A.1 Bias of Instantaneous Marriage Penalty

To state the bias of the instantaneous method, I hold constant all non-labor market components of the tax schedule at their observed values. Given these values, I calculate the average tax rate τ_q^e with respect to the tax unit's total income. Let $e \in \{1, 2\}$ denote the primary and secondary earner, respectively, and $q \in \{m, s\}$ denote marital status (married, single). The instantaneous method assumes that within each household, each individual's hours are fixed at the observed level $h_q^e = h^e$. Taking gross wages w^e and household nonwork income I to be fixed, we can calculate the instantaneous marriage penalty

$$P = [\tau_m(w^1h^1 + w^2h^2 + I)] - [\tau_s^1(w^1h^1 + I/2) + \tau_s^2(w^2h^2 + I/2)] \quad . \tag{A.1}$$

Where I is split in half among unmarried households by assumption, as part of the definition of the marriage penalty. When labor supply choice is allowed to be a function of the marginal tax rate, I write expected hours, a function of the gross wage rate and the tax schedule, as $\widehat{h_q^e}$. Acknowledging that the average tax rate is in turn dependent on this endogenous hours choice, $\widehat{\tau_q^e}$, we can write the endogenous marriage penalty as

$$E = [\widehat{\tau_m}(w^1\widehat{h_m^1} + w^2\widehat{h_m^2} + I)] - [\widehat{\tau_s^1}(w^1\widehat{h_s^1} + I/2) + \widehat{\tau_s^2}(w^2\widehat{h_s^2} + I/2)] \quad . \tag{A.2}$$

The bias of the instantaneous method of measurement is then

$$\begin{aligned} P - E = \sum_{e=1,2} w^e & \left[(\tau_m h^e - \widehat{\tau_m}\widehat{h_m^e}) - (\tau_s^e h^e - \widehat{\tau_s^e}\widehat{h_s^e})\right] \\ & + I\left[(\tau_m - \widehat{\tau_m}) + \frac{(\tau_s^1 - \widehat{\tau_s^1}) + (\tau_s^2 - \widehat{\tau_s^2})}{2}\right] \end{aligned} \tag{A.3}$$

One particularly useful way of stating this bias arises by decomposing the difference into subparts. For example, for a married primary worker, add and subtract tax payments if gross income is not changed, but martial status did, $\pm w^1h^1\tau_s^1$, and tax payments given both optimal response to the married tax schedule, but assuming the endogenous tax if single, $\pm w^1\widehat{h_m^1}\widehat{\tau_s^1}$. Then the prime earner's labor market contribution to the bias calculation becomes

$$\begin{aligned} & w^1\left[(\tau_m h^1 - \widehat{\tau_m}\widehat{h_m^1}) - (\tau_s^1 h^1 - \widehat{\tau_s^1}\widehat{h_s^1})\right] \pm w^1h^1\tau_s^1 \pm w^1\widehat{h_m^1}\widehat{\tau_s^1} \\ & = w^1\left[h^1(\tau_m - \tau_s^1) - \widehat{h_m^1}(\widehat{\tau_m^1} - \widehat{\tau_s^1}) - \tau_s^1(h^1 - h^1) + \widehat{\tau_s^1}(\widehat{h_s^1} - \widehat{h_m^1})\right] \end{aligned} \tag{A.4}$$

Clearly, $\tau_s^1(h^1 - h^1) = 0$, but I retain it in the equation to stress the idea that the instantaneous penalty forces hours when single to equal hours when married. When I also add and subtract the change in endogenous tax revenue across martial status evaluated at observed hours $\pm w^1h^1(\widehat{\tau_m} - \widehat{\tau_s^1})$, and the change in endogenous hours evaluated at the counterfactual instantaneous tax rate, $\pm w^1\tau_s^1(\widehat{h_m^1} - \widehat{h_s^1})$, and do all the same operations for the partner in the household, we can state the instantaneous bias as

$$P - E = \sum_{e=1,2} w^e \Big[h^e \left((\tau_m - \tau_s^e) - (\widehat{\tau_m} - \widehat{\tau_s^e}) \right) + (h^e - \widehat{h_q^e})(\widehat{\tau_m} - \widehat{\tau_s^e})$$

$$+ \tau_{-q}^e \left((h^e - h^e) - (\widehat{h_m^e} - \widehat{h_s^e}) \right) + (\tau_{-q}^e - \widehat{\tau_{-q}^e})(\widehat{h_m^e} - \widehat{h_s^e}) \Big] \tag{A.5}$$

$$+ I \left[(\tau_m - \widehat{\tau_m}) + \frac{(\tau_s^1 - \widehat{\tau_s^1}) + (\tau_s^2 - \widehat{\tau_s^2})}{2} \right]$$

which is equation 5 given in the text.

A Appendix

A.1 Marriage Choice Estimation

To estimate marriage choice as a function of the marriage penalty, I apply three corrections to ensure the exogeneity of the marriage penalty with respect to marital status among heterosexuals. Following the Hirano and Imbens (2005) model for continuous treatment variables, I estimate the conditional marriage function

$$E(M(P_{ict})|\widehat{p}) = \alpha_0 + \alpha_1 P_{ict} + \alpha_2 P_{ict}^2 + \alpha_3 \widehat{p}(y_1, y_2) + \alpha_4 \widehat{p}(y_1, y_2)^2 + \alpha_5 P_{ict} \cdot \widehat{p}(y_1, y_2) \tag{A.6}$$

where $M(P_{ict})$ is an indicator variable taking the value of one when the individual is married, P_{ict} represents the treatment variable, the marriage penalty, and $\widehat{p}(y_1, y_2)$ is the expected marriage penalty as a function of taxable assets and offsets of each household member, as in (1). $\widehat{p}(y_1, y_2)$ is also referred to as the generalized propensity score. My first source of exogeneity is to only use changes in the marriage penalty around the expected level to identify the effects of marriage penalty on marriage.

Since the marriage penalty P_{ict} is actually a deterministic function of y_1 and y_2, it might appear that any differences between P_{ict} and the our estimate of this generalized propensity score $\widehat{p}(y_1, y_2)$ must come via functional-form misspecifications of $\widehat{p}(y_1, y_2)$. This would be true if the tax schedule were fixed across time, but my second source of exogeneity is the JGTRRA tax reforms of 2003. I estimate the coefficients of the propensity score function based on data from 2002 and 2003 (the time between the EGTRRA and JGTRRA reforms) and then predict $\widehat{p}(y_1, y_2)$ based on y_1 and y_2 data observed in 2003 and 2004 (immediately before and after the JGTRRA). Thus, the primary source of variation in π conditional on $\widehat{p}(y_1, y_2)$ in equation A.6 is the unexpected shock to the tax schedule in tax year 2003. I estimate the propensity score via OLS using quadratic terms in the income of the higher-earner and the earnings gap between household members (see Eissa and Hoynes 2000), linear terms in non-work income and expenditure variables, and indicator variables for every possible number of children. The propensity score regression results are given in Table A.1.

While (A.6) describes the response of marriage to unexpected changes in the marriage penalty, it does not imply anything about how common each level of treatment is among those who are married and those who are unmarried. In particular, since the Census is purely cross-sectional, individuals who are married tend to be much older, higher-income, and more specialized in the labor market. Each of these factors implies that the married are over-represented among low-penalty households and under-represented among high-penalty households. In order to "balance" the sample in order to create of sample overlap (a necessary condition for identification) and to place appropriate weight on those married households most observably similar to unmarried households, my third correction is to re-weight the data following the method of Barksy, Bound, Charles, and Lupton ((BBCL) 2002).

I partition the unmarried in the 2003 Census into 20 marriage penalty quantile bins defined by π_b. Since the tax schedule changed in 2003, people with the same observable characteristics will have different treatment levels π in 2003 and 2004. Holding the tax schedule constant (which involves generating counterfactual taxes via TAXSIM under the assumption that there was no JGTRRA) I take every heterosexual in 2004 and every married household in 2003 and categorize them according to the 2003 unmarried penalty bins P_b. For each bin I construct the weight adjustment factor

$$\phi(P_{ict}) = \frac{Pr(M(P_{ict}) = 0|\ P_{ict})/Pr(M(P_{ict}) = 0)}{Pr(M(P_{ict}) = 1|\ P_{ict})/Pr(M(P_{ict}) = 1)} \text{ if } P_{b-1} < P_{ict} \leq P_b. \tag{A.7}$$

Given sample weights ω_{icet}, the weights applied in the estimation of (A.6) are $\omega_{icet} \times \phi(P_{ict})$. This process balances the sample with respect to the determinants of P_{ict}, and the tax schedule changes after 2003. BBCL stress that this weight imposes the assumption that the distribution of the treatment (the shock to the marriage penalty) among the married matches the distribution among the unmarried. I set $\phi(P_{ict})$=0 for households whose marriage penalty is either greater than the maximum observed among the unmarried in 2003, or is lower than the minimum, to enforce a common support of the treatment variable.

The entire process described above allows me to recover the average potential outcome (or "dose-response" function) by predicting the expected marriage outcome over the treatment levels of interest. This dose-response function is given by

$$\begin{aligned} E(\widehat{M(P_{ict})}) =& E\left[\widehat{\alpha}_0 + \widehat{\alpha}_1 P_{ict} + \widehat{\alpha}_2 P_{ict}^2 \right. \\ & \left. + \widehat{\alpha}_3 \widehat{p}(y_{1ict}, y_{2ict}) + \widehat{\alpha}_4 \widehat{p}(y_{1ict}, y_{2ict})^2 + \widehat{\alpha}_5 P_{ict} \cdot \widehat{p}(y_{1ict}, y_{2ict})\right] \end{aligned} \tag{A.8}$$

where the term inside the brackets on the righthand side is evaluated for each individual, and the expectation over these values is evaluated by local polynomial regression over 50 centiles of the marriage penalty P_{ict}. Since $E(\widehat{M(P_{ict})})$ is estimated using generated regressors and parameters, I recover standard errors by bootstrapping the entire process described above 1000 times over the sample of heterosexual households observed between 2002 and 2004. (A.8) estimates the causal effects of marriage penalties on marital choice. I do estimate this by penalty measure (both instantaneous and endogenous) and by the number of children present in the household (none, one, or greater than one).

The regression output from (A.6) is given in Table A.2. These results are used to calculate the expectation $E(\widehat{M(P_{ict})})$, which is plotted in Figure 2.

Table A.1: pre-JGTRRA determinants of expected marriage penalty

	Instantaneous penalty	Endogenous penalty
Labor income of high earner /1,000	41.687	24.845
	(1.893)	(2.588)
(Labor income of high earner) ^{2} /1,000,000	0.349	0.091
	(0.017)	(0.022)
(High labor income - low labor income) /1,000	-79.318	-47.161
	(1.339)	(1.764)
(High labor income - low labor income) ^{2} /1,000,000	-0.267	-0.053
	(0.016)	(0.021)
Household investment income	0.036	0.021
	(0.002)	(0.002)
HH retirement income	0.039	0.032
	(0.002)	(0.003)
HH other income	-0.004	-0.013
	(0.003)	(0.006)
HH rent payment	-0.114	0.242
	(0.031)	(0.060)
HH roperty tax payment	-0.017	0.062
	(0.006)	(0.012)
Constant	-608.768	-149.433
	(38.964)	(63.021)
N	11,602	11,602
R^2	0.761	0.2208

Note : Dependent variable is marriage penalty. Estimate is based on heterosexual households in 2002 and 2003, over the common suppposert of penalties between married and unmarried households. Estimate also includes indicator variables for every observed number of children. Standard errors are in parenthesis.

Table A.2: conditional marriage probability given treatment and expected treatment

	Instantaneous penalty			Endogenous penalty		
	No children	One child	More than one child	No children	One child	More than one child
Marriage penalty/1000	-0.064	0.109	-0.040	0.067	-0.022	-0.005
	(0.056)	(0.053)	(0.057)	(0.047)	(0.038)	(0.030)
(Marriage penalty) ^{2}/1,000,000	0.014	-0.088	-0.117	0.058	0.007	-0.020
	(0.028)	(0.019)	(0.019)	(0.023)	(0.011)	(0.009)
Expected penalty/1000	0.049	-0.477	-0.342	-0.194	-0.457	-0.735
	(0.049)	(0.104)	(0.085)	(0.050)	(0.186)	(0.169)
(Expected penalty) ^{2}/1,000,000	-0.010	-0.112	-0.135	0.073	0.095	0.153
	(0.018)	(0.032)	(0.040)	(0.042)	(0.082)	(0.069)
Actual penalty * expected penalty	0.035	0.297	0.334	-0.108	0.116	0.033
	(0.041)	(0.053)	(0.055)	(0.055)	(0.033)	(0.026)
Constant	0.948	1.442	1.962	1.141	1.177	2.097
	(0.039)	(0.100)	(0.074)	(0.038)	(0.131)	(0.121)
N	4,288	2,750	4,909	4,288	2,750	4,909

Note : probit estimate of marriagie likelihood, according to appendix equation A.6. Estimate is based on heterosexual households in 2003 and 2004 over the common supposert of penalties between married and unmarried households. Expected marriage penalty is calculated based on the results of table A.1. Unadjusted standard errors are in parenthesis.