that individuals would have the same earnings in both situations, so we address concerns that variation in the marriage subsidy arising from total earnings across couples and earnings splits within couples may be endogenously determined. For example, couples may choose which state to live in based on their marriage and labor supply preferences, or may change their labor supply in response to marriage or marriage-induced tax changes (Isaac 2019b). Also, couples may report income with error, and may not report enough information for us to accurately compute tax liability. One step we take to address such concerns is to control for year and state fixed effects, which capture evolving attitudes toward same-sex marriage nationally as well as state-varying attitudes that may be correlated with residential choices of same-sex couples or state legalization. The other step is to implement a simulated instruments approach, in which we calculate each individual's predicted earnings and therefore the couple's predicted marriage subsidy, which we use to instrument for their observed marriage subsidy.

Following the general methods of Dahl and Lochner (2012) and Isaac (2019b), we predict earned income for each individual using observable household and individual characteristics in the ACS, and we use predicted earned income, information about legal marriage recognition, and the NBER TAXSIM simulator to calculate each couple's predicted marriage subsidy.[8] We implement a machine learning LASSO approach for the predictions in order to gain as much explanatory power as possible. We then gradually add controls to the main specifications for both partners' predicted earnings to ascertain that our identification comes purely from predicted changes in the marriage

7. We have been informed by those knowledgeable about such data that it is far from straightforward to distinguish cohabitors in a relationship from other roommates using tax data. Additionally, we use covariates in the ACS to predict individual earned income as part of our identification strategy, which may not work as well using administrative data containing less demographic information.

8. We try two approaches for this. In one, we use all years of the ACS in order to predict individual earnings, which gives us more power. In the other, we only use the 2012 ACS, which reduces concerns about changing norms in states that subsequently legalized marriage; in those states, labor supply of same-sex couples may have changed as attitudes towards marriage equality changed as well. We present results in this paper using the second approach, but our estimates are not sensitive to this choice.

subsidy due to legal marriage recognition.[9]

Our instrumental variables estimates indicate a statistically significant and robust effect of the tax-induced marriage subsidy on marriage. For the sample as a whole, we estimate that a $1,000 increase in the marriage subsidy causes a 1.0–1.5 percentage point (2.3–3.5%) increase in the probability of being married, implying an elasticity of 0.021–0.030. This elasticity is similar in magnitude to some well-identified estimates for different-sex couples, and smaller than others, especially those based on EITC variation. Additional estimates suggest that the elasticity is highest for low-earning households; point estimates indicate an elasticity in the 0.10–0.15 range at low earning levels (which is close to estimates found in recent EITC papers), declining to around 0.05 for household earnings of $100,000, and remaining statistically different than zero over an earnings range of around $20,000–$580,000. We confirm recent findings by Carpenter et al. (2018): we estimate that, all else equal, state same-sex marriage legalization increases the probability of being married, irrespective of tax considerations, by 6.7–6.8 percentage points (15.5–15.7%). Additional specifications show that our main estimate is driven by a positive marriage effect among couples expecting a subsidy rather than a negative effect among couples expecting a penalty. We estimate a significantly higher elasticity for male couples than for female couples, but insignificant differences by presence of children. Finally, our main estimates are robust to including state-by-year fixed effects and to controlling for marriage incentives introduced by the Affordable Care Act's premium tax credit.[10]

Lastly, we use our estimates to simulate changes in marriage behavior for unmarried cohabiting couples as a result of the 2018 Tax Cuts and Jobs Act. The Tax Cuts and Jobs Act increased the typical marriage subsidy for many high-earning couples by reducing progressivity: at the low end of the tax schedule by increasing the standard deduction and adjusting the married-filing jointly tax brackets to be roughly double those of the single tax brackets, and at the high end by reducing

9. Our estimates are not sensitive to including controls for each partners' predicted earnings, suggesting that the key variation arises from the tax code.

10. We present bootstrapped estimates in Appendix B to address Young's (2019) concerns about bias in IV estimates created by non-iid error processes. We present estimates in Appendix C using a control function approach that includes controls for all covariates with non-zero coefficients in the LASSO model for earnings in levels to further ensure that our identification is driven by variation in taxes caused by changing definitions of marriage rather than by unique variation created during the prediction process. Our estimates are robust to both bootstrapping and the control function.

marginal tax rates. Our simulations suggest that the 2018 Tax Cuts and Jobs Act, by diminishing average marriage penalties, would increase the propensity of most high-earning cohabiting couples to marry. Meanwhile, the changes in the marriage propensity for couples earning less than $230,000 average to about zero, with most of the mass in the range of a five percent increase or decrease.

Previous evidence of the effect of the tax-induced marriage subsidy is mixed. Some researchers have found significant effects of the marriage subsidy on both marriage and divorce (Alm and Whittington 1995a, 1999; Whittington and Alm 1997; Dickert-Conlin 1999; Eissa and Hoynes 2003; Herbst 2011; Fisher 2013; Gayle and Shephard 2019), with some of the larger effects appearing in response to the EITC (Bastian 2017; Michelmore 2018; Isaac 2019a), while others have found little to no effect (Sjoquist and Walker 1995; Ellwood 2000; Dickert-Conlin and Houser 2002; Light and Omori 2008; Herbst 2011; Isaac 2019a). Regardless of the effect size, the changes in marital status as a result can be economically and socially important, by affecting tax revenue (Stevenson 2012; Alm, Leguizamon, and Leguizamon 2014; Isaac 2019b), retirement finances (Zissimopoulos, Karney, and Rauer 2015; Borella, De Nardi, and Yang 2019), health and access to health care (Carpenter et al. 2018; Friedberg, Guo, and Lin 2018), and children's well-being (Lyle 2006; Finlay and Neumark 2010).

This paper is grounded in traditional taxation and marriage questions, but also adds to the small, but growing, literature concerning same-sex couples. Most closely related to this paper, Oreffice (2016) and Carpenter et al. (2018) also study the marriage margin among same-sex couples, although neither focus on taxation. Other research of same-sex couples and LGBT individuals has analyzed labor supply (Hansen, Martell, and Roncolato 2019; Isaac 2019b; Sansone 2019), differences in labor market behavior between same- and different-sex couples (Tebaldi and Elmslie 2006; Oreffice 2011; Antecol and Steinberger 2013), workplace discrimination (Badgett 1995; Carpenter 2007; Plug, Webbink, and Martin 2014), health outcomes (Buchmueller and Carpenter 2010; Gonzales and Blewett 2014; Carpenter et al. 2018), and predicted revenue effects of same-sex marriage legalization (Stevenson 2012; Alm, Leguizamon, and Leguizamon 2014). This paper

is the first, to the best of our knowledge, to leverage tax variation among same-sex married couples to identify the effects of taxation on marriage.

2 Treatment Effects Resulting From the Same-Sex Marriage Recognition

The Defense of Marriage Act (DOMA) was established in 1996 and defined, for federal government purposes, "marriage" as the union between one man and one woman and "spouse" as a member of the opposite sex who is a husband or wife. In this section we describe the changing legal landscape at the federal and state level since 1996 and discuss the relevant tax implications.

2.1 The Evolution of Same-Sex Marriage Recognition

Despite the definitions of "marriage" and "spouse" at the federal level, state law has traditionally governed who may marry. In 2004 Massachusetts became the first state to legalize and recognize same-sex marriages.[11] Twelve more states legalized same-sex marriage before the *United States v. Windsor* Supreme Court ruling in 2013.[12] *United States v. Windsor* invalidated the definitions of "marriage" and "spouse" under the federal DOMA law, thereby requiring the federal government to recognize same-sex marriages that some states had legalized up to that time, but still did not require all states to legalize same-sex marriages or recognize same-sex marriages performed in other states. Two years later, the 2015 *Obergefell v. Hodges* Supreme Court ruling required this. Figure 2 illustrates the relevant level of marriage recognition for each state between 2004–2017.

Each of these changes (state legalization, *United States v. Windsor*, post-*Windsor* state legalization, and *Obergefell v. Hodges*) introduced different treatment effects. We parameterize two classes of treatment: the legalization of same-sex marriage itself and the resulting marriage subsidy or penalty for same-sex couples, whether coming from the state, federal, or both tax schedules (which we will sometimes distinguish as separate treatments as well). Table 2 provides a summary

11. We use "legalize" to refer to a state's decision to grant same-sex marriage licenses, and use "recognize" to refer to recognition of same-sex marriages for tax purposes at either the state or federal levels. We do not consider alternative partnerships such as civil unions or domestic partnerships, as these institutions are not treated as marriages for tax purposes.

12. California legalized same-sex marriage in June 2008, but the statute was suspended by Proposition 8 in November 2008 until the Supreme Court decision in 2013. Same-sex marriage licenses issued in California between June and November 2008 continued to be recognized by the state.

of these treatment effects, discussed below.

At the outset, state legalization laws before *Windsor* included a legalization treatment as well as a tax treatment. The tax treatment for those early states is only generated by state tax progressivity. Such states are denoted in blue in Figure 2. Same-sex married couples were still required to file as single individuals at the federal level and, therefore, were not exposed to the federal marriage subsidy.[13]

Next, *United States v. Windsor* introduced only a federal tax treatment without a marriage legalization treatment. The ruling did not affect states' same-sex marriage legislation, and only required the federal government to recognize, at the federal level, same-sex marriages that were permitted by some states. This treatment affected all same-sex couples regardless of their current state of residence, including couples who traveled to a different state to marry. Same-sex married couples were required to file at the federal level as married, filing jointly or married, filing separately beginning in tax year 2013 even if their state of residence did not recognize same-sex marriages and required them to file as single individuals at the state level.[14] For states that had already legalized same-sex marriage by that time, *Windsor* aligned state and federal policy, and those states are denoted in purple in Figure 2. For states that had not yet legalized same-sex marriages, it still exposed same-sex married couples living in those states to the federal marriage subsidy, and those states are denoted in red in Figure 2.

After that, state legalization that followed *Windsor* included a legalization treatment and introduced marriage subsidy variation arising from both the state and, due to *Windsor*, federal tax codes. Lastly, the *Obergefell v. Hodges* ruling, by mandating state legalization and recognition of same-sex marriages, included all three treatment effects. Both of these changes aligned state and federal policy and are represented in purple in Figure 2.

13. Note that this discussion presumes that the treated couples reside in the state. If a couple traveled to the state to marry, then they would not be exposed to the state marriage subsidy unless their state of residence also recognized same-sex marriages. Traveling to marry would, however, expose the couple to a federal marriage subsidy after *Windsor* regardless of where they reside.

14. The federal tax code uses the "place of celebration" rule, meaning that a same-sex couple is considered married, for federal tax purposes, so long as they married in a state that permitted same-sex marriage, even if they live in or moved to another state.

2.2 State and Federal Marriage Subsidies

The staggered rollout of marriage equality at the state and federal levels meant that same-sex couples, even in the same financial situation, were exposed to varying magnitudes of marriage subsidies. As Figure 2 made clear, pre-*Windsor* state-level marriage recognition generated a state but not federal tax treatment; the 2013 *Windsor* ruling generated a federal tax treatment only; and subsequent state-level recognition, followed by the 2015 *Obergefell* ruling, generated combined state and federal tax treatments.

The marriage subsidy is defined as:

$$\text{Marriage Subsidy} = (T_i + T_j) - T_{ij}$$

where T_i and T_j are each partner's tax liability if they file as single, and T_{ij} is the couple's tax liability if they file jointly. We use income from all available sources, number of children, and state of residence when calculating the observed marriage subsidy.[15] A positive value of the marriage subsidy indicates a decline in tax liability and, hence, an increase in after-tax income as a result of marriage. Variation in the observed marriage subsidy is driven not only by the couple's total earned income but also by the partners' earned income split, which are the horizontal and vertical axes, respectively, in Figure 1. As is well-known, the marriage subsidy is higher the more uneven is the split in household earnings. Also, given the current tax code, the average marriage subsidy is more negative at very low and high household income levels.

The means and standard deviations of the marriage subsidy for same-sex couples in the ACS appear in Table 3.[16] We find that approximately 88% of the average marriage subsidy for this sample originates in the federal tax code. Among married couples, the observed marriage subsidy is \$1,350 – meaning that they would pay \$1,350 less in combined federal and state taxes, based on what we can observe about them, than if they were single. Among cohabiting couples, the

15. By "observed marriage subsidy" we mean the marriage subsidy calculated using the NBER TAXSIM simulator, which applies the relevant tax code to a couple's reported income from all available sources. However, we do not have information on their actual tax liability, nor enough information about deductions and so on to compute their exact tax liability. We distinguish the observed marriage subsidy from the "predicted marriage subsidy" calculated in the same way from predicted earned income, as described later.

16. We explain our full set of assumptions for these calculations later.

observed marriage subsidy is $521, so they would pay $521 more in taxes than if they married. Notably, this is smaller for cohabiting same-sex couples than it is for married couples, suggesting a potential causal effect that we investigate further below.

While the observed marriage subsidy depends on many couple-specific factors, we highlight here the extent to which our predicted marriage subsidy calculations (described later) leverage variation in marriage incentives created by both the state and federal tax codes. Figure 3 illustrates some of this variation, averaged for couples in our sample at the state-year level.[17] Although our analysis with the ACS starts in 2012, we illustrate the impact of marriage legalization beginning in 2004 (with blue lines indicating only a state tax treatment), followed by the 2013 *United States v. Windsor* ruling requiring federal recognition of same-sex marriages in states that had previously legalized it (with red lines indicating only a federal tax treatment), and followed by additional state legalization along with the 2015 *Obergefell v. Hodges* ruling requiring all states to permit same-sex marriages (with purple lines indicating combined state and federal tax treatments).

As shown in Figure 3, the average marriage subsidy in most of the early-legalizing states was negative but small; the notable exception is California, which briefly legalized marriage in 2008 and had a relatively large average marriage subsidy for same-sex couples. While state tax codes introduced some marriage non-neutrality, much of the variation we exploit was created by federal marriage recognition following *Windsor*, which is evident in the jump up in the average marriage subsidy arising when couples became exposed to the substantial progressivity of the federal tax schedule. This, along with subsequent state and federal recognition in the remaining states, also generated a substantial spread across states in the average marriage subsidy, arising from the interaction of progressivity at the state level along with systematic differences in the typical level and split of household earnings among same-sex couples in different states. To the extent that the latter is correlated with unobserved differences in marriage propensities across states, our empirical specification that uses state fixed effects will control for them; our estimation results are also

17. The data in Figure 3 come from average same-sex couples in the 2012 ACS, run through the federal and state tax codes via TAXSIM in each prior and subsequent year. We use the population-weighted average earned income for primary and secondary earners in same-sex couples in each state in 2012 (assuming a 3% annual growth rate), and the recognition status of same-sex marriages in each state and year. While it is not possible to construct samples of same-sex couples in the ACS over the full time period in illustrated in Figure 3, this illustrates the nature of the tax variation we leverage.

robust when we include state-year fixed effects. Meanwhile, we will control separately for the legalization of marriage to distinguish its effect from the tax recognition of marriage.

3 Empirical Strategy

Our goal is to estimate the causal effect of the marriage subsidy on marriage. We estimate the likelihood of a couple being married for a sample of married and cohabiting couples, who are thus known to be in a relationship. Our research design exploits variation in the tax recognition of marriages across states and over time. We begin with a specification that takes the following form:

$$\text{Married}_{cst} = \beta_0 + \beta_1 \text{Marriage Subsidy}_{cst} + \beta_2 \text{Legal Marriage}_{st} + \beta_3 X_{cst} + \delta_t + \mu_s + v_{cst} \qquad (1)$$

Married is a binary variable that takes a value of one if couple c in state s in year t is married. We control for the *Marriage Subsidy* separately from the binary variable *Legal Marriage*, so the coefficient β_1 on *Marriage Subsidy* isolates the effect of marriage non-neutrality of the tax code, which is a consequence of federal and state marriage recognition, while β_2 captures the direct effect of marriage legalization, as in Carpenter et al. (2018). X_{cst} includes controls for the couple's sex, racial composition, age, education levels, presence of children, and number of children, along with whether state s expanded Medicaid under the ACA; in some specifications, we add additional controls that we discuss later to help deal with potential endogeneity or omitted variable concerns. δ_t and μ_s are year and state fixed effects, respectively. Year fixed effects capture time-varying shocks that may affect same-sex marriage rates overall, such as changing national attitudes about same-sex relationships that may be correlated with the *Windsor* or *Obergefell* rulings. State fixed effects capture, for example, state attitudes toward same-sex relationships or discrimination against LGBT individuals, which may be correlated with the state's decision to legalize same-sex marriages (Gao and Zhang 2016).

OLS estimation of Equation 1 may be problematic for several reasons. First, measurement error in the *Marriage Subsidy* variable may introduce bias into the OLS estimates. Income in the ACS is

likely to be reported with error. Also, we do not observe enough about the household to determine its exact tax liability and hence its marriage subsidy. We do not know enough about either problem to determine whether the resulting measurement error is classical.

Second, it is possible that community-level omitted variables in the error term are correlated with the marriage subsidy through attitudes toward both marriage recognition and labor supply in the LGBT community. This would introduce omitted variables bias. For example, if unobservable social norms are related to marriage rates, then Equation 1 becomes:

$$\text{Married}_{cst} = \beta_0 + \beta_1 \text{Marriage Subsidy}_{cst} + \beta_2 \text{Legal Marriage}_{st} + \beta_3 X_{cst} + \delta_t + \mu_s + \underbrace{\beta_4 \text{Norms}_{st} + \omega_{cst}}_{v_{cst}} \tag{2}$$

where *Norms* indicate unobservable social norms that might be state-time varying, and ω_{cst} is an idiosyncratic error, together constituting the overall error term, v_{cst}. Unobservable social norms within the LGBT community that influence marriage rates and labor supply within the couple (and, therefore, the marriage subsidy) would not be a problem if they are uncorrelated with marriage recognition. However, if norms in favor of marriage recognition also drive greater earnings equality within same-sex couples (reducing the marriage subsidy), then our OLS estimates would be biased downward; or, if norms in favor of marriage recognition also drive more traditional household specialization (raising the marriage subsidy), then our OLS estimates would be biased upward. Overall, we observe relatively more equal earners in same-sex couples than in different-sex couples (Figure 4), suggesting the first possibility, but this does not reveal whether norms altered the average earnings split in recent years.[18,19]

Third, and most importantly, labor supply of a married couple may change in response to marriage itself or in response to the same tax progressivity that causes non-neutrality of marriage. Isaac (2019b) demonstrates that changes in average tax rates for already-married couples following *Windsor* caused secondary earners in same-sex married couples to reduce their labor supply.

18. Isaac (2019b) also observed more equal earner couples among same-sex couples relative to different-sex couples. Although they do not explicitly report this statistic, this appears to be the case for Hansen, Martell, and Roncolato (2019) using the CPS and AC and for Sansone (2019) using the SIPP and ACS, based on their descriptive statistics and exposition. Those papers both examine the effect of same-sex marriage legalization on labor supply.

19. Using different-sex couples as a comparison group might control for unobservable state-level changes if they were similarly affected by earnings equality norms.

This kind of labor supply response alters the observed marriage subsidy, introducing bias into an OLS estimate of Equation 1. The direction of simultaneity bias in this situation can be difficult to predict, and depends on the magnitude of the relationship between the marriage subsidy and marriage itself, but our results suggest that it may bias estimates upward.[20]

These problems can be addressed by instrumenting for the observed marriage subsidy. We use an instrumental variables strategy based on a simulated instrument. The first-stage equation is:

$$\begin{aligned}\text{Marriage Subsidy}_{cst} = \alpha_0 + \alpha_1 \text{Predicted Marriage Subsidy}_{cst} + \alpha_2 \text{Legal Marriage}_{st} \\ + \alpha_3 X_{cst} + \delta_t + \mu_s + u_{cst}\end{aligned} \tag{3}$$

And, the second-stage equation is:

$$\text{Married}_{cst} = \beta_0 + \beta_1 \widehat{\text{Marriage Subsidy}}_{cst} + \beta_2 \text{Legal Marriage}_{st} + \beta_3 X_{cst} + \delta_t + \mu_s + \varepsilon_{cst} \tag{4}$$

$\widehat{Marriage\ Subsidy}_{cst}$ is the fitted value from Equation 3. The idea is to use characteristics of the couple to predict individual earnings and then use predicted earnings to compute a predicted marriage subsidy, which we use as an instrument for the observed marriage subsidy. Following the general methods of Dahl and Lochner (2012) and Isaac (2019b), we predict earned income for each individual and use predicted earned income and the NBER TAXSIM simulator to calculate each couple's predicted marriage subsidy. In doing so, we have found that an accurate prediction of the marriage subsidy is critical, so we implement a machine learning LASSO approach for the predictions in order to gain as much explanatory power as possible.[21]

Our goal is to identify β_1 from the gradual rollout of same-sex marriage recognition at the state and federal levels and exposure to state and federal marriage subsidies as a result. To check whether our approach does this, we gradually add controls for both partners' predicted earnings when estimating Equation 4 to ensure that β_1 does not reflect endogenous determinants of earnings.[22]

20. A bigger marriage subsidy generates an income effect, potentially reducing labor supply of both spouses. However, it also raises the marginal tax rate on the lower/secondary earner and reduces it on the higher/primary earner.

21. Since we lack a clearly exogenous, for example policy-driven, predictor that has substantial identifying power, we rely on individual characteristics collectively to help us explain earnings. Therefore, we view the first-stage, linear instrumental variables approach as "effectively a prediction exercise" (Mullainathan and Spiess 2017, page 100), which makes it well-suited to machine learning methods such as the LASSO. The LASSO uses numerous interaction terms involving the covariates and their polynomials in order to best fit the data.

22. These expanded earnings controls include a fifth-order polynomial in the couple's earned income, an indicator equal to one if neither partner

Our instrumental variables strategy alleviates the measurement error, omitted variables bias, and endogeneity concerns discussed earlier by leveraging tax variation in the predicted marriage subsidy generated by state and federal same-sex marriage legalization and recognition. We also find that our estimates are robust to including state-by-year fixed effects, which leverages variation solely from the federal tax code and further controls for state-time varying unobservables that may affect same-sex marriage rates or the state's decision to legalize same-sex marriages. We also control for marriage incentives introduced by the Affordable Care Act's premium tax credit in 2014, and we explore heterogeneous effects of the marriage subsidy depending on whether the couple has children, whether the partners are male or female, and by household earnings.

4 Data

4.1 Sample Characteristics

We use the 2012–2017 waves of the American Community Survey to construct a sample of same-sex married and cohabiting couples. We restrict the sample to couples where both partners are between 18–60 years old and are no more than 20 years apart in age. Our main sample includes 36,323 couples (20,585 cohabiting couples and 15,738 married couples).[23]

Table 4 presents couple-level summary statistics for same-sex married and cohabiting couples in the 2012–2017 waves of the American Community Survey. 43.3% of our sample of same-sex couples are married. Married couples are more likely to be female and to have children, and are also older and have slightly lower employment compared to cohabiting couples. Although our analysis uses the couple as the unit of observation, Appendix Table A1 presents individual-level summary statistics. Next, we discuss our approach to predicting individual earnings, which we use to construct our simulated marriage subsidy instrument.

works, and the earned income split between partners. In addition, Appendix C presents estimates from Equation 4 using a control function approach, which controls for all additional covariates with non-zero coefficients in the LASSO prediction of earnings in levels. Our estimated effect of the marriage subsidy is robust to this control function approach.

23. If a same-sex couple reports themselves to be married even though they reside in a state that does not recognize same-sex marriages, then we assume the couple married in a state that did recognize same-sex marriages, which makes them ineligible for the state marriage subsidy until after marriage legalization in their own state or *Obergefell*.

4.2 Predicted Earnings

To alleviate concerns outlined above about endogeneity in the observed couple-specific marriage subsidy, we follow the general methods of Dahl and Lochner (2012) and Isaac (2019b) by predicting earned income for each individual and using predicted earned income and the NBER TAXSIM simulator to calculate each couple's predicted marriage subsidy. Because we have found that an accurate prediction of the marriage subsidy is critical, we implement a machine learning LASSO approach for the predictions in order to gain as much explanatory power as possible. The LASSO is a model selection method that uses a penalized regression to select the covariates that best predict earned income using OLS (Tibshirani 2011).[24] This approach considers a large number of covariates and interactions while allowing the LASSO to select the subset of variables that best fit the data. Variables that we included, but which the LASSO may have ultimately ignored, include five-year age group dummies, four education level dummies, number of children, dummies for race, sex, two-digit occupation dummies, college major, and state of residence, as well as pairwise interactions between all of these variables.[25] We limit our prediction sample to individuals observed in 2012 so that our predictions do not reflect potential labor supply responses to the policies we study.[26]

We found that we gained important explanatory power when we first use a LASSO to predict whether each individual has positive earnings using a linear probability model. We convert these predicted probabilities into a binary variable by setting a threshold in the distribution of predicted positive earnings such that the binary variable has the same observed sample mean of having positive predicted earnings. If the predicted probability is less than this threshold, we assign \$0 in predicted earnings to that individual. For individuals who have positive predicted earnings, we use another LASSO regression to predict their earnings level, estimated on those in the sample with positive observed earnings. The LASSO regression output is available upon request.

24. The LASSO is similar to a ridge regression, but uses an L1 norm constraint rather than the L2 norm constraint of the ridge regression.

25. As we noted above, we are more concerned with explanatory power, as suggested by Mullainathan and Spiess (2017), than with eliminating all sources of bias, which some particular covariates, like college major and occupation, might introduce. The control function results, which include in the first- and second-stage equations all covariates with non-zero coefficients from the LASSO prediction model of earnings in levels, as reported in Appendix C, alleviates concerns about bias.

26. We also followed this process using all years of the ACS and adding year fixed effects to the list of covariates. Our main findings using all years are slightly smaller in magnitude than those we present below and remain highly significant. They are available upon request.

Figure 5 displays kernel densities for reported and predicted earned income, split to show the higher-earning and lower-earning member of each couple. Our two-step approach to predict zero and then positive conditional earnings helps us capture the relatively higher non-employment rate for secondary earners, on the right side of the figure, although for both we underpredict the frequency of positive but very low earnings and overpredict the frequency of earnings in the middle range. The R^2 of the first- and second-step LASSO regressions are 0.454 for having positive earnings and 0.299 for earnings conditional on having positive earnings; and the mean predicted earnings split is 0.645, compared to the mean reported earnings split of 0.731; all of which suggest a reasonably accurate prediction process.[27] Table 3 and Appendix Table A1 reports these mean values separately for married and cohabiting couples, and Figure 6 compares the joint distribution of the couple's total earned income and the earnings split between partners for reported and predicted earned income. They make it clear that our prediction process tends to understate earned income and the earnings split a little; for example, more of the red circles in Figure 6, indicating predicted values, appear toward the lower center, and more of the black circles, indicating observed values, appear tailing off on the right.

We use predicted earned income and the NBER TAXSIM simulator to calculate the predicted marriage subsidy for each couple. We focus on earned income only rather than total income because positive income from other sources is infrequent and often small, making it more difficult to predict accurately. We calculate the tax liability as a function of only predicted earned income, number of children, and state of residence.[28] As reported in Table 3, we obtain more compressed variation in predicted marriage subsidies relative to actual marriage subsidies. This may reflect the lack of an endogenous labor supply response to marriage, which would increase the observed marriage subsidy for married couples and which our prediction strategy is designed to ignore; and it may reflect the facts that we are only using household earnings, along with family structure, to predict the marriage subsidy, and that we underpredict earnings and the earnings split a little, as noted earlier. Nevertheless, as we show later, we obtain a strong first-stage estimate.

27. These mean earnings splits are for married and cohabiting couples combined and are conditional on having positive observed household earned income.

28. We are therefore assuming that having children is exogenously determined with respect to marital status and any tax-induced child subsidies.

Table 3 also makes clear that the majority of the variation in the combined federal and state marriage subsidy is due to the federal subsidy rather than the state subsidy. The mean state marriage subsidy is only 4.4–11.8% of the mean combined federal and state marriage subsidy. Therefore, our identification of the effect of the marriage subsidy on the probability of being married comes largely from the federal subsidy and the *United States v. Windsor* ruling.

4.3 Marriage Transitions

One issue with our approach to sample definition is that we omit non-cohabiting people, some of whom are in relationships and may be encouraged or discouraged from marrying by the tax code. We cannot determine how many couples married without cohabiting first using the ACS, so we use the 2014 Survey of Income and Program Participation (SIPP) to gauge this, although the resulting sample of same-sex couples is small. The 2014 panel was the first to differentiate between same-sex and different-sex partnerships, and therefore allows us to follow individuals over time conditional on observing them as either unmarried or married partners.

Table 5 presents relationship transitions for individuals in same-sex relationships (Panel A) and, for the sake of comparison, different-sex relationships (Panel B) whom we can observe for at least two years. Among newly married same-sex couples (couples we observe as married in year t and not married in year $t-1$), 85.9% were cohabiting the year before. In contrast, among newly married different-sex couples, 62.1% were cohabiting the year before.[29] Thus, while the newly-married were more commonly cohabiting than not beforehand, this was especially the case for a large majority of same-sex couples. Though the sample size is small, this analysis suggests that our approach using the ACS does not omit many non-cohabiting couples who are contemplating marriage.

29. Of the 150 individuals we observe in the SIPP in same-sex marriages, 28.7% were unmarried and cohabiting the year before and 4.7% were single the year before, yielding $\frac{0.287}{0.287+0.047} = 85.9\%$ of newly married same-sex couples who were cohabiting the year before. Of the 22,153 individuals we observe in different-sex marriages, 3.6% were unmarried and cohabiting the year before and 2.2% were single the year before, yielding $\frac{0.036}{0.022+0.036} = 62.1\%$ of newly married different-sex couples who were cohabiting the year before.

5 Results

Our baseline model, presented next, is a simple average effect of the marriage subsidy on the probability of being married. After that, we allow the effect of the marriage subsidy to vary by household earnings. The set of models after that consider heterogeneous parameterizations of the treatments, allowing the effect of the marriage subsidy to vary for each tax recognition treatment; allowing the effect of the federal versus state marriage subsidies to differ; and allowing the effect of a marriage subsidy versus penalty to differ. Then, another set of models consider heterogeneous effects by couple characteristics, depending on whether the couple has children, and on whether the partners are male or female. Lastly, we explore robustness to omitted variables, including state-by-year fixed effects. For each model, we gradually add controls for the couple's predicted earned income and predicted earned income split to ensure that our estimated marriage subsidy effect is driven by tax variation and not by our method for predicting earnings.

5.1 Baseline Estimates

Table 6 presents the OLS and IV estimates of the effect of the combined federal and state marriage subsidy on the probability of being married, with the first-stage coefficients reported in the bottom panel.[30] The OLS estimates indicate that a $1,000 increase in the total marriage subsidy is associated with a 0.3–0.5 percentage point increase (0.7–1.2%) in the probability of being married, which implies a marriage-subsidy elasticity of 0.006–0.010 ($p < 0.01$). Although these estimates are very small, they are statistically significant and are similar in magnitude to some others found in the literature (e.g., by Alm and Whittington 1995a; Eissa and Hoynes 2003; Bastian 2017; Michelmore 2018).

As noted earlier, however, OLS estimates of the effect of the marriage subsidy on marriage may be biased due to measurement error, omitted variables, or endogeneity due to labor supply changes that are caused by marriage. We use an instrumental variables strategy to address these concerns, in which we instrument for the observed marriage subsidy with the predicted marriage

30. Table A2 presents the baseline OLS and reduced form estimates.

subsidy.[31] The first-stage coefficients, in the lower panel of Table 6, are highly significant, and range between 0.55 and 0.65. Notably, the first-stage coefficient gets bigger as we add controls for the partners' earnings (using a fifth-order polynomial) and earnings split, so this reduces concern that the simulated IV might still incorporate endogenous variation related to earnings. The first-stage coefficients differ from one in part because we only use predicted earned income instead of income from all sources when computing the predicted marriage subsidy, and in part because our simulated IV approach, as designed, abstracts from endogenous determinants of earnings. For example, some couples who marry are likely to specialize within the household, which would tilt the earnings split and raise the observed marriage subsidy but not our predicted one, for married relative to cohabiting households.

The instrumental variables estimates, also shown in Table 6, remain statistically significant at the 1% level. We estimate that a $1,000 increase in the combined federal and state marriage subsidy causes a 1.0–1.5 percentage point (2.3–3.5%) increase in the probability of being married. These estimates are substantially larger than the OLS estimates and suggest that couples are more responsive to the marriage subsidy than they otherwise appear to be. Nevertheless, the coefficient estimates translate to a relatively small marriage-subsidy elasticity of 0.021–0.030 ($p < 0.01$). This elasticity is similar in magnitude to some found in the literature (e.g., by Alm and Whittington 1995a; Eissa and Hoynes 2003; Herbst 2011), but are smaller than some others, especially recent ones based on EITC variation, (e.g., by Alm and Whittington 1999; Fisher 2013; Bastian 2017; Michelmore 2018; Gayle and Shephard 2019); we consider possible heterogeneity in responsiveness by household income level below.

Notably, the IV estimates are insensitive to the inclusion of controls for the couple's predicted earnings or predicted earnings split, as shown in the remaining columns of Table 6; the goal of these additional specifications is to isolate the variation arising from the tax code exclusive of the predicted level of and split in earnings.[32]

31. Recall that we use income from all sources, number of children, and state when calculating the observed marriage subsidy, and only use predicted earned income, number of children, and state when calculating the predicted marriage subsidy.

32. In addition to the expanded earnings controls listed in Table 6, we have also estimated a control function specification that is similar in nature to Dahl and Lochner's (2012) approach. This specification includes all covariates with non-zero coefficients from the LASSO prediction of earnings in levels. The goal of this specification is to additionally control for the inputs to predicted earned income, so that identification of the effect of the

It is also notable that access to legal same-sex marriage at the state level increases the probability of being married by 6.7–6.8 percentage points (15.5–15.7%), controlling for the tax-related effect. This estimate is smaller than those from Carpenter et al. (2018), but corroborate their main conclusions that access to legal same-sex marriage in one's state increases marriage rates.

5.2 Heterogeneous Effects by Earnings

As we noted above, the marriage elasticity implied by our baseline estimates is relatively small, especially compared to recent estimates based on EITC variation. Since the EITC affects relatively low-earning couples, it is worth exploring whether responsiveness to the marriage subsidy in our sample differs by household earnings level. Therefore, we estimate our baseline IV model again, while interacting the marriage subsidy with a 5^{th}-order polynomial in household earned income.

The resulting elasticity estimate and 95% confidence interval is depicted in Figure 7. These results confirm that the marriage elasticity declines with total household earnings, though a lack of power makes these results suggestive rather than conclusive. Our point estimate indicates an elasticity in the 0.10–0.15 range at low earnings levels (which is close to estimates in the EITC literature), declining to around 0.05 for household earnings of $100,000. The elasticity remains above the baseline estimate of 0.021 (displayed in Figure 7 as the dashed black line) for households earning less than $229,000 and is statistically different than zero over an earnings range of around $20,000-$580,000. We use the point estimates from this specification to simulate the effect of the Tax Cuts and Jobs Act on the probability of marrying in Section 6.

5.3 Heterogeneous Effects by Other Characteristics

Besides that, we consider other ways in which the treatment effect might be heterogeneous. Table 7 presents IV estimates that distinguish the effect of the marriage subsidy arising from each tax recognition policy treatment outlined in Table 2 or arising from the federal versus state tax

marriage subsidy is driven by changes in the tax code due to marriage recognition rather than cross-sectional variation created during the prediction process. These results are presented in Appendix C.

codes.[33] We find that the marriage subsidy has an effect that is larger in magnitude, but is imprecisely estimated and insignificant, before *United States v. Windsor*, has a slightly larger and significant effect of 1.4–1.9 percentage points per $1,000 as a result of *Windsor* and post-*Windsor* state legalization, and has a slightly smaller and significant effect of 0.8–1.3 percentage points per $1,000 after *Obergefell* compared to the baseline estimates in Table 6. These effects suggest that the introduction of the federal marriage subsidy due to *Windsor* plays an important role in our estimation.

The second specification in Table 7 explicitly allows the effect of the federal marriage subsidy to differ from the effect of the state marriage subsidy. We find that our main estimates are driven almost entirely by variation in the federal marriage subsidy as opposed to the state subsidy. Our findings corroborate Light and Omori (2008), who find no significant effect of the state marriage tax penalty on the probability of marrying or divorcing. However, the standard errors on our state marriage subsidy estimates are large, and we cannot determine whether this reflects weaker identification arising from less state progressivity or reduced salience of state income taxes.

Table 8 presents IV estimates that distinguish a marriage subsidy from a marriage penalty.[34] We find that our main estimates are driven by a positive marriage effect among couples expecting a subsidy (with a point estimate that is a little larger than our baseline IV estimate) rather than a negative marriage effect among couples expecting a penalty. This suggests that the response to tax reforms, like the recent one, that reduce average marriage penalties may be noteworthy, but that tax reforms that increase average marriage penalties may have little effect. It should be noted, however, that there are three times as many couples expecting to face a subsidy rather than a penalty so there is more identifying variation among that group.

Next, we consider heterogeneity among sub-groups in our sample of same-sex couples. Table 9 explores heterogeneous effects of the marriage subsidy depending on whether the couple has children and whether the partners are male or female.[35] We do not find evidence of heterogeneous

33. Table A3 presents the corresponding OLS estimates, Table A4 presents the corresponding reduced form estimates, and Table A5 presents all coefficients from the IV specification.

34. Table A6 presents the corresponding OLS estimates, Table A7 presents the corresponding reduced form estimates, and Table A8 presents all coefficients from the IV specification.

35. Table A9 presents the corresponding OLS estimates, Table A10 presents the corresponding reduced form estimates and Table A11 presents

effects by the presence of children, although couples with children are more likely to be married overall. We estimate significantly different effects by sex, with male couples being more responsive to the marriage subsidy than female couples.[36] Note that there should be a mechanical equivalence of the effect of the marriage subsidy among women and men in studies of different-sex couples because they marry each other. However, this equivalency no longer occurs in our context, and so our estimates of the effect of the marriage subsidy by sex may speak more broadly to differences in behavioral responses to taxes. In this case, we conclude that men are more responsive across the marriage margin in response to changes in the marriage subsidy.[37]

5.4 Robustness

In this subsection, we address concerns that may remain about endogeneity or omitted variables. It may yet be that state-level attitudes toward same-sex relationships and discrimination against LGBT individuals are correlated with the state's decision to legalize same-sex marriage. It is also possible that state-time varying social norms within the LGBT community continue to confound our estimates. To address these concerns, we replace the separate state and year fixed effects in our main models with state-by-year fixed effects, and re-estimate our baseline specification and the specification that allows the effect of the federal marriage subsidy to differ from the effect of the state marriage subsidy. The state-by-year fixed effects will capture state-time varying shocks and unobservables that may affect same-sex marriage rates or the state's decision to legalize same-sex marriages. This specification no longer allows us to identify and estimate coefficients on the *Legal Marriage* and state Medicaid expansion dummy variables, but leaves intact the federal and state marriage subsidy variation. Identification of the effect of the federal subsidy should be similar in this context as in our main specifications because the *Windsor* ruling affected all same-sex married couples regardless of where they live or whether their state of residence recognized same-sex

all coefficients from the IV specification.

36. The male and female estimates in columns 2 and 4 of Table 9 are significantly different at the 10% level. The male and female estimates in column 6 of Table 9 are significantly different at the 5% level.

37. We also estimated our models separately for couples between 18–55 years old and couples who are 56 years old or above. In these specifications, the magnitudes are similar between age groups, but the coefficients among the older group are rarely significant. The coefficient on the *Legal Marriage* dummy variable is only significant for the younger age group (it is smaller in magnitude, but still positive, for the older age group), and the coefficient on the *Male* dummy variable is positive and significant for the older age group (it is insignificant for the younger age group). These results are available upon request.

marriage. Identification of the effect of the state marriage subsidy is weaker, however, because it is no longer driven by state same-sex marriage legalization, but instead driven by cross-sectional variation in predicted earnings and number of children.

Table 10 presents the estimates with state-by-year fixed effects. All of our first stage estimates continue to be quite similar in magnitude and highly significant. Our main estimates that use the combined federal and state subsidy are essentially unchanged. When separating the effect of the federal and state subsidies, this specification with state-by-year fixed effects shows a slightly smaller effect of the federal subsidy, but it remains significant. The coefficient on the state subsidy is positive as in our main estimates, but it remains insignificant with slightly larger standard errors, which may reflect weaker identification. Overall, it does not appear that state-time varying omitted variables are confounding our estimates of the effect of the marriage subsidy on the probability of being married.

Another possible concern is that other policy changes altered marriage incentives over the same time period. In particular, the Affordable Care Act (ACA) introduced marriage incentives in 2014 via the tax credit available to households with income between 100–400% of the federal poverty line who purchased health insurance through the federal or state marketplaces. The ACA tax credit can introduce marriage incentives depending upon the age-adjusted premium for each partner and the partners' income split because unmarried couples are considered separate health insurance units for the purposes of the tax credit. Following Frean, Gruber, and Sommers (2017), we use data on ACA plan premiums for the second-lowest-cost Silver plan, and the ACA age multipliers to obtain age-specific premiums.[38] We define the ACA marriage subsidy as the difference between the joint tax credit if the couple is married and the sum of the individual tax credits if the couple is unmarried.[39] Table 3 displays summary statistics of our resulting ACA marriage subsidy measure.

38. We use data from the HIX Compare dataset, made available by the Robert Wood Johnson Foundation, which allows us to identify the second-lowest-cost Silver plan in each rating area. We map the rating areas to counties, using the mean county premium for counties that fall within multiple rating areas. We are only able to match 60% of our 2015–2017 observations (tax years 2014–2016) to the plan premium data because the publicly available ACS does not identify all counties and because the HIX Compare data do not include premiums in 2014 from states that operated their own marketplaces. We also account for interactions between Medicaid eligibility and the ACA premium tax credit, so that individuals in our sample (and their children) who are eligible for Medicaid are not eligible to receive a premium tax credit. We obtained Medicaid income limits for childless adults, parents, children less than 1, children between 1-5 years old, and children between 6-18 years old from the Kaiser Family Foundation (Kaiser 2018).

39. We calculate the ACA tax credit based on federal adjusted gross income obtained from TAXSIM, assuming that each individual pays the same premium for the entire calendar year and the predicted higher earner claims any dependent children if the couple is unmarried. We follow IRS form

The ACA marriage subsidy is small relative to the federal marriage subsidy from the income tax code. Same-sex couples in 2015–2017 (tax years 2014–2016) in our sample faced an average ACA marriage subsidy of only $4-5, but, conditional on receiving any ACA marriage subsidy or penalty, couples faced an ACA marriage subsidy of approximately $400, on average.

Table 11 presents estimates controlling for the ACA marriage subsidy. All of our first stage estimates continue to be highly significant. Our main estimates of the effect of the marriage subsidy on the probability of marrying are essentially unchanged, and the coefficient on the marriage subsidy from the ACA tax credit is negative and insignificant in all specifications. We also estimate a slight decrease in the impact of access to legal same-sex marriage. Overall, we conclude that marriage incentives created by the ACA tax credit do not confound our main estimated effect of the marriage subsidy.

6 The Tax Cuts and Jobs Act

We finish by using our estimates of the effect of the marriage subsidy to simulate changes in the probability of being married as a result of the 2018 Tax Cuts and Jobs Act (TCJA). The TCJA generally increased the marriage subsidy (or decreased the marriage penalty) for many high-earning couples by reducing progressivity: at the low end of the tax schedule by increasing the standard deduction and adjusting the married-filing jointly tax brackets to be roughly double those of the single tax brackets, and at the high end by reducing marginal tax rates. Our estimates suggest, therefore, that the TCJA likely increased the probability of marrying, although the highly non-uniform changes, depending on both the level and split of household earnings, means that some couples faced dramatic increases in marriage incentives while others faced less pronounced increases. Figure 1 displays the marriage subsidy in 2017 and 2018 as a function of the number of children, the couple's total earned income, and the split in the partners' earned incomes. Many childless or high-earning couples shifted from facing a marriage penalty to a marriage subsidy, and the marriage subsidy increased on net for all couples earning more than roughly $250,000.

8962, which contains instructions to calculate each health insurance unit's ACA tax credit.

Couples at very low income levels saw little change, and in some cases faced lower subsidies (or higher penalties).

We use estimates from our household earnings heterogeneity specification for this exercise.[40] We multiply these point estimates by the simulated dollar change in the marriage subsidy between 2017 and 2018 for each unmarried cohabiting couple in our ACS sample to calculate the change in the marriage probability as a percentage of the base marriage rate.

Figure 8 illustrates our simulated changes in the probability of being married as a result of the TCJA, throughout the earned income distribution, along with the mean change within each $10,000 earnings bin.[41] While the figure shows little average change for cohabiting couples earning less than $230,000, the range for most households with the same earnings includes a five percent increase or decrease. Meanwhile, the average change becomes positive at increasingly high earning levels, for cohabiting couples earning above $240,000, and essentially all cohabiting couples earning above $350,000 face an increase in marriage incentives.

7 Conclusion

The staggered rollout of marriage recognition at the state and federal levels meant that same-sex couples were exposed to varying levels of state and federal marriage incentives through the income tax code. In this paper, we provide new evidence of the effects of taxes on the probability of being married using a sample of same-sex married and cohabiting couples from the 2012–2017 American Community Surveys, along with recent state and federal tax variation created by same-sex marriage legalization and recognition.

We implement a simulated instrument approach for each couple's marriage subsidy, using a machine learning LASSO approach to predict individual earnings and then using the NBER TAXSIM simulator to calculate the couple's predicted marriage subsidy. This approach allows us to exploit plausibly exogenous variation in the marriage subsidy, including specifications that control for

40. Figure 7 displays the elasticities implied by these estimates.

41. Figure 8 displays the change in the probability of being married as a percent of the base marriage rate of 0.433. Figure A1 in Appendix A displays the percentage point change the probability of being married.

state-by-year fixed effects. The majority of the variation we leverage originates from the *United States v. Windsor* ruling that required federal tax recognition of legal state marriages, with modest additional variation arising from early state legalization and the *Obergefell v. Hodges* ruling that mandated legalization in the remaining states.

Our instrumental variables estimates imply that a $1,000 increase in the total marriage subsidy causes a 1.0–1.5 percentage point (2.3–3.5%) increase in the probability of being married, implying a marriage-subsidy elasticity of 0.021–0.030. This estimate is smaller than some in the literature, especially recent estimates based on EITC variation, which is concentrated at low earning levels. We find further suggestive evidence that the elasticity declines with total household earnings, with estimates of 0.10-0.15 at low earning levels (which is close to estimates found in recent EITC papers), declining to around 0.05 for household earnings of $100,000 and not falling below statistical significance until households earnings reach around $580,000.

Finally, we use our point estimates to simulate changes in the probability of being married as a result of the 2018 Tax Cuts and Jobs Act. Our simulations suggest that there were small changes in the probability of being married, averaging to about zero but with a range of +/- five percent, for cohabiting couples earning less than $230,000; and sizable increases for higher-earning cohabiting couples. Our analysis not only speaks to the particular economic changes facing same-sex couples, but also offers an opportunity to learn more about couples' responsiveness to marriage incentives more generally, and especially how these responses differ by income.

References

Alm, James, J. Sebastian Leguizamon, and Susane Leguizamon. 2014. "Revisiting the Income Tax Effects of Legalizing Same-Sex Marriages." *Journal of Policy Analysis and Management* 33 (2): 263–289.

Alm, James, and Leslie A. Whittington. 1995a. "Does the Income Tax Affect Marital Decisions?" *National Tax Journal* 48 (4): 565–572.

———. 1995b. "Income taxes and the marriage decision." *Applied Economics* 27 (1): 25–31.

Alm, James, and Leslie A. Whittington. 1997. "Income taxes and the timing of marital decisions." *Journal of Public Economics* 64 (2): 219–240.

———. 1999. "For Love or Money? The Impact of Income Taxes on Marriage." *Economica* 66 (263): 297–316.

Antecol, Heather, and Michael D. Steinberger. 2013. "Labor Supply Differences Between Married Heterosexual Women and Partnered Lesbians." *Economic Inquiry* 51 (1): 783–805.

Badgett, M. V. Lee. 1995. "The Wage Effects of Sexual Orientation Discrimination." *Industrial and Labor Relations Review* 48 (4): 726–739.

Bastian, Jacob. 2017. "Unintended Consequences? More Marriage, More Children, and the EITC." *Working Paper.*

Black, Dan, Gary Gates, Seth Sanders, and Lowell Taylor. 2007. "The Measurement of Same-Sex Unmarried Partner Couples in the 2000 U.S. Census." *California Center for Population Research On-Line Working Paper Series.*

Borella, Margherita, Mariacristina De Nardi, and Fang Yang. 2019. "Are Marriage-Related Taxes and Social Security Benefits Holding Back Female Labor Supply?" *NBER Working Paper No. 23972.*

Buchmueller, Thomas, and Christopher S. Carpenter. 2010. "Disparities in Health Insurance Coverage, Access, and Outcomes for Individuals in Same-Sex Versus Different-Sex Relationships, 2000–2007." *American Journal of Public Health* 100 (3): 489–495.

Carpenter, Christopher S. 2007. "Revisiting the income penalty for behaviorally gay men: Evidence from NHANES III." *Labour Economics* 14:25–34.

Carpenter, Christopher, Samuel T. Eppink, Gilbert Gonzales, and Tara McKay. 2018. "Effects of Access to Legal Same-Sex Marriage on Marriage and Health: Evidence from BRFSS." *NBER Working Paper No. 24651.*

Dahl, Gordon B., and Lance Lochner. 2012. "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit." *American Economic Review* 102 (5): 1927–1956.

Dickert-Conlin, Stacy. 1999. "Taxes and Transfers: Their Effect on the Decision to End a Marriage." *Journal of Public Economics* 73 (2): 217–240.

Dickert-Conlin, Stacy, and Scott Houser. 2002. "EITC and Marriage." *National Tax Journal* 55 (1): 25–40.

Eissa, Nada, and Hilary Williamson Hoynes. 2003. "Good News for Low Income Families? Tax-transfer Schemes and Marriage." *CESifo Venice Summer Institute 2003; Workshop on Taxation and the Family.*

Ellwood, David T. 2000. "The Impact of the Earned Income Tax Credit and Social Policy Reforms on Work, Marriage, and Living Arrangements." *National Tax Journal* 53 (4): 1063–1106.

Feenberg, Daniel Richard, and Elizabeth Coutts. 1993. "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management* 12 (1): 189–194.

Finlay, Keith, and David Neumark. 2010. "Is Marriage Always Good for Children?: Evidence from Families Affected by Incarceration." *Journal of Human Resources* 45 (4): 1046–1088.

Fisher, Hayley. 2013. "The Effect of Marriage Tax Penalties and Subsidies on Marital Status." *Fiscal Studies* 34 (4): 437–465.

Frean, Molly, Jonathan Gruber, and Benjamin D. Sommers. 2017. "Premium subsidies, the mandate, and Medicaid expansion: Coverage effects of the Affordable Care Act." *Journal of Health Economics* 53:72–86.

Friedberg, Leora, Dina Guo, and Dajun Lin. 2018. "Health Interdependency in the Household." *Working Paper.*

Gao, Huasheng, and Wei Zhang. 2016. "Employment Nondiscrimination Acts and Corporate Innovation." *Management Science* 63 (9): 2982–2999.

Gates, Gary J., and Michael D. Steinberger. 2010. "Same-Sex Unmarried Partner Couples in the American Community Survey: The Role of Misreporting, Miscoding and Misallocation." *Working Paper.*

Gayle, George-Levi, and Andrew Shephard. 2019. "Optimal Taxation, Marriage, Home Production, and Family Labor Supply." *Econometrica* 87 (1): 291–326.

Gonzales, Gilbert, and Lynn A. Blewett. 2014. "National and State-Specific Health Insurance Disparities for Adults in Same-Sex Relationships." *American Journal of Public Health* 104 (2): e95–e104.

Hansen, Mary Eschelbach, Michael E. Martell, and Leanne Roncolato. 2019. "A labor of love: The impact of same-sex marriage on labor supply." *Review of Economics of the Household.*

Henry J. Kaiser Family Foundation. 2018. *Trends in Medicaid Income Eligibility Limits.* Accessed September 14, 2019. `https://www.kff.org/data-collection/trends-in-medicaid-income-eligibility-limits/`.

Herbst, Chris M. 2011. "The Impact of the Earned Income Tax Credit on Marriage and Divorce: Evidence from Flow Data." *Population Research and Policy Review* 30 (1): 101–128.

Isaac, Elliott. 2019a. "Marriage, Divorce, and Social Safety Net Policy." *Working Paper.*

Isaac, Elliott. 2019b. "Suddenly Married: Joint Taxation and the Labor Supply of Same-Sex Married Couples After *U.S. v. Windsor*." *Working Paper.*

Light, Audrey, and Yoshiaki Omori. 2008. "Economic Incentives and Family Formation." *Working Paper.*

Lyle, David S. 2006. "Using Military Deployments and Job Assignments to Estimate the Effect of Parental Absences on Household Relocations on Childrens Academic Achievement." *Journal of Labor Economics* 24 (2): 319–350.

Michelmore, Katherine. 2018. "The earned income tax credit and union formation: The impact of expected spouse earnings." *Review of Economics of the Household* 16 (2): 377–406.

Mullainathan, Sendhil, and Jann Spiess. 2017. "Machine Learning: An Applied Econometric Approach." *Journal of Economic Perspectives* 31 (2): 87–106.

Oreffice, Sonia. 2011. "Sexual orientation and household decision making." *Labour Economics* 18 (2): 145–158.

———. 2016. "Sexual Orientation and Marriage." *Estudios de Economia Aplicada* 34 (1): 7–34.

Plug, Erik, Dinand Webbink, and Nick Martin. 2014. "Sexual Orientation, Prejudice, and Segregation." *Journal of Labor Economics* 32 (1): 123–159.

Robert Wood Johnson Foundation. 2019. *HIX Compare 2014-2016 Datasets.* Accessed September 17, 2019. `http://www.rwjf.org/en/library/research/2017/04/hix-compare-2014-2017-datasets.html`.

Rosen, Harvey S. 1977. "Is it time to abandon joint filing?" *National Tax Journal:* 423–428.

Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. 2019. *IPUMS USA: Version 9.0 [dataset].* Minneapolis, MN: IPUMS, 2019. `https://doi.org/10.18128/D010.V9.0`.

Sanderson, Eleanor, and Frank Windmeijer. 2016. "A weak instrument F-test in linear IV models with multiple endogenous variables." *Journal of Econometrics* 190 (2): 212–221.

Sansone, Dario. 2019. "Pink Work: Same-Sex Marriage, Employment and Discrimination." *Journal of Public Economics* 180.

Sjoquist, David L., and Mary Beth Walker. 1995. "The Marriage Tax and the Rate and Timing of Marriage." *National Tax Journal* 48 (4): 547–558.

Stevenson, Adam. 2012. "The Labor Supply and Tax Revenue Consequences of Federal Same-Sex Marriage Legalization." *National Tax Journal* 65 (4): 783–806.

Tebaldi, Edinaldo, and Bruce Elmslie. 2006. "Sexual orientation and labour supply." *Applied Economics* 38 (5): 549–562.

Tibshirani, Robert. 2011. "Regression shrinkage and selection via the lasso: a retrospective." *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 73 (3): 273–282.

U.S. Census Bureau. 2009. *History: 2000 Census of Population and Housing.* Vol. 1. U.S. Government Printing Office.

Whittington, Leslie A., and James Alm. 1997. "'Till Death or Taxes Do Us Part: The Effect of Income Taxation on Divorce." *Journal of Human Resources* 32 (2): 388–412.

Young, Alwyn. 2019. "Consistency without Inference: Instrumental Variables in Practical Application." *Working Paper.*

Zissimopoulos, Julie M., Benjamin R. Karney, and Amy J. Rauer. 2015. "Marriage and economic well being at older ages." *Review of Economics of the Household* 13 (1): 1–35.

Table 1
Methods and Results in Marriage-Subsidy Studies

Study	Identification	Data	Sample	Marriage measure	Elasticity estimate
Alm and Whittington (1995a)	U.S. tax reforms	Annual time series from 1947–1988	Married vs. all unmarried	Stock	$\hat{\varepsilon} < 0.050$
Alm and Whittington (1995b)	U.S. tax reforms	PSID 1985 and 1989	Married vs. all unmarried	Flow	$\hat{\varepsilon} = 0.012$
Sjoquist and Walker (1995)	U.S. tax reforms	Annual time series from 1947–1987	Married vs. all unmarried	Stock	null
Alm and Whittington (1999)	U.S. tax reforms	PSID 1968–1992	Married vs. all unmarried	Flow	$\hat{\varepsilon} = 0.230$
Ellwood (2000)	EITC reforms	March CPS 1986 and 1999	Married vs. all unmarried	Stock	null
Dickert-Conlin and Houser (2002)	EITC reforms	SIPP 1990–1993	Married vs. all unmarried	Flow	null
Eissa and Hoynes (2003)	U.S. tax reforms	March CPS 1985–1998	Married vs. all unmarried	Stock	$\hat{\varepsilon} = 0.004$
Light and Omori (2008)	State tax reforms	NLSY79 1979–2004	Married vs. unmarried cohabiting vs. non-cohabiting single	Flow	null
Herbst (2011)	EITC reforms	Vital Statistics 1977–2004	Married vs. all unmarried	Flow	$\hat{\varepsilon} = 0.094^{a}$
Fisher (2013)	U.S. tax reforms	March CPS 1984–2008	Married vs. unmarried cohabiting^{b}	Stock	$\hat{\varepsilon} = 1.100$
Bastian (2017)	EITC reforms	PSID 1980–2013	Married vs. all unmarried	Flow	$\hat{\varepsilon} = 0.222^{c}$
Michelmore (2018)	EITC reforms	SIPP 2001, 2004, 2008	Married vs. non-cohabiting single^{d}	Flow	$\hat{\varepsilon} = 0.248^{e}$
Friedberg and Isaac (2019)	**Same-sex marriage recognition**	**ACS 2012–2017**	**Married vs. unmarried cohabiting**	Hybrid	$\hat{\varepsilon} = \mathbf{0.021}$, varies with earnings
Gayle and Shephard (2019)	Marriage market variation, structural model	ACS 2006 and ATUS 2002–2007	Married vs. non-cohabiting single	Stock	$\hat{\varepsilon} = 0.100$
Isaac (2019a)	EITC reforms	NLSY79 1991–1998	Married vs. all unmarried, married vs. cohabiting	Flow	null

Notes: Column 2 highlights the main source of policy variation. Many studies also make use of U.S. income tax progressivity, cross-state income tax variation, and cross-sectional variation in total household income and the income split between partners. Column 6 reports the marriage elasticity, with respect to the marriage subsidy, from the authors' preferred specification when statistically significant, or else we compute the elasticity when not reported as such by the authors. When the preferred specification yields an insignificant estimate, we report it as "null." "PSID" refers to the Panel Study of Income Dynamics, "March CPS" refers to the March Current Population Survey, "NLSY79" refers to the 1979 National Longitudinal Survey of Youth, "ACS" refers to the American Community Survey, and "ATUS" refers to the American Time Use Survey.

a: Calculated as $\frac{0.073}{\frac{1000}{1294}}$ given a $1,000 increase in maximum EITC, a reported mean maximum EITC of $1,294, and an estimated effect size of a 7.3% increase in new marriages caused by a $1,000 increase in EITC.

b: Cohabitation is inferred between 1984–1992.

c: Calculated as $\frac{\ln(0.58+0.007)-\ln(0.58)}{\ln(50.5+2.8)-\ln(50.5)}$ given author's calculation, reported mean marriage rate of 0.58, an estimated effect size of a 0.7 pp increase in probability of being married caused by a $1,000 increase in EITC, and author's reported statistic that a $1,000 increase in EITC causes an increase in family earnings of approximately $2,800.

d: Michelmore (2018) also estimates a model examining transitions from being single to unmarried cohabitation, but does not report estimates from a model examining transitions from unmarried cohabitation to marriage.

e: Calculated as $\frac{\frac{0.027}{0.139}}{\frac{2566}{3275}}$ given weighted average of reported mean probability of marrying of 0.139, a reported mean decrease in EITC benefits of $2,566 relative to EITC benefits while single of $3,275, and and estimated effect size of a 2.7 pp decrease in probability of marrying caused by expecting to lose EITC benefits.

Table 2
Treatment Effects Resulting From the Recognition of Same-Sex Marriage

		Treatment		
		Legalization	State marriage subsidy	Federal marriage subsidy
2004–2012	State legalization pre-*Windsor*	✓	✓	
2013	*United States v. Windsor*			✓
2013–2014	State legalization post-*Windsor*	✓	✓	✓
2015–	*Obergefell v. Hodges*	✓	✓	✓

Table 3
Couple-Level Reported and Predicted Earnings Statistics

	Married couples	Cohabiting couples
Reported earnings	126,327.93	105,837.67
	(119,834.05)	(105,403.75)
Predicted earnings	111,497.42	103,325.29
	(58,092.51)	(54,421.64)
Reported earnings split	0.744	0.721
	(0.201)	(0.173)
Predicted earnings split	0.648	0.642
	(0.195)	(0.179)
Fed + st marriage subsidy (reported income)	1,350.39	521.04
	(5,575.28)	(3,295.19)
Fed + st marriage subsidy (predicted earned income)	776.39	515.84
	(1,918.96)	(1,471.09)
Fed marriage subsidy (reported income)	1,193.80	459.47
	(5,026.75)	(3,102.60)
Fed marriage subsidy (predicted earned income)	718.00	493.39
	(1,674.31)	(1,303.36)
St marriage subsidy (reported income)	156.59	61.58
	(1,018.67)	(590.82)
St marriage subsidy (predicted earned income)	58.39	22.45
	(399.20)	(299.54)
ACA marriage subsidy[a]	4.30	5.07
	(70.60)	(61.85)
Conditional ACA marriage subsidy[b]	404.20	395.03
	(556.73)	(380.69)
Observations	15,738	20,585

Notes: Standard deviations in parentheses. The data come from the 2012–2017 American Community Surveys and include same-sex married and cohabiting couples where both partners are between 18–60 years old and are no more than 20 years apart in age. The earnings split means are conditional on the couple having positive reported earnings.
a: This ACA marriage subsidy measure is for 2015–2017 observations only (tax years 2014–2016).
b: This ACA marriage subsidy measure is for 2015–2017 observations only (tax years 2014–2016) and is conditional on having a non-zero subsidy or penalty.

Table 4
Couple-Level Demographic Characteristics

	Married couples	Cohabiting couples
Male	0.465	0.502
	(0.499)	(0.500)
Female	0.535	0.498
	(0.499)	(0.500)
Partners are the same race	0.794	0.758
	(0.405)	(0.428)
Age of older partner	46.046	43.093
	(9.660)	(10.903)
Age of younger partner	41.575	38.146
	(9.673)	(10.399)
Age difference between partners	4.471	4.947
	(4.144)	(4.414)
Education of more educated partner	15.621	15.384
	(2.459)	(2.259)
Education of less educated partner	13.763	13.546
	(3.010)	(2.590)
Education difference between partners	1.857	1.838
	(2.257)	(2.092)
Any dependent children	0.314	0.162
	(0.464)	(0.369)
Conditional number of dependent children	1.817	1.697
	(0.979)	(0.952)
Both partners work	0.779	0.815
	(0.415)	(0.389)
Both partners work (predicted)	0.783	0.818
	(0.412)	(0.386)
Only 1 partner works	0.193	0.157
	(0.395)	(0.364)
Only 1 partner works (predicted)	0.182	0.153
	(0.386)	(0.360)
Neither partner works	0.028	0.028
	(0.165)	(0.166)
Neither partner works (predicted)	0.035	0.029
	(0.184)	(0.168)
Observations	15,738	20,585

Notes: Standard deviations in parentheses. The data come from the 2012–2017 American Community Surveys and include same-sex married and cohabiting couples where both partners are between 18–60 years old and are no more than 20 years apart in age.

Table 5
Relationship Transitions in the 2014 SIPP

Panel A: Same-Sex Couples

Transitioned from	Conditional on being in year t:		
(in year $t-1$):	Single	Cohabiting	Married
Single	0.411	0.183	0.047
Cohabiting	0.522	0.751	0.287
Married	0.067	0.066	0.667
Observations	90	213	150

Panel B: Different-Sex Couples

Transitioned from	Conditional on being in year t:		
(in year $t-1$):	Single	Cohabiting	Married
Single	0.319	0.163	0.022
Cohabiting	0.325	0.736	0.036
Married	0.356	0.101	0.941
Observations	2,465	3,591	22,153

Notes: The data come from waves 1-3 of the 2014 Survey of Income and Program Participation and include same- and different-sex married and cohabiting couples where both partners are between 18–60 years old and are no more than 20 years apart in age. The statistics are at the individual level, and include individuals we observe for two years. Each row represents the relationship status in year $t-1$, and each column represents the relationship status in year t. The relationship transition statistics in each column sum to 1, meaning that the transitions are conditional on relationship status in year t.

Table 6
Baseline OLS and IV Estimates of the Effect of the Marriage Subsidy on the Probability of Being Married

	No income controls		Expanded income controls			
	OLS	IV	OLS	IV	OLS	IV
Outcome: Married						
Marriage subsidy ($1,000s)	0.005***	0.012***	0.005***	0.015***	0.003***	0.010***
	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)
Legal marriage	0.068***	0.067***	0.067***	0.067***	0.068***	0.068***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.005	0.005	0.005	0.005	0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.001	-0.000	-0.005	-0.003	-0.008	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.156***	0.149***	0.153***	0.146***	0.154***	0.151***
	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.012)
Number of children	0.038***	0.036***	0.038***	0.034***	0.037***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.004***	0.000	0.004**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Partners' education difference	-0.002*	-0.003**	-0.000	-0.002*	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.189***	0.111**
					(0.025)	(0.048)
Partners' earnings split					0.147***	0.045*
					(0.018)	(0.025)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient		0.556***		0.566***		0.638***
		(0.028)		(0.030)		(0.042)
		[389.065]		[362.230]		[228.949]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the OLS specifications use reported earnings measures and the IV specifications use predicted earnings measures. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).

Table 7
Heterogeneous IV Estimates by Treatment Effect

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × pre-*Windsor*	0.075		0.090		0.068	
	(0.131)		(0.131)		(0.132)	
Marriage subsidy × post-*Windsor*, pre-*Obergefell*	0.016***		0.019***		0.014***	
	(0.004)		(0.005)		(0.005)	
Marriage subsidy × post-*Obergefell*	0.010***		0.013***		0.008**	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.012***		0.014***		0.010**
		(0.003)		(0.004)		(0.004)
St. marriage subsidy ($1,000s)		0.015		0.018		0.015
		(0.019)		(0.019)		(0.019)
Legal marriage	0.066***	0.067***	0.065***	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.388***	0.599***	0.387***	0.588***	0.387***	0.664***
	(0.054)	(0.037)	(0.054)	(0.037)	(0.054)	(0.048)
	[78.796]	[342.449]	[72.070]	[316.247]	[78.377]	[225.205]
1^{st} stage coefficient 2	0.552***	0.477***	0.551***	0.493***	0.576***	0.495***
	(0.042)	(0.031)	(0.043)	(0.032)	(0.050)	(0.032)
	[225.128]	[452.776]	[203.072]	[431.394]	[161.765]	[383.316]
1^{st} stage coefficient 3	0.592***		0.602***		0.651***	
	(0.037)		(0.038)		(0.047)	
	[298.549]		[301.236]		[217.551]	
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × pre-*Windsor* variable using the outcome Observed Marriage Subsidy × pre-*Windsor*. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × post-*Windsor*, pre-*Obergefell* variable using the outcome Observed Marriage Subsidy × post-*Windsor*, pre-*Obergefell*, and so on. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table 8
Heterogeneous IV Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy ×	0.015***	0.016***	0.011***
predicted subsidy	(0.003)	(0.003)	(0.004)
Marriage subsidy ×	0.001	-0.002	0.000
predicted penalty	(0.005)	(0.008)	(0.008)
Legal marriage	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Zero earner family			✓
Partners' earnings split			✓
Mean of dep var	0.433	0.433	0.433
1^{st} stage coefficient 1	0.478***	0.520***	0.578***
	(0.023)	(0.025)	(0.035)
	[438.334]	[450.592]	[298.092]
1^{st} stage coefficient 2	1.536***	1.350***	1.348***
	(0.231)	(0.213)	(0.212)
	[45.623]	[45.824]	[49.597]
Observations	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Subsidy) variable using the outcome Observed Marriage Subsidy × 1(Observed Subsidy). "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Penalty) variable using the outcome Observed Marriage Subsidy × 1(Predicted Penalty), and so on. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table 9
Heterogeneous IV Estimates by Presence of Children and Sex

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × couple has children	0.011***		0.012***		0.010***	
	(0.003)		(0.003)		(0.003)	
Marriage subsidy × childless couple	0.013***		0.017***		0.011*	
	(0.004)		(0.005)		(0.006)	
Marriage subsidy × male		0.015***		0.019***		0.014***
		(0.003)		(0.004)		(0.004)
Marriage subsidy × fem.		0.007*		0.009**		0.004
		(0.004)		(0.004)		(0.005)
Legal marriage	0.067***	0.067***	0.067***	0.066***	0.068***	0.067***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.869***	0.587***	0.876***	0.581***	0.921***	0.609***
	(0.070)	(0.038)	(0.071)	(0.039)	(0.077)	(0.047)
	[207.253]	[283.156]	[195.150]	[252.268]	[198.558]	[195.594]
1^{st} stage coefficient 2	0.447***	0.582***	0.404***	0.594***	0.409***	0.641***
	(0.026)	(0.039)	(0.025)	(0.039)	(0.032)	(0.048)
	[285.383]	[273.447]	[254.489]	[271.789]	[175.661]	[205.920]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × Has Children variable using the outcome Observed Marriage Subsidy × Has Children. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × Childless variable using the outcome Observed Marriage Subsidy × Childless, and so on. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table 10
IV Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy ($1,000s)	0.012***		0.014***		0.010***	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.011***		0.014***		0.009**
		(0.003)		(0.004)		(0.004)
St. marriage subsidy ($1,000s)		0.016		0.019		0.016
		(0.021)		(0.022)		(0.022)
Additional controls for:						
5^{th}-order polynomila in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.555***	0.598***	0.564***	0.585***	0.635***	0.661***
	(0.028)	(0.038)	(0.030)	(0.037)	(0.042)	(0.048)
	[385.993]	[328.251]	[355.282]	[299.747]	[223.634]	[220.815]
1^{st} stage coefficient 2		0.426***		0.441***		0.442***
		(0.032)		(0.033)		(0.034)
		[337.446]		[317.751]		[282.924]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

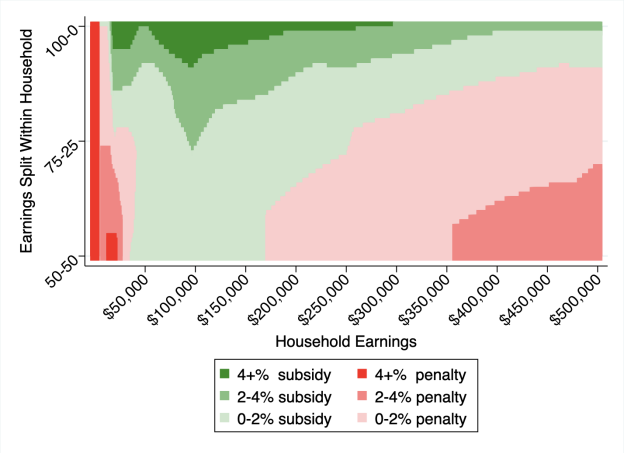
Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include state-by-year fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, and the partners' ages and education levels. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 2 is the coefficient of the Predicted Federal Marriage Subsidy variable using the outcome Observed Federal Marriage Subsidy. "Coefficient 2" in column 2 is the coefficient of the Predicted State Marriage Subsidy variable using the outcome Observed State Marriage Subsidy, and so on.

Table 11
IV Estimates Controlling for the ACA Tax Credit

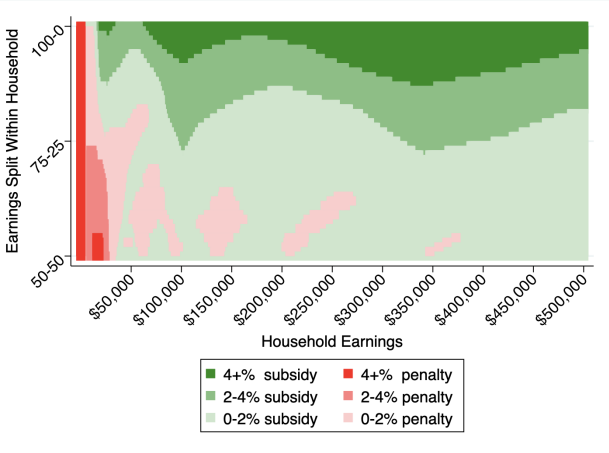
	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy ($1,000s)	0.013***	0.014***	0.008**
	(0.003)	(0.003)	(0.004)
Legal marriage	0.057***	0.057***	0.058***
	(0.010)	(0.010)	(0.010)
Marriage subsidy from ACA tax credit ($1,000s)	-0.031	-0.033	-0.033
	(0.054)	(0.054)	(0.054)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Zero earner family			✓
Partners' earnings split			✓
Mean of dep var	0.404	0.404	0.404
1^{st} stage coefficient	0.565***	0.574***	0.642***
	(0.031)	(0.034)	(0.046)
	[331.073]	[286.583]	[196.304]
Observations	28,406	28,406	28,406

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys, but we are only able to match 60% of our 2015–2017 observations (tax years 2014–2016) to the plan premium data because the publicly available ACS does not identify all counties and because the HIX Compare data do not include premiums in 2014 from states that operated their own marketplaces. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).

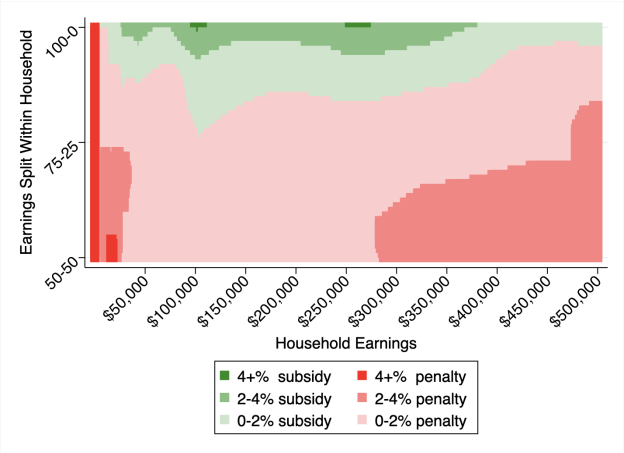
Figure 1
Marriage Taxes from 2017 and 2018



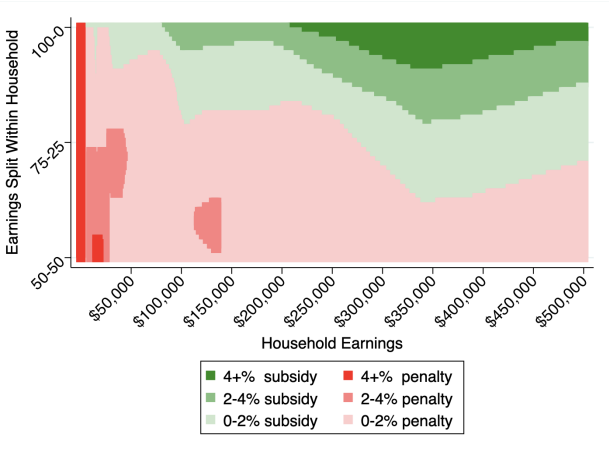
(a) 2017, no children



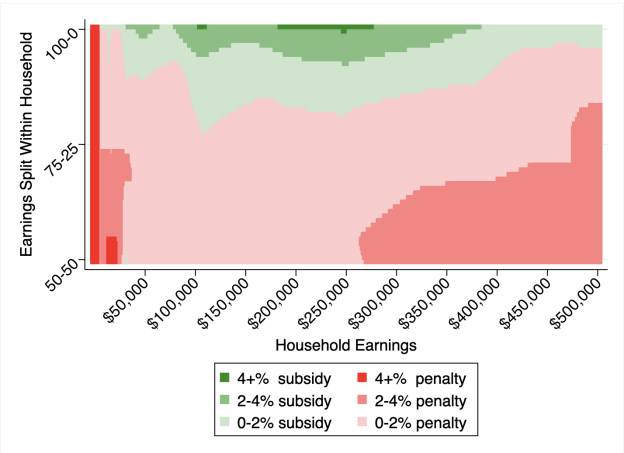
(b) 2018, no children



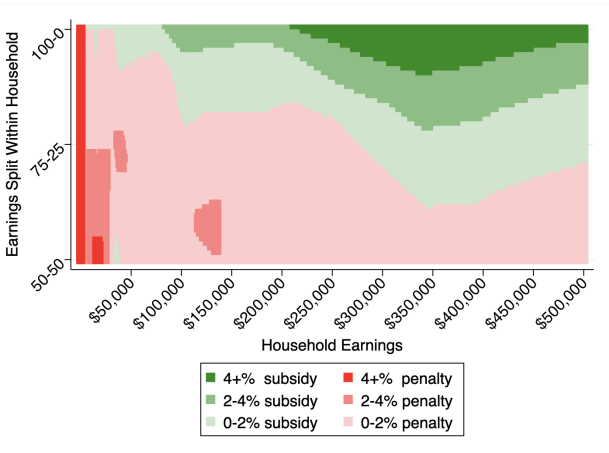
(c) 2017, one child



(d) 2018, one child



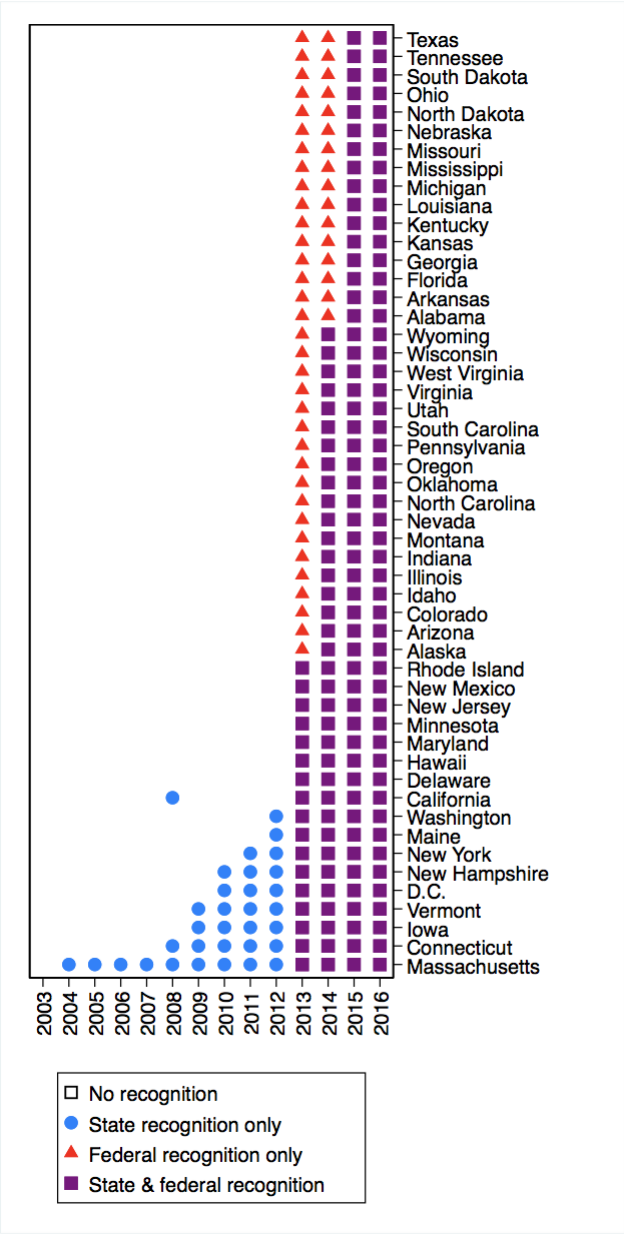
(e) 2017, two children



(f) 2018, two children

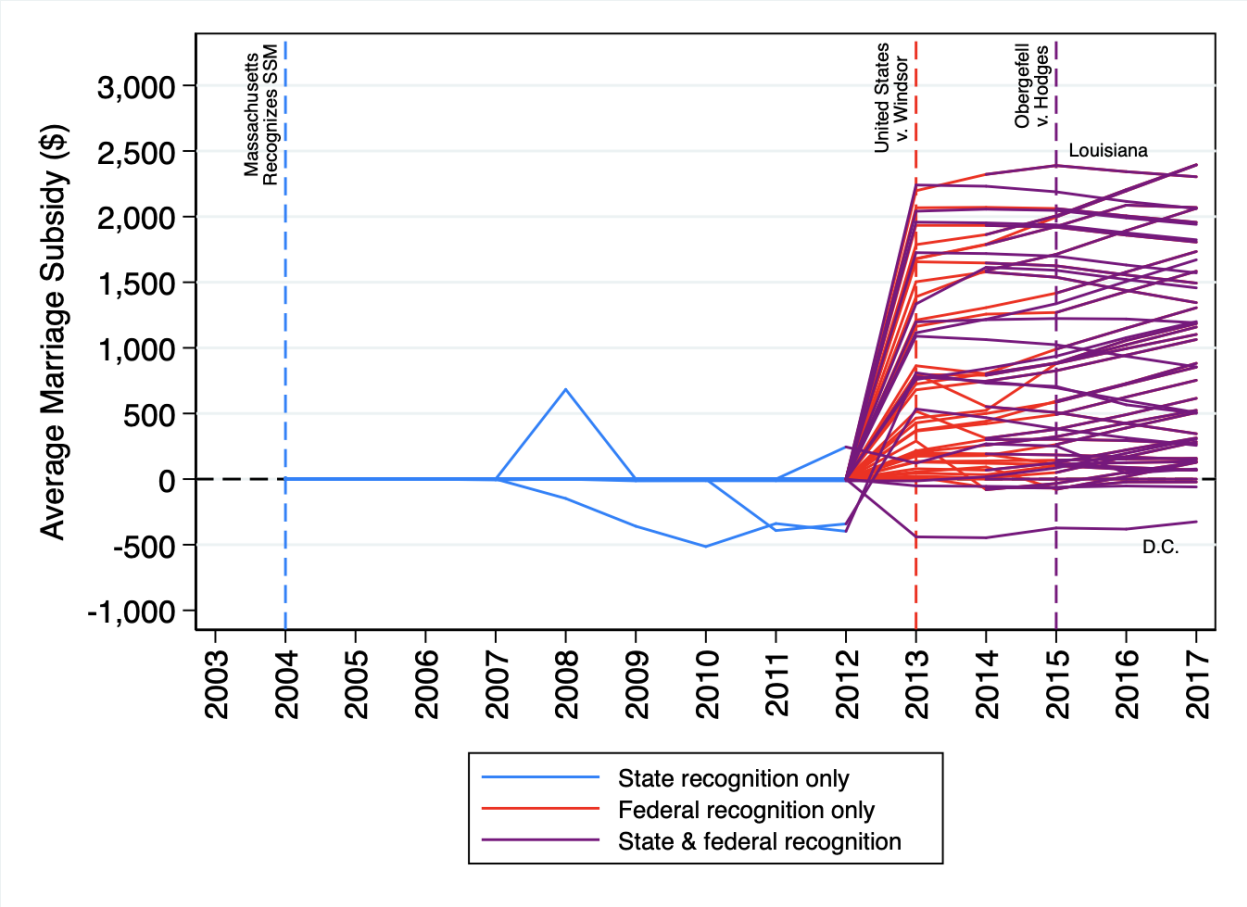
Notes: The data in Figure 1 are generated, and do not originate from the sample we analyze. The marriage subsidy is calculated as a percentage of total household earnings. We use the NBER TAXSIM simulator to calculate the marriage subsidy assuming no other income nor tax expenditures.

Figure 2
Timeline of Same-Sex Marriage Recognition



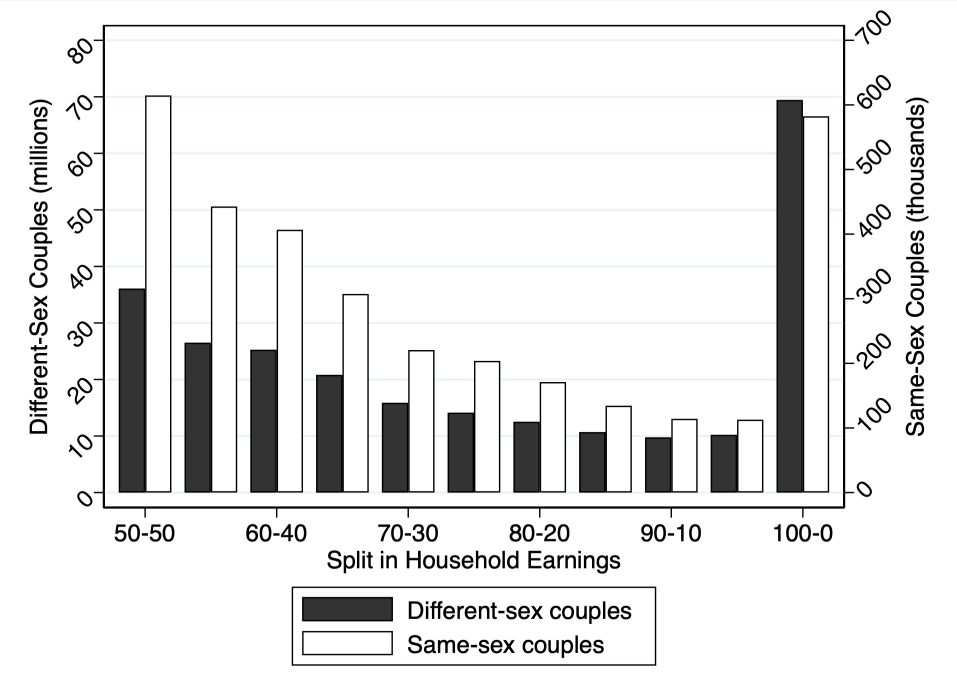
Notes: California legalized same-sex marriage in June 2008, but the statute was suspended by Proposition 8 in November 2008 until the Supreme Court decision in 2013. Same-sex marriage licenses issued in California between June and November 2008 continued to be recognized by the state.

Figure 3
Average Marriage Subsidy by State and Year



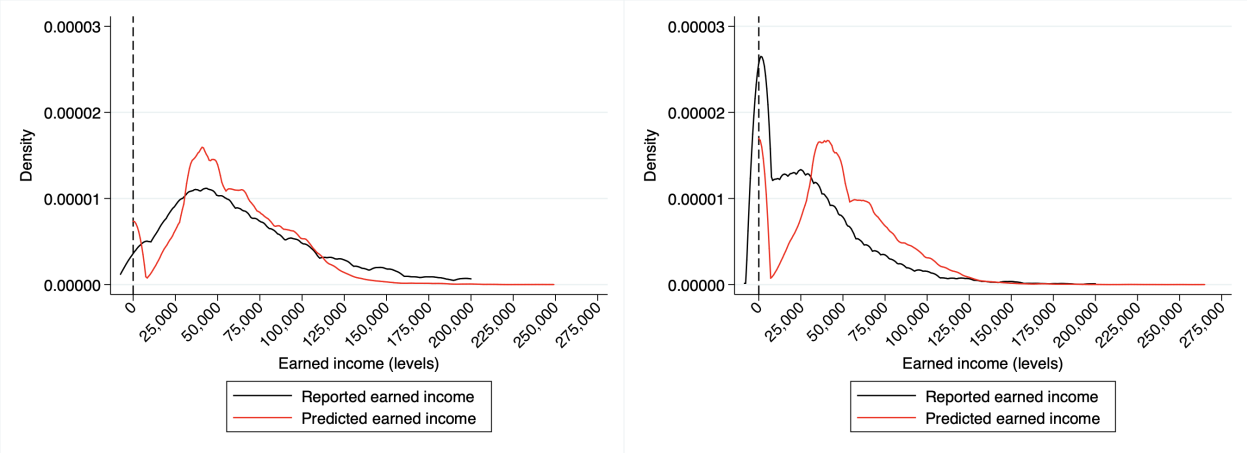
Notes: The data in Figure 3 come from average same-sex couples in the 2012 American Community Survey, run through the federal and state tax codes via TAXSIM in each prior and subsequent year. We use the population-weighted average earned income for primary and secondary earners in same-sex couples in each state in 2012 (assuming a 3% annual growth rate), and the recognition status of same-sex marriages in each state and year. While it is not possible to construct samples of same-sex couples in the ACS over the full time period in illustrated in Figure 3, this illustrates the nature of the tax variation we leverage.

Figure 4
Distribution of Couple Earnings Splits



Notes: The data come from the 2012–2017 American Community Surveys and includes married and cohabiting couples where both partners are between 18–60 years old and are no more than 20 years apart in age. Couples have been placed into 5 percentage point bins of partner earned income splits.

Figure 5
Earnings Densities

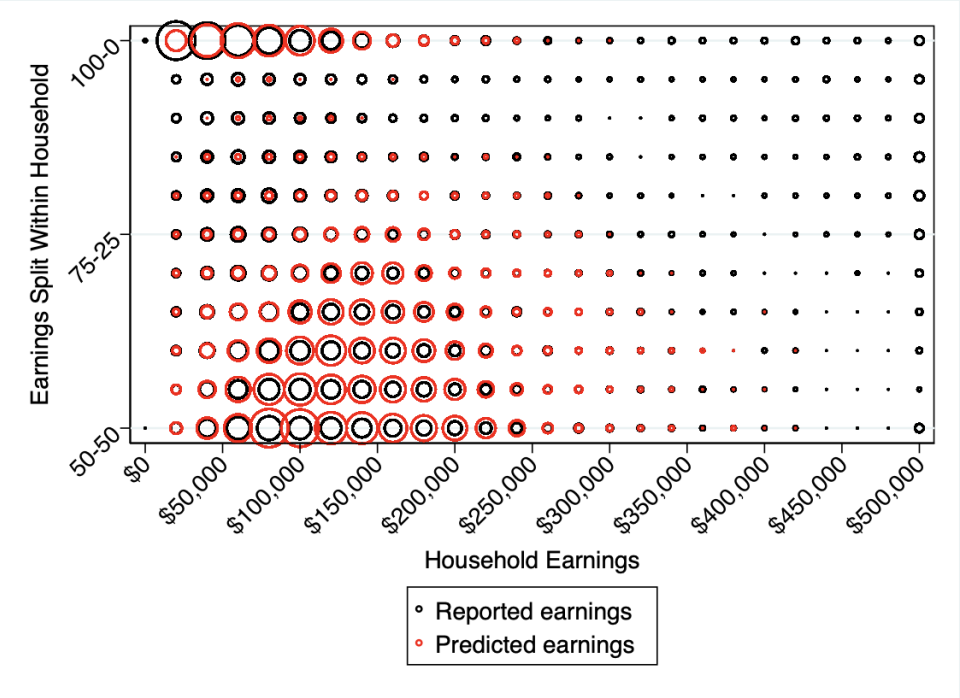


(a) Higher earners

(b) Lower earners

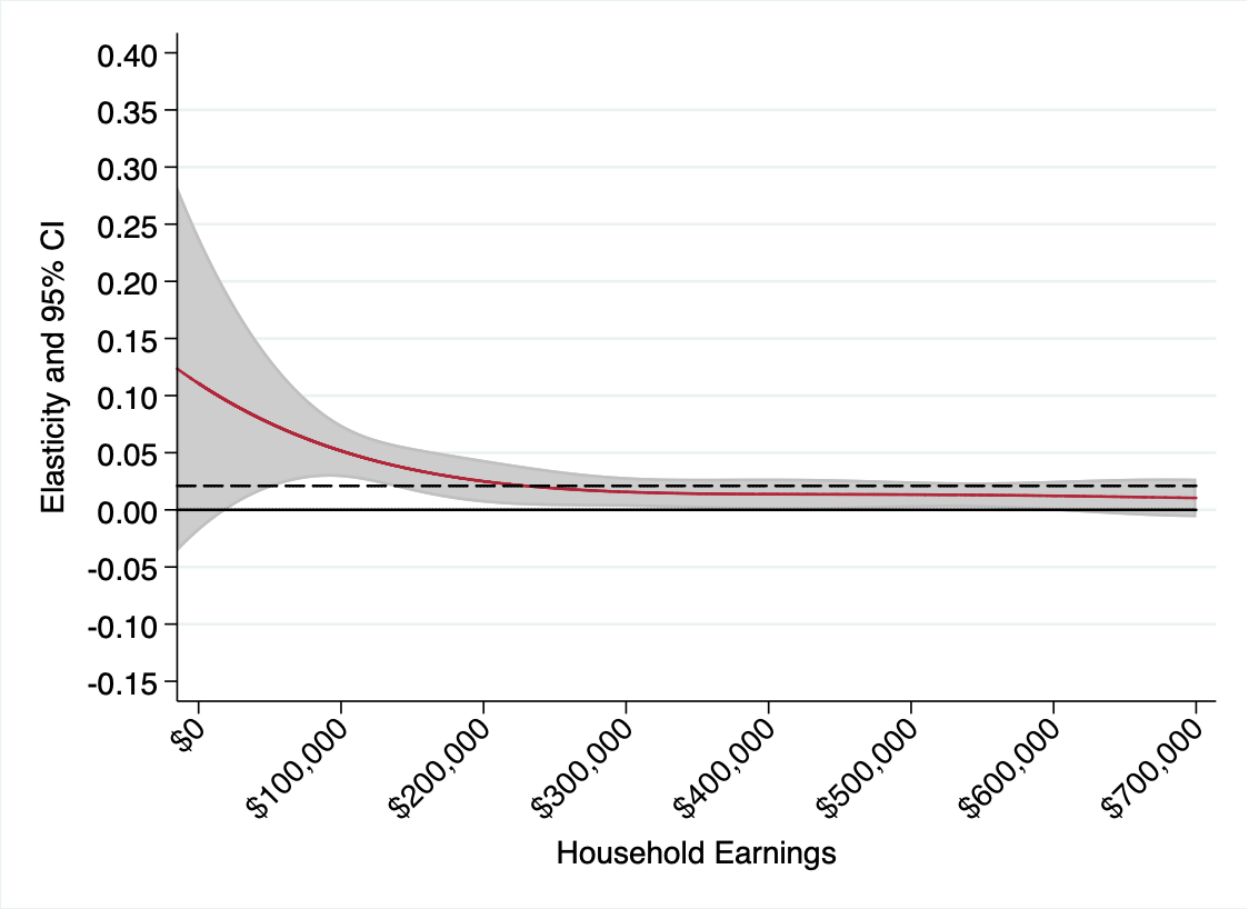
Notes: The LASSO prediction is a two-step process. We first use a LASSO to predict whether each individual has positive earnings using a linear probability model. We convert these predicted probabilities into a binary variable by setting a threshold in the distribution of predicted positive earnings such that the binary variable has the same observed sample mean of having positive predicted earnings (0.885). If the predicted probability is less than this threshold, then we assign $0 in predicted earnings to that individual. For individuals who have positive predicted earnings, we predict their earnings using coefficients from a LASSO regression of earnings in levels, estimated on a sample of individuals observed in 2012 with positive observed earnings. For illustrative purposes, we display reported and predicted earned income for higher and lower earners separately, although we calculate household predicted earned income as the sum of the partners' individual predicted earned incomes for estimation.

Figure 6
Joint Distribution of Couple Earned Income and Earnings Splits



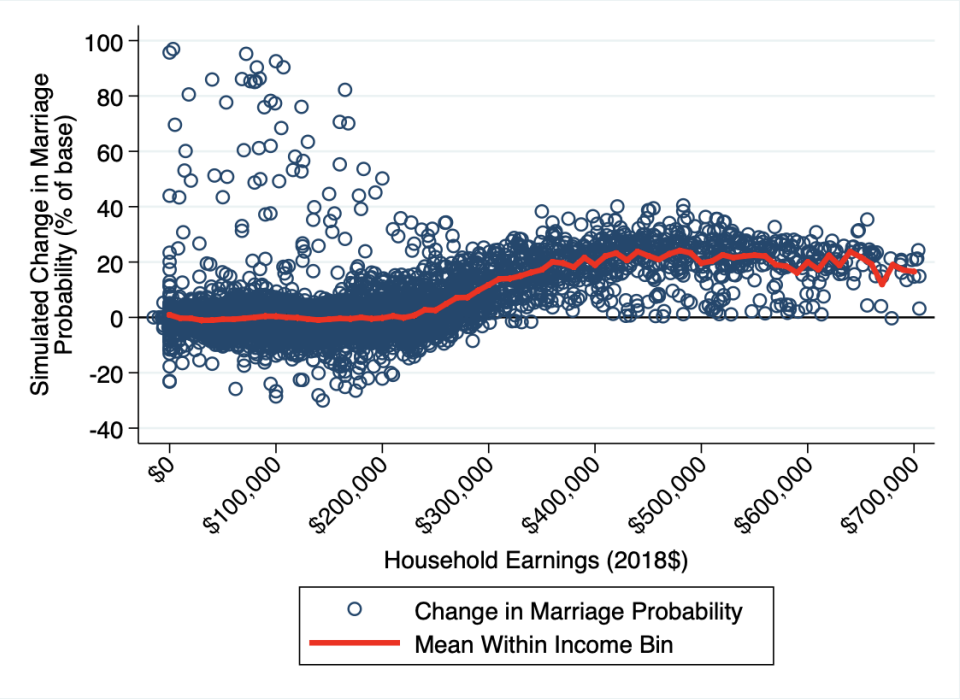
Notes: The data come from the 2012–2017 American Community Surveys. Couples have been placed into $20,000 bins of household earned income and 5 percentage point bins of partner earned income splits. The size of each point represents the relative number of couples in that total earned income-earnings split bin.

Figure 7
Heterogeneous Marriage Subsidy Elasticities by Household Earnings



Notes: The figure displays the marriage subsidy elasticity estimate (red line) and 95% confidence intervals (grey area) implied by point estimates from an instrumental variables specification that interacts the marriage subsidy with a 5^{th}-order polynomial in household earned income. The dashed black line represents our baseline elasticity estimate of 0.021 from column 6 of Table 6. This specification includes all baseline covariates described in the text in addition to the un-interacted 5^{th}-order polynomial in household earned income, but does not include the other expanded income controls. We trim off elasticities for couples earning more than $700,000 for presentation purposes only.

Figure 8
Implied Changes in the Probability of Being Married Due to the Tax Cuts and Jobs Act



Notes: The figure translates the dollar change in the marriage subsidy due to the 2018 Tax Cuts and Jobs Act among same-sex cohabiting couples in our sample into a marriage effect based on point estimates from our household earnings heterogeneity specification (elasticities displayed in Figure 7). The baseline marriage rate in the sample is 0.433. We trim off outlier data points in this figure (those whose simulated changes are greater than 100% or less than -40%) for presentation purposes only.

A Appendix: Additional Tables

This appendix contains individual level summary statistics from our main estimation sample (Table A1), as well as OLS, reduced form, and full IV estimates for each of our tables in the main text (Tables A2–A14).

Table A1
Individual Summary Statistics

	Married couples		Cohabiting couples	
	Predicted primary earners	Predicted secondary earners	Predicted primary earners	Predicted secondary earners
Male	0.465	0.465	0.502	0.502
	(0.499)	(0.499)	(0.500)	(0.500)
Female	0.535	0.535	0.498	0.498
	(0.499)	(0.499)	(0.500)	(0.500)
Black	0.054	0.058	0.062	0.070
	(0.226)	(0.233)	(0.241)	(0.255)
White	0.752	0.724	0.760	0.729
	(0.432)	(0.447)	(0.427)	(0.444)
Hispanic	0.122	0.142	0.119	0.139
	(0.327)	(0.349)	(0.323)	(0.346)
Asian	0.046	0.044	0.029	0.027
	(0.210)	(0.205)	(0.168)	(0.161)
Other race	0.026	0.032	0.030	0.035
	(0.158)	(0.176)	(0.171)	(0.184)
Age	44.202	43.418	41.130	40.110
	(9.534)	(10.280)	(10.575)	(11.265)
Years of education	15.229	14.155	15.030	13.900
	(2.811)	(2.890)	(2.514)	(2.558)
Positive earnings	0.937	0.814	0.937	0.849
	(0.243)	(0.389)	(0.243)	(0.358)
Positive earnings (predicted)	0.965	0.783	0.971	0.818
	(0.184)	(0.412)	(0.168)	(0.386)
Conditional annual hours worked	2,086.075	1,944.319	2,054.653	1,930.210
	(657.108)	(706.297)	(654.221)	(678.919)
Reported annual earnings	77,655.483	48,672.448	63,282.766	42,554.901
	(90,087.379)	(65,771.749)	(74,962.154)	(54,986.458)
Predicted annual earnings	70,092.938	41,404.479	64,575.916	38,749.369
	(34,613.387)	(29,655.507)	(32,760.345)	(26,975.316)
Observations	15,738	15,738	20,585	20,585

Notes: Standard deviations in parentheses. The data come from the 2012–2017 American Community Surveys. Predicted primary earners are the individual in each couple who has higher individual predicted earned income from the LASSO prediction process.

Table A2
Baseline OLS and Reduced Form Estimates of the Effect of the Marriage Subsidy on the Probability of Being Married

	No income controls		Expanded income controls			
	OLS	Reduced form	OLS	Reduced form	OLS	Reduced form
Outcome: Married						
Marriage subsidy ($1,000s)	0.005***	0.007***	0.005***	0.008***	0.003***	0.007***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Legal marriage	0.068***	0.069***	0.067***	0.069***	0.068***	0.069***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.006	0.005	0.007	0.005	0.007
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.001	0.002	-0.005	-0.001	-0.008	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.156***	0.161***	0.153***	0.161***	0.154***	0.161***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.037***	0.038***	0.036***	0.037***	0.036***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.007***	0.001	0.005***	0.000	0.004***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Partners' education difference	-0.002*	-0.003**	-0.000	-0.002	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.037***	0.036***	0.037***	0.036***	0.037***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.189***	0.094*
					(0.025)	(0.051)
Partners' earnings split					0.147***	0.032
					(0.018)	(0.027)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the OLS specifications use reported earnings measures and the reduced form specifications use predicted earnings measures. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. The OLS models use the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) as the main explanatory variable, and the reduced form models use the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence) as the main explanatory variable.

Table A3
Heterogeneous OLS Estimates by Treatment Effect

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × pre-*Windsor*	0.061		0.069*		0.051	
	(0.038)		(0.039)		(0.038)	
Marriage subsidy × post-*Windsor*, pre-*Obergefell*	0.003*		0.003*		0.001	
	(0.002)		(0.002)		(0.001)	
Marriage subsidy × post-*Obergefell*	0.006***		0.006***		0.004***	
	(0.001)		(0.001)		(0.001)	
Fed. marriage subsidy ($1,000s)		0.006***		0.005***		0.003***
		(0.001)		(0.001)		(0.001)
St. marriage subsidy ($1,000s)		0.001		0.000		-0.001
		(0.006)		(0.006)		(0.005)
Legal marriage	0.069***	0.069***	0.068***	0.068***	0.069***	0.069***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.005	0.006	0.005	0.006	0.005	0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.001	0.001	-0.005	-0.005	-0.008	-0.008
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.155***	0.156***	0.153***	0.153***	0.154***	0.154***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.038***	0.038***	0.038***	0.037***	0.037***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners' education difference	-0.002*	-0.002*	-0.000	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.186***	0.188***
					(0.024)	(0.024)
Partners' reported earnings split					0.144***	0.147***
					(0.017)	(0.018)
Additional controls for: 5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on reported earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and are calculated from reported income from all available sources, number of children, and state of residence. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table A4
Heterogeneous Reduced Form Estimates by Treatment Effect

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × pre-*Windsor*	0.026		0.033		0.028	
	(0.051)		(0.051)		(0.051)	
Marriage subsidy × post-*Windsor*, pre-*Obergefell*	0.008***		0.010***		0.008***	
	(0.002)		(0.002)		(0.003)	
Marriage subsidy × post-*Obergefell*	0.006***		0.007***		0.006**	
	(0.002)		(0.002)		(0.003)	
Fed. marriage subsidy ($1,000s)		0.007***		0.008***		0.006**
		(0.002)		(0.002)		(0.003)
St. marriage subsidy ($1,000s)		0.006		0.008		0.008
		(0.009)		(0.009)		(0.009)
Legal marriage	0.069***	0.069***	0.069***	0.069***	0.069***	0.069***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.006	0.007	0.007	0.006	0.006
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.002	0.002	-0.001	-0.001	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.161***	0.161***	0.161***	0.161***	0.161***	0.161***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.037***	0.037***	0.036***	0.036***	0.036***	0.036***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.007***	0.007***	0.005***	0.005***	0.004***	0.004***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Partners' education difference	-0.003**	-0.003**	-0.002	-0.002	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.037***	0.037***	0.037***	0.037***	0.037***	0.037***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.094*	0.094*
					(0.051)	(0.051)
Partners' earnings split					0.032	0.033
					(0.027)	(0.027)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All specifications use the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence) as the main explanatory variable. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table A5
Full Results: Heterogeneous IV Estimates by Treatment Effect

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × pre-*Windsor*	0.075		0.090		0.068	
	(0.131)		(0.131)		(0.132)	
Marriage subsidy × post-*Windsor*, pre-*Obergefell*	0.016***		0.019***		0.014***	
	(0.004)		(0.005)		(0.005)	
Marriage subsidy × post-*Obergefell*	0.010***		0.013***		0.008**	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.012***		0.014***		0.010**
		(0.003)		(0.004)		(0.004)
St. marriage subsidy ($1,000s)		0.015		0.018		0.015
		(0.019)		(0.019)		(0.019)
Legal marriage	0.066***	0.067***	0.065***	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.005	0.005	0.004	0.004	0.005	0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	-0.001	-0.001	-0.004	-0.003	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.149***	0.149***	0.146***	0.146***	0.151***	0.151***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Number of children	0.036***	0.036***	0.034***	0.034***	0.035***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.004***	0.004***	0.004**	0.004**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Partners' education difference	-0.003**	-0.003**	-0.002*	-0.002*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.114**	0.111**
					(0.048)	(0.048)
Partners' earnings split					0.045*	0.045*
					(0.025)	(0.024)
Additional controls for: 5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.388***	0.599***	0.387***	0.588***	0.387***	0.664***
	(0.054)	(0.037)	(0.054)	(0.037)	(0.054)	(0.048)
	[78.796]	[342.449]	[72.070]	[316.247]	[78.377]	[225.205]
1^{st} stage coefficient 2	0.552***	0.477***	0.551***	0.493***	0.576***	0.495***
	(0.042)	(0.031)	(0.043)	(0.032)	(0.050)	(0.032)
	[225.128]	[452.776]	[203.072]	[431.394]	[161.765]	[383.316]
1^{st} stage coefficient 3	0.592***		0.602***		0.651***	
	(0.037)		(0.038)		(0.047)	
	[298.549]		[301.236]		[217.551]	
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × pre-*Windsor* variable using the outcome Observed Marriage Subsidy × pre-*Windsor*. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × post-*Windsor*, pre-*Obergefell* variable using the outcome Observed Marriage Subsidy × post-*Windsor*, pre-*Obergefell*, and so on. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table A6
Heterogeneous OLS Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy × predicted subsidy	0.010***	0.010***	0.007***
	(0.001)	(0.001)	(0.001)
Marriage subsidy × predicted penalty	-0.001	-0.002**	-0.001*
	(0.001)	(0.001)	(0.001)
Legal marriage	0.067***	0.067***	0.068***
	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.004	0.004	0.004
	(0.010)	(0.010)	(0.010)
Male	-0.002	-0.006	-0.008
	(0.005)	(0.005)	(0.005)
Couple has children	0.153***	0.151***	0.153***
	(0.011)	(0.011)	(0.011)
Number of children	0.036***	0.037***	0.036***
	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.007***
	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.005***	0.001	0.000
	(0.001)	(0.001)	(0.001)
Partners' education difference	-0.002	-0.001	-0.001
	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.037***
	(0.006)	(0.006)	(0.006)
Zero earner family			0.161***
			(0.023)
Partners' earnings split			0.119***
			(0.016)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Mean of dep var	0.433	0.433	0.433
Observations	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on reported earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and are calculated from reported income from all available sources, number of children, and state of residence. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table A7
Heterogeneous Reduced Form Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy × predicted subsidy	0.007***	0.008***	0.007***
	(0.002)	(0.002)	(0.002)
Marriage subsidy × predicted penalty	0.002	0.007	0.007
	(0.008)	(0.010)	(0.010)
Legal marriage	0.069***	0.069***	0.069***
	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.007	0.007
	(0.010)	(0.010)	(0.010)
Male	0.002	-0.001	-0.002
	(0.005)	(0.005)	(0.005)
Couple has children	0.161***	0.161***	0.161***
	(0.011)	(0.011)	(0.011)
Number of children	0.037***	0.036***	0.036***
	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.007***	0.005***	0.004***
	(0.001)	(0.002)	(0.002)
Partners' education difference	-0.002**	-0.002	-0.002*
	(0.001)	(0.001)	(0.001)
Partners are the same race	0.037***	0.037***	0.037***
	(0.006)	(0.006)	(0.006)
Zero earner family			0.094*
			(0.051)
Partners' earnings split			0.033
			(0.027)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Mean of dep var	0.433	0.433	0.433
Observations	3.6e+04	3.6e+04	3.6e+04

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All specifications use the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence) as the main explanatory variable. All marriage subsidy variables are measured in $1,000s. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table A8
Full Results: Heterogeneous IV Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy × predicted subsidy	0.015***	0.016***	0.011***
	(0.003)	(0.003)	(0.004)
Marriage subsidy × predicted penalty	0.001	-0.002	0.000
	(0.005)	(0.008)	(0.008)
Legal marriage	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.003	0.003	0.004
	(0.010)	(0.010)	(0.010)
Male	-0.004	-0.005	-0.006
	(0.005)	(0.006)	(0.006)
Couple has children	0.149***	0.148***	0.152***
	(0.011)	(0.011)	(0.012)
Number of children	0.035***	0.034***	0.035***
	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.004***	0.004**	0.004**
	(0.001)	(0.002)	(0.002)
Partners' education difference	-0.002	-0.002	-0.002*
	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)
Zero earner family			0.104**
			(0.049)
Partners' earnings split			0.043*
			(0.025)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Mean of dep var	0.433	0.433	0.433
1^{st} stage coefficient 1	0.478***	0.520***	0.578***
	(0.023)	(0.025)	(0.035)
	[438.334]	[450.592]	[298.092]
1^{st} stage coefficient 2	1.536***	1.350***	1.348***
	(0.231)	(0.213)	(0.212)
	[45.623]	[45.824]	[49.597]
Observations	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Subsidy) variable using the outcome Observed Marriage Subsidy × 1(Observed Subsidy). "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Penalty) variable using the outcome Observed Marriage Subsidy × 1(Observed Penalty), and so on. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table A9
Heterogeneous OLS Estimates by Presence of Children and Sex

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × couple has children	0.005***		0.005***		0.003***	
	(0.001)		(0.001)		(0.001)	
Marriage subsidy × childless couple	0.005***		0.005***		0.003**	
	(0.001)		(0.002)		(0.001)	
Marriage subsidy × male		0.006***		0.006***		0.004***
		(0.001)		(0.001)		(0.001)
Marriage subsidy × fem.		0.004**		0.004**		0.002
		(0.002)		(0.002)		(0.001)
Legal marriage	0.068***	0.068***	0.067***	0.067***	0.068***	0.068***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.006	0.005	0.005	0.005	0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.001	-0.000	-0.005	-0.007	-0.008	-0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.155***	0.156***	0.153***	0.153***	0.154***	0.155***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.038***	0.038***	0.038***	0.037***	0.037***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners' education difference	-0.002*	-0.002*	-0.000	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.189***	0.187***
					(0.025)	(0.024)
Partners' reported earnings split					0.147***	0.146***
					(0.018)	(0.018)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on reported earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and are calculated from reported income from all available sources, number of children, and state of residence. All marriage subsidy variables include both federal and state taxes. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table A10
Heterogeneous Reduced Form Estimates by Presence of Children and Sex

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × couple has children	0.010***		0.010***		0.009***	
	(0.003)		(0.003)		(0.003)	
Marriage subsidy × childless couple	0.006***		0.007***		0.005**	
	(0.002)		(0.002)		(0.003)	
Marriage subsidy × male		0.009***		0.011***		0.009***
		(0.002)		(0.002)		(0.002)
Marriage subsidy × fem.		0.003		0.005*		0.002
		(0.002)		(0.002)		(0.003)
Legal marriage	0.069***	0.069***	0.069***	0.069***	0.069***	0.069***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.006	0.007	0.007	0.006	0.007
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.002	-0.001	-0.001	-0.005	-0.002	-0.007
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)
Couple has children	0.159***	0.161***	0.160***	0.161***	0.160***	0.161***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.037***	0.038***	0.036***	0.036***	0.036***	0.036***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.007***	0.007***	0.005***	0.005***	0.004***	0.004***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Partners' education difference	-0.002**	-0.002**	-0.002	-0.002	-0.002*	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.037***	0.037***	0.037***	0.037***	0.037***	0.037***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.097*	0.100**
					(0.051)	(0.051)
Partners' earnings split					0.035	0.039
					(0.027)	(0.027)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All specifications use the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence) as the main explanatory variable. All marriage subsidy variables are measured in $1,000s. All marriage subsidy variables include both federal and state taxes. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table A11
Full Results: Heterogeneous IV Estimates by Presence of Children and Sex

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × couple has children	0.011*** (0.003)		0.012*** (0.003)		0.010*** (0.003)	
Marriage subsidy × childless couple	0.013*** (0.004)		0.017*** (0.005)		0.011* (0.006)	
Marriage subsidy × male		0.015*** (0.003)		0.019*** (0.004)		0.014*** (0.004)
Marriage subsidy × fem.		0.007* (0.004)		0.009** (0.004)		0.004 (0.005)
Legal marriage	0.067*** (0.010)	0.067*** (0.010)	0.067*** (0.010)	0.066*** (0.010)	0.068*** (0.010)	0.067*** (0.010)
State expanded Medicaid	0.005 (0.010)	0.005 (0.010)	0.005 (0.010)	0.005 (0.010)	0.005 (0.010)	0.006 (0.010)
Male	-0.000 (0.005)	-0.008 (0.007)	-0.004 (0.005)	-0.012* (0.007)	-0.005 (0.005)	-0.014** (0.007)
Couple has children	0.150*** (0.012)	0.151*** (0.012)	0.151*** (0.012)	0.148*** (0.012)	0.152*** (0.012)	0.153*** (0.012)
Number of children	0.036*** (0.005)	0.036*** (0.005)	0.035*** (0.005)	0.034*** (0.005)	0.035*** (0.005)	0.034*** (0.005)
Oldest partner's age	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
Partners' age difference	-0.011*** (0.001)	-0.011*** (0.001)	-0.010*** (0.001)	-0.010*** (0.001)	-0.010*** (0.001)	-0.010*** (0.001)
Most educated partner's years of education	0.006*** (0.001)	0.006*** (0.001)	0.004*** (0.002)	0.004*** (0.002)	0.004** (0.002)	0.004** (0.002)
Partners' education difference	-0.003** (0.001)	-0.003** (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)
Partners are the same race	0.036*** (0.006)	0.036*** (0.006)	0.036*** (0.006)	0.036*** (0.006)	0.036*** (0.006)	0.037*** (0.006)
Zero earner family					0.111** (0.048)	0.119** (0.048)
Partners' earnings split					0.044* (0.026)	0.049** (0.025)
Additional controls for: 5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.869*** (0.070) [207.253]	0.587*** (0.038) [283.156]	0.876*** (0.071) [195.150]	0.581*** (0.039) [252.268]	0.921*** (0.077) [198.558]	0.609*** (0.047) [195.594]
1^{st} stage coefficient 2	0.447*** (0.026) [285.383]	0.582*** (0.039) [273.447]	0.404*** (0.025) [254.489]	0.594*** (0.039) [271.789]	0.409*** (0.032) [175.661]	0.641*** (0.048) [205.920]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × Has Children variable using the outcome Observed Marriage Subsidy × Has Children. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × Childless variable using the outcome Observed Marriage Subsidy × Childless, and so on. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table A12
OLS Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subisdy ($1,000s)	0.005***		0.005***		0.003***	
	(0.001)		(0.001)		(0.001)	
Fed. marriage subsidy ($1,000s)		0.005***		0.005***		0.003***
		(0.001)		(0.001)		(0.001)
St. marriage subsidy ($1,000s)		0.002		0.001		-0.000
		(0.006)		(0.006)		(0.005)
Male	0.001	0.001	-0.005	-0.005	-0.008*	-0.008*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.155***	0.155***	0.152***	0.152***	0.154***	0.153***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.038***	0.039***	0.039***	0.037***	0.037***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.001	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners' education difference	-0.002*	-0.002*	-0.000	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.035***	0.035***	0.034***	0.034***	0.035***	0.035***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.184***	0.183***
					(0.025)	(0.024)
Partners' earnings split					0.143***	0.143***
					(0.018)	(0.018)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include state-by-year fixed effects. In specifications using expanded income controls, the earnings measures are based on reported earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and are calculated from reported income from all available sources, number of children, and state of residence. All marriage subsidy variables include both federal and state taxes.

Table A13
Reduced Form Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subisdy ($1,000s)	0.006***		0.008***		0.006***	
	(0.001)		(0.002)		(0.002)	
Fed. marriage subsidy ($1,000s)		0.007***		0.008***		0.006**
		(0.002)		(0.002)		(0.003)
St. marriage subsidy ($1,000s)		0.006		0.008		0.007
		(0.009)		(0.009)		(0.010)
Male	0.002	0.002	-0.001	-0.001	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.160***	0.160***	0.160***	0.160***	0.161***	0.160***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.038***	0.037***	0.037***	0.036***	0.036***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.007***	0.007***	0.005***	0.005***	0.004***	0.004***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Partners' education difference	-0.002**	-0.002**	-0.002	-0.002	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.035***	0.035***	0.035***	0.035***	0.035***	0.035***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.097*	0.097*
					(0.051)	(0.051)
Partners' earnings split					0.032	0.032
					(0.027)	(0.027)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
Observations	36,323	36,323	36,323	36,323	36,323	36,323

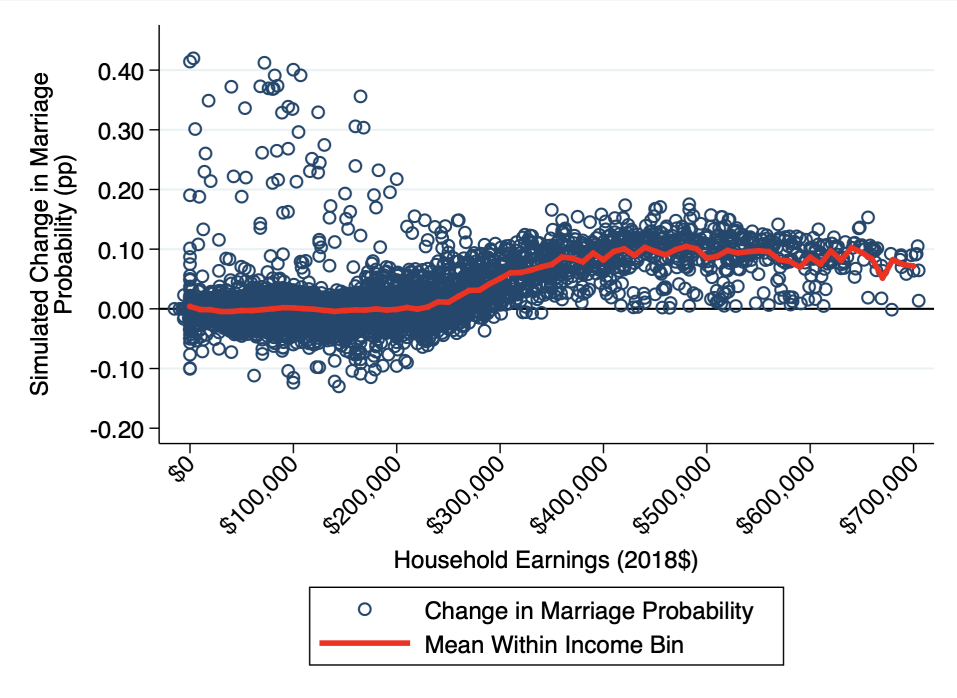
Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses. All specifications also include state-by-year fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All specifications use the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence) as the main explanatory variable. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes.

Table A14
Full Results: IV Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy ($1,000s)	0.012***		0.014***		0.010***	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.011***		0.014***		0.009**
		(0.003)		(0.004)		(0.004)
St. marriage subsidy ($1,000s)		0.016		0.019		0.016
		(0.021)		(0.022)		(0.022)
Male	-0.000	-0.001	-0.003	-0.004	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.148***	0.149***	0.145***	0.146***	0.150***	0.151***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Number of children	0.036***	0.036***	0.035***	0.035***	0.035***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.004**	0.004**	0.004**	0.004**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Partners' education difference	-0.003**	-0.003**	-0.002*	-0.002*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.034***	0.034***	0.034***	0.034***	0.035***	0.035***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.113**	0.113**
					(0.048)	(0.048)
Partners' earnings split					0.044*	0.044*
					(0.024)	(0.024)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.555***	0.598***	0.564***	0.585***	0.635***	0.661***
	(0.028)	(0.038)	(0.030)	(0.037)	(0.042)	(0.048)
	[385.993]	[328.251]	[355.282]	[299.747]	[223.634]	[220.815]
1^{st} stage coefficient 2		0.426***		0.441***		0.442***
		(0.032)		(0.033)		(0.034)
		[337.446]		[317.751]		[282.924]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include state-by-year fixed effects. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 2 is the coefficient of the Predicted Federal Marriage Subsidy variable using the outcome Observed Federal Marriage Subsidy. "Coefficient 2" in column 2 is the coefficient of the Predicted State Marriage Subsidy variable using the outcome Observed State Marriage Subsidy, and so on.

Figure A1
Implied Changes in the Probability of Being Married Due to the Tax Cuts and Jobs Act



Notes: The figure translates the dollar change in the marriage subsidy due to the 2018 Tax Cuts and Jobs Act among same-sex cohabiting couples in our sample into a percentage point marriage effect based on point estimates from our household earnings heterogeneity specification (elasticities displayed in Figure 7). The baseline marriage rate in the sample is 0.433. We trim off outlier data points in this figure (those whose simulated changes are greater than 100% or less than -40%) for presentation purposes only.

B Appendix: Bootstrapped Estimates

This appendix contains bootstrapped IV estimates, in contrast to our results in the main text, which are not bootstrapped. Young (2019) notes that non-iid error processes can create spuriously large first stage F-statistics, leading researchers to conclude that their instruments are not weak because the F-statistics are higher than the rule-of-thumb values of 10 or 40. The author concludes that "while the bootstrap does not undo the increased bias of 2SLS brought on by non-iid errors, it nevertheless allows for improved inference under these circumstances" (p. 3). We therefore bootstrapped our estimates and robust standard errors using 1,000 replications to consider and address the possibility of non-iid errors, but, as can be seen below in Tables B1–B6, bootstrapping does not change our first stage conclusions about the strength of our instrument or our second stage results.

One corollary of the bootstrapping process, however, is that the confidence intervals of our esti-

mated heterogeneous elasticities by household earnings are larger, and indicate significant elasticities only for households earning between $37,200 and $187,000. Despite larger standard errors, the evolution of the elasticity estimate has the same downward sloping shape as before and, as a result, the simulation of the effect of the TCJA by earnings remains unchanged.

Table B1
Bootstrapped Baseline OLS and IV Estimates of the Effect of the Marriage Subsidy on the Probability of Being Married

	No income controls		Expanded income controls			
	OLS	IV	OLS	IV	OLS	IV
Outcome: Married						
Marriage subsidy ($1,000s)	0.005***	0.012***	0.005***	0.015***	0.003***	0.010***
	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)
Legal marriage	0.068***	0.067***	0.067***	0.067***	0.068***	0.068***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
State expanded Medicaid	0.006	0.005	0.005	0.005	0.005	0.005
	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)
Male	0.001	-0.000	-0.005	-0.003	-0.008	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Couple has children	0.156***	0.149***	0.153***	0.146***	0.154***	0.151***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Number of children	0.038***	0.036***	0.038***	0.034***	0.037***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.004**	0.000	0.004**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Partners' education difference	-0.002*	-0.003**	-0.000	-0.002*	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.189***	0.111**
					(0.022)	(0.048)
Partners' earnings split					0.147***	0.045*
					(0.015)	(0.025)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient		0.542***		0.550***		0.625***
		(0.031)		(0.032)		(0.045)
		[389.065]		[362.230]		[228.949]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the OLS specifications use reported earnings measures and the IV specifications use predicted earnings measures. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).

Table B2
Bootstrapped Heterogeneous IV Estimates by Treatment Effect

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × pre-*Windsor*	0.075		0.090		0.068	
	(0.134)		(0.134)		(0.134)	
Marriage subsidy × post-*Windsor*, pre-*Obergefell*	0.016***		0.019***		0.014***	
	(0.004)		(0.004)		(0.005)	
Marriage subsidy × post-*Obergefell*	0.010***		0.013***		0.008**	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.012***		0.014***		0.010**
		(0.003)		(0.003)		(0.004)
St. marriage subsidy ($1,000s)		0.015		0.018		0.015
		(0.019)		(0.019)		(0.019)
Legal marriage	0.066***	0.067***	0.065***	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.323***	0.592***	0.323***	0.571***	0.321***	0.650***
	(0.052)	(0.043)	(0.052)	(0.043)	(0.052)	(0.055)
	[78.796]	[342.449]	[72.070]	[316.247]	[78.377]	[225.205]
1^{st} stage coefficient 2	0.529***	0.439***	0.527***	0.464***	0.561***	0.466***
	(0.044)	(0.029)	(0.046)	(0.030)	(0.055)	(0.030)
	[225.128]	[452.776]	[203.072]	[431.394]	[161.765]	[383.316]
1^{st} stage coefficient 3	0.588***		0.597***		0.642***	
	(0.042)		(0.041)		(0.050)	
	[298.549]		[301.236]		[217.551]	
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × pre-*Windsor* variable using the outcome Observed Marriage Subsidy × pre-*Windsor*. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × post-*Windsor*, pre-*Obergefell* variable using the outcome Observed Marriage Subsidy × post-*Windsor*, pre-*Obergefell*, and so on. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table B3
Bootstrapped Heterogeneous IV Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy × predicted subsidy	0.015***	0.016***	0.011***
	(0.003)	(0.003)	(0.004)
Marriage subsidy × predicted penalty	0.001	-0.002	0.000
	(0.005)	(0.008)	(0.008)
Legal marriage	0.067***	0.066***	0.067***
	(0.010)	(0.010)	(0.010)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Zero earner family			✓
Partners' earnings split			✓
Mean of dep var	0.433	0.433	0.433
1^{st} stage coefficient 1	0.475***	0.525***	0.586***
	(0.023)	(0.025)	(0.035)
	[438.334]	[450.592]	[298.092]
1^{st} stage coefficient 2	1.690***	1.505***	1.501***
	(0.279)	(0.253)	(0.251)
	[45.623]	[45.824]	[49.597]
Observations	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Subsidy) variable using the outcome Observed Marriage Subsidy × 1(Observed Subsidy). "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Penalty) variable using the outcome Observed Marriage Subsidy × 1(Predicted Penalty), and so on. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table B4
Bootstrapped Heterogeneous IV Estimates by Presence of Children and Sex

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy × couple has children	0.011***		0.012***		0.010***	
	(0.003)		(0.003)		(0.003)	
Marriage subsidy × childless couple	0.013***		0.017***		0.011*	
	(0.004)		(0.005)		(0.006)	
Marriage subsidy × male		0.015***		0.019***		0.014***
		(0.003)		(0.004)		(0.004)
Marriage subsidy × fem.		0.007*		0.009**		0.004
		(0.004)		(0.004)		(0.005)
Legal marriage	0.067***	0.067***	0.067***	0.066***	0.068***	0.067***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Additional controls for:						
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.844***	0.574***	0.852***	0.559***	0.881***	0.587***
	(0.072)	(0.044)	(0.073)	(0.045)	(0.079)	(0.053)
	[207.253]	[283.156]	[195.150]	[252.268]	[198.558]	[195.594]
1^{st} stage coefficient 2	0.431***	0.570***	0.388***	0.585***	0.411***	0.637***
	(0.031)	(0.038)	(0.030)	(0.038)	(0.037)	(0.047)
	[285.383]	[273.447]	[254.489]	[271.789]	[175.661]	[205.920]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × Has Children variable using the outcome Observed Marriage Subsidy × Has Children. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × Childless variable using the outcome Observed Marriage Subsidy × Childless, and so on. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table B5
Bootstrapped IV Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls			
Outcome: Married						
Marriage subsidy ($1,000s)	0.012***		0.014***		0.010***	
	(0.003)		(0.003)		(0.004)	
Fed. marriage subsidy ($1,000s)		0.011***		0.014***		0.009**
		(0.003)		(0.004)		(0.004)
St. marriage subsidy ($1,000s)		0.016		0.019		0.016
		(0.021)		(0.021)		(0.021)
Additional controls for:						
5^{th}-order polynomila in couple's earnings			✓	✓	✓	✓
Zero earner family					✓	✓
Partners' earnings split					✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.541***	0.594***	0.546***	0.570***	0.618***	0.647***
	(0.031)	(0.044)	(0.032)	(0.043)	(0.046)	(0.055)
	[385.993]	[328.251]	[355.282]	[299.747]	[223.634]	[220.815]
1^{st} stage coefficient 2		0.385***		0.410***		0.411***
		(0.030)		(0.031)		(0.032)
		[337.446]		[317.751]		[282.924]
Observations	36,323	36,323	36,323	36,323	36,323	36,323

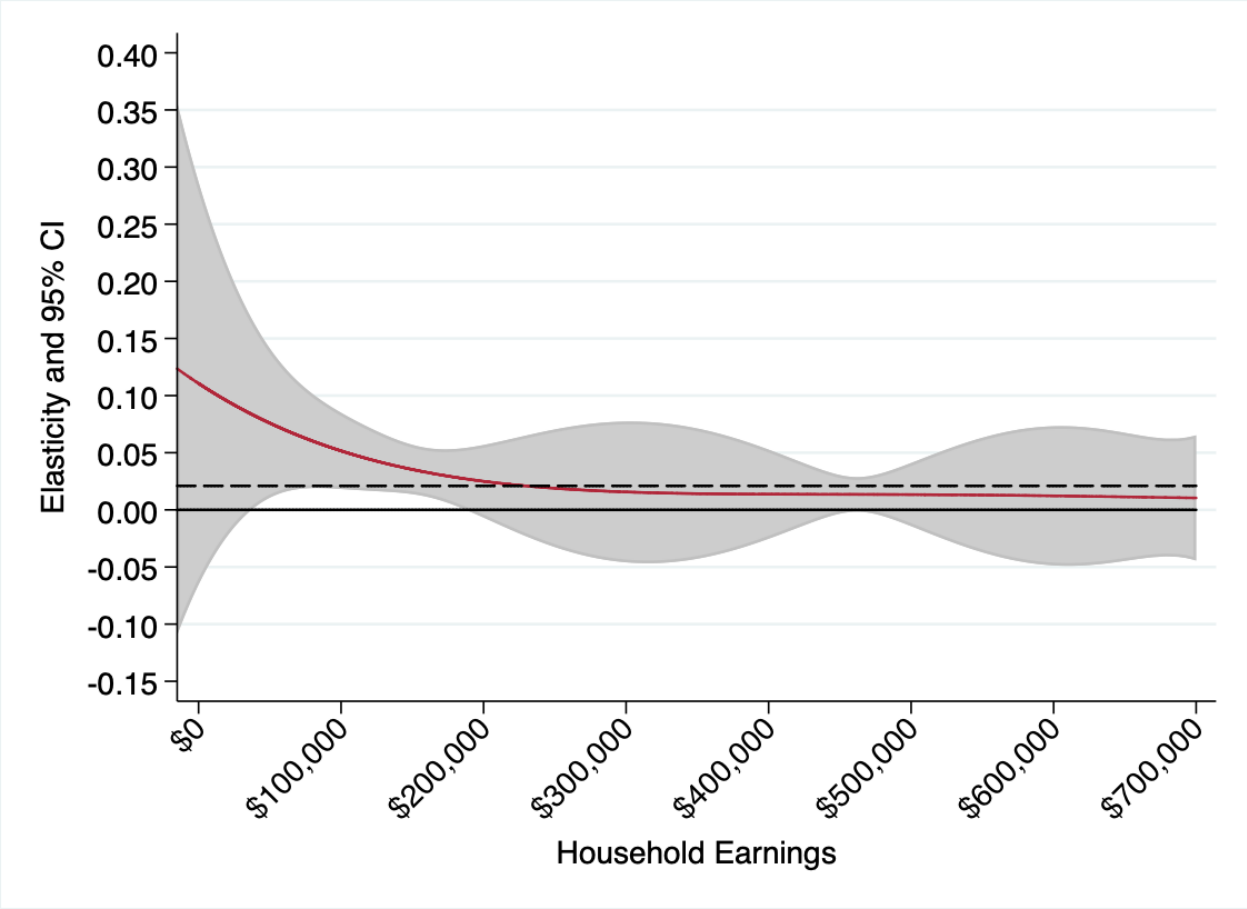
Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include state-by-year fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, and the partners' ages and education levels. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 2 is the coefficient of the Predicted Federal Marriage Subsidy variable using the outcome Observed Federal Marriage Subsidy. "Coefficient 2" in column 2 is the coefficient of the Predicted State Marriage Subsidy variable using the outcome Observed State Marriage Subsidy, and so on.

Table B6
Bootstrapped IV Estimates Controlling for the ACA Tax Credit

	No income controls	Expanded income controls	
Outcome: Married			
Marriage subsidy ($1,000s)	0.013***	0.014***	0.008**
	(0.003)	(0.003)	(0.004)
Legal marriage	0.057***	0.057***	0.058***
	(0.010)	(0.010)	(0.010)
Marriage subsidy from ACA tax credit ($1,000s)	-0.031	-0.033	-0.033
	(0.056)	(0.056)	(0.056)
Additional controls for:			
5^{th}-order polynomial in couple's earnings		✓	✓
Zero earner family			✓
Partners' earnings split			✓
Mean of dep var	0.404	0.404	0.404
1^{st} stage coefficient	0.581***	0.582***	0.678***
	(0.034)	(0.037)	(0.050)
	[331.073]	[286.583]	[196.304]
Observations	28,406	28,406	28,406

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Bootstrapped robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys, but we are only able to match 60% of our 2015–2017 observations (tax years 2014–2016) to the plan premium data because the publicly available ACS does not identify all counties and because the HIX Compare data do not include premiums in 2014 from states that operated their own marketplaces. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).

Figure B1
Bootstrapped Heterogeneous Marriage Subsidy Elasticities by Household Earnings



Notes: The figure displays the marriage subsidy elasticity estimate (red line) and 95% confidence intervals (grey area) implied by point estimates from a bootstrapped instrumental variables specification that interacts the marriage subsidy with a 5^{th}-order polynomial in household earned income. The dashed black line represents our baseline elasticity estimate of 0.021 from column 6 of Table 6. This specification includes all baseline covariates described in the text in addition to the un-interacted 5^{th}-order polynomial in household earned income, but does not include the other expanded income controls. We trim off elasticities for couples earning more than $700,000 for presentation purposes only.

Figure B2
Bootstrapped Implied Changes in the Probability of Being Married Due to the Tax Cuts and Jobs Act

Notes: The figure translates the dollar change in the marriage subsidy due to the 2018 Tax Cuts and Jobs Act among same-sex cohabiting couples in our sample into a marriage effect based on point estimates from our bootstrapped household earnings heterogeneity specification (elasticities displayed in Figure B1). The baseline marriage rate in the sample is 0.433. We trim off outlier data points in this figure (those whose simulated changes are greater than 100% or less than -40%) for presentation purposes only.

C Appendix: Control Function Specification

In addition to the expanded income controls listed in Table 6, we have also estimated a control function specification that is similar in nature to Dahl and Lochner's (2012) approach. This specification includes all covariates with non-zero coefficients from the LASSO prediction of earnings in levels. As discussed in the main text in the context of using expanded income controls, the goal of this specification is to additionally control for the inputs to predicted earned income, so that identification of the effect of the marriage subsidy is driven by changes in the tax code due to marriage recognition rather than unique cross-sectional variation created during the prediction process.

One drawback of this approach is that the LASSO may select subsets of a vector of indicator variables or interactions instead of selecting the full vector, resulting in, for example, an incomplete

vector of state-by-year fixed effects. Although these additional controls strengthen the identification of the effect of the marriage subsidy, including only some indicator variables while omitting others weakens the identification and interpretation of our Legal Marriage and state Medicaid expansion indicator variables.

Overall, as can be seen below in Tables C1–C6, our main estimate of the effect of the marriage subsidy on marriage rates remains robust to the control function approach, but our coefficient estimates are larger than our main results. Additionally, although the control function approach significantly increases our estimate of the effect of access to legal marriage, we continue to conclude that access to legal same-sex marriage in one's state increases marriage rates.

Table C1
Baseline OLS and IV Estimates of the Effect of the Marriage Subsidy on the Probability of Being Married

	No income controls		Expanded income controls				
	OLS	IV	OLS	IV	OLS	IV	IV
Outcome: Married							
Marriage subsidy ($1,000s)	0.005***	0.012***	0.005***	0.015***	0.003***	0.010***	0.018***
	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)	(0.005)
Legal marriage	0.068***	0.067***	0.067***	0.067***	0.068***	0.068***	0.114***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.008)
State expanded Medicaid	0.006	0.005	0.005	0.005	0.005	0.005	0.029***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.007)
Male	0.001	-0.000	-0.005	-0.003	-0.008	-0.005	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.009)
Couple has children	0.156***	0.149***	0.153***	0.146***	0.154***	0.151***	0.146***
	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)
Number of children	0.038***	0.036***	0.038***	0.034***	0.037***	0.035***	0.037***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
Oldest partner's age	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***	0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partners' age difference	-0.011***	-0.011***	-0.010***	-0.010***	-0.010***	-0.010***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most educated partner's years of education	0.006***	0.006***	0.001	0.004***	0.000	0.004**	0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)
Partners' education difference	-0.002*	-0.003**	-0.000	-0.002*	-0.001	-0.002*	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partners are the same race	0.036***	0.036***	0.036***	0.036***	0.036***	0.036***	0.035***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Zero earner family					0.189***	0.111**	0.052
					(0.025)	(0.048)	(0.055)
Partners' earnings split					0.147***	0.045*	0.046
					(0.018)	(0.025)	(0.028)
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓	✓
Control function							✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient		0.556***		0.566***		0.638***	0.536***
		(0.028)		(0.030)		(0.042)	(0.039)
		[389.065]		[362.230]		[228.949]	[187.828]
Observations	36,323	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects. In specifications using expanded income controls, the OLS specifications use reported earnings measures and the IV specifications use predicted earnings measures. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).

Table C2
Heterogeneous IV Estimates by Treatment Effect

	No income controls		Expanded income controls					
Outcome: Married								
Marriage subsidy ×	0.075		0.090		0.068		0.130	
pre-*Windsor*	(0.131)		(0.131)		(0.132)		(0.136)	
Marriage subsidy ×	0.016***		0.019***		0.014***		0.022***	
post-*Windsor*, pre-*Obergefell*	(0.004)		(0.005)		(0.005)		(0.006)	
Marriage subsidy ×	0.010***		0.013***		0.008**		0.017***	
post-*Obergefell*	(0.003)		(0.003)		(0.004)		(0.005)	
Fed. marriage subsidy ($1,000s)		0.012***		0.014***		0.010**		0.017***
		(0.003)		(0.004)		(0.004)		(0.005)
St. marriage subsidy ($1,000s)		0.015		0.018		0.015		0.028
		(0.019)		(0.019)		(0.019)		(0.018)
Legal marriage	0.066***	0.067***	0.065***	0.067***	0.066***	0.067***	0.112***	0.113***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.008)	(0.008)
Additional controls for:								
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓	✓	✓
Zero earner family					✓	✓	✓	✓
Partners' earnings split					✓	✓	✓	✓
Control function							✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.388***	0.599***	0.387***	0.588***	0.387***	0.664***	0.385***	0.554***
	(0.054)	(0.037)	(0.054)	(0.037)	(0.054)	(0.048)	(0.054)	(0.045)
	[78.796]	[342.449]	[72.070]	[316.247]	[78.377]	[225.205]	[73.367]	[173.641]
1^{st} stage coefficient 2	0.552***	0.477***	0.551***	0.493***	0.576***	0.495***	0.549***	0.508***
	(0.042)	(0.031)	(0.043)	(0.032)	(0.050)	(0.032)	(0.046)	(0.030)
	[225.128]	[452.776]	[203.072]	[431.394]	[161.765]	[383.316]	[172.848]	[458.814]
1^{st} stage coefficient 3	0.592***		0.602***		0.651***		0.577***	
	(0.037)		(0.038)		(0.047)		(0.045)	
	[298.549]		[301.236]		[217.551]		[178.663]	
Observations	36,323	36,323	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s. The federal marriage subsidy variable is the marriage subsidy only from the federal tax code, and the state marriage subsidy variable is the marriage subsidy only from the state tax code. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × pre-*Windsor* variable using the outcome Observed Marriage Subsidy × pre-*Windsor*. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × post-*Windsor*, pre-*Obergefell* variable using the outcome Observed Marriage Subsidy × post-*Windsor*, pre-*Obergefell*, and so on. The mean marriage rate is 0.245 pre-*Windsor*, 0.354 post-*Windsor* and pre-*Obergefell*, and 0.526 post-*Obergefell*.

Table C3
Heterogeneous IV Estimates by Expected Subsidy or Penalty

	No income controls	Expanded income controls		
Outcome: Married				
Marriage subsidy ×	0.015***	0.016***	0.011***	0.019***
predicted subsidy	(0.003)	(0.003)	(0.004)	(0.005)
Marriage subsidy ×	0.001	-0.002	0.000	0.001
predicted penalty	(0.005)	(0.008)	(0.008)	(0.008)
Legal marriage	0.067***	0.066***	0.067***	0.112***
	(0.010)	(0.010)	(0.010)	(0.008)
Additional controls for:				
5^{th}-order polynomial in couple's earnings		✓	✓	✓
Zero earner family			✓	✓
Partners' earnings split			✓	✓
Control function				✓
Mean of dep var	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.478***	0.520***	0.578***	0.518***
	(0.023)	(0.025)	(0.035)	(0.034)
	[438.334]	[450.592]	[298.092]	[269.640]
1^{st} stage coefficient 2	1.536***	1.350***	1.348***	1.248***
	(0.231)	(0.213)	(0.212)	(0.209)
	[45.623]	[45.824]	[49.597]	[39.038]
Observations	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and includes federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Subsidy) variable using the outcome Observed Marriage Subsidy × 1(Observed Subsidy). "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × 1(Predicted Penalty) variable using the outcome Observed Marriage Subsidy × 1(Predicted Penalty), and so on. The mean marriage rate is 0.429 among couples with a predicted marriage subsidy and 0.448 among couples with a predicted marriage penalty.

Table C4
Heterogeneous IV Estimates by Presence of Children and Sex

	No income controls		Expanded income controls					
Outcome: Married								
Marriage subsidy ×	0.011***		0.012***		0.010***		0.017***	
couple has children	(0.003)		(0.003)		(0.003)		(0.004)	
Marriage subsidy ×	0.013***		0.017***		0.011*		0.020***	
childless couple	(0.004)		(0.005)		(0.006)		(0.007)	
Marriage subsidy × male		0.015***		0.019***		0.014***		0.023***
		(0.003)		(0.004)		(0.004)		(0.005)
Marriage subsidy × fem.		0.007*		0.009**		0.004		0.012**
		(0.004)		(0.004)		(0.005)		(0.006)
Legal marriage	0.067***	0.067***	0.067***	0.066***	0.068***	0.067***	0.114***	0.113***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.008)	(0.008)
Additional controls for:								
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓	✓	✓
Zero earner family					✓	✓	✓	✓
Partners' earnings split					✓	✓	✓	✓
Control function							✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.869***	0.587***	0.876***	0.581***	0.921***	0.609***	0.867***	0.543***
	(0.070)	(0.038)	(0.071)	(0.039)	(0.077)	(0.047)	(0.076)	(0.043)
	[207.253]	[283.156]	[195.150]	[252.268]	[198.558]	[195.594]	[190.858]	[178.590]
1^{st} stage coefficient 2	0.447***	0.582***	0.404***	0.594***	0.409***	0.641***	0.373***	0.599***
	(0.026)	(0.039)	(0.025)	(0.039)	(0.032)	(0.048)	(0.031)	(0.047)
	[285.383]	[273.447]	[254.489]	[271.789]	[175.661]	[205.920]	[157.585]	[175.747]
Observations	36,323	36,323	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 1 is the coefficient of the Predicted Marriage Subsidy × Has Children variable using the outcome Observed Marriage Subsidy × Has Children. "Coefficient 2" in column 1 is the coefficient of the Predicted Marriage Subsidy × Childless variable using the outcome Observed Marriage Subsidy × Childless, and so on. The mean marriage rate is 0.597 among couples with children, 0.385 among childless couples, 0.414 among male couples, and 0.451 among female couples.

Table C5
IV Estimates Using State-by-Year Fixed Effects

	No income controls		Expanded income controls					
Outcome: Married								
Marriage subsidy ($1,000s)	0.012***		0.014***		0.010***		0.018***	
	(0.003)		(0.003)		(0.004)		(0.005)	
Fed. marriage subsidy ($1,000s)		0.011***		0.014***		0.009**		0.018***
		(0.003)		(0.004)		(0.004)		(0.006)
St. marriage subsidy ($1,000s)		0.016		0.019		0.016		0.013
		(0.021)		(0.022)		(0.022)		(0.024)
Additional controls for:								
5^{th}-order polynomial in couple's earnings			✓	✓	✓	✓	✓	✓
Zero earner family					✓	✓	✓	✓
Partners' earnings split					✓	✓	✓	✓
Control function							✓	✓
Mean of dep var	0.433	0.433	0.433	0.433	0.433	0.433	0.433	0.433
1^{st} stage coefficient 1	0.555***	0.598***	0.564***	0.585***	0.635***	0.661***	0.534***	0.548***
	(0.028)	(0.038)	(0.030)	(0.037)	(0.042)	(0.048)	(0.040)	(0.046)
	[385.993]	[328.251]	[355.282]	[299.747]	[223.634]	[220.815]	[182.640]	[166.803]
1^{st} stage coefficient 2		0.426***		0.441***		0.442***		0.416***
		(0.032)		(0.033)		(0.034)		(0.034)
		[337.446]		[317.751]		[282.924]		[257.484]
Observations	36,323	36,323	36,323	36,323	36,323	36,323	36,323	36,323

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include state-by-year fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, and the partners' ages and education levels. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence). The reported first stage coefficients are only those for the relevant instrument. For example, "coefficient 1" in column 2 is the coefficient of the Predicted Federal Marriage Subsidy variable using the outcome Observed Federal Marriage Subsidy. "Coefficient 2" in column 2 is the coefficient of the Predicted State Marriage Subsidy variable using the outcome Observed State Marriage Subsidy, and so on.

Table C6
IV Estimates Controlling for the ACA Tax Credit

	No income controls	Expanded income controls		
Outcome: Married				
Marriage subsidy ($1,000s)	0.013***	0.014***	0.008**	0.015***
	(0.003)	(0.003)	(0.004)	(0.005)
Legal marriage	0.057***	0.057***	0.058***	0.112***
	(0.010)	(0.010)	(0.010)	(0.009)
Marriage subsidy from ACA tax credit ($1,000s)	-0.031	-0.033	-0.033	-0.024
	(0.054)	(0.054)	(0.054)	(0.053)
Additional controls for:				
5^{th}-order polynomial in couple's earnings		✓	✓	✓
Zero earner family			✓	✓
Partners' earnings split			✓	✓
Control function				✓
Mean of dep var	0.404	0.404	0.404	0.404
1^{st} stage coefficient	0.565***	0.574***	0.642***	0.532***
	(0.031)	(0.034)	(0.046)	(0.042)
	[331.073]	[286.583]	[196.304]	[159.306]
Observations	28,406	28,406	28,406	28,406

Notes: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses and Sanderson and Windmeijer (2016) F-statistics are in brackets. All specifications also include year and state fixed effects, as well as controls for the couple's sex, racial composition, the presence of children, the number of children, the partners' ages and education levels, and for whether the couple's state of residence expanded Medicaid under the Affordable Care Act. In specifications using expanded income controls, the earnings measures are based on predicted earnings. The data come from the 2012–2017 American Community Surveys, but we are only able to match 60% of our 2015–2017 observations (tax years 2014–2016) to the plan premium data because the publicly available ACS does not identify all counties and because the HIX Compare data do not include premiums in 2014 from states that operated their own marketplaces. All marriage subsidy variables are measured in $1,000s and include both federal and state taxes. We instrument for the observed marriage subsidy (calculated from reported income from all available sources, number of children, and state of residence) with the predicted marriage subsidy (calculated from predicted earned income, number of children, and state of residence).