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DOES THE INCOME TAX AFFECT MARITAL DECISIONS?

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***Abstract** - This paper discusses new empirical evidence on the role of income tax incentives in marital decisions. Time-series evidence suggests that taxes have a small but statistically significant effect on the aggregate marriage rate; however, this evidence is sensitive to the time period and the measure of marriage. Additional evidence, based on household longitudinal data, indicates that the probability of marriage falls and that of divorce rises with an increase in the so-called marriage tax, and that the timing of marriage (though not of divorce) is also affected by taxes. In short, there is strong evidence that taxes affect some marital decisions.*

It is now widely documented that marital decisions can have a significant impact on individuals' income taxes, via what has come to be called the marriage tax or marriage subsidy. It is also widely accepted that economic factors play an important, if not an exclusive, role in marital decisions, such as the choice of when to marry or divorce and whether to marry or divorce. A natural question—and one with a range of implications in a nation increasingly concerned with the family—is whether these marital decisions are affected in some way by their tax consequences; that is, does the income tax affect marital decisions?

In a provocative paper in this issue of the *National Tax Journal,* Sjoquist and Walker (1995) use time-series evidence on aggregate marriage rates in the United States to show that the individual income tax affects the *timing* but not the *rate* of marriage. Their results on the rate of marriage are in contrast to some of our recent work (Alm and Whittington, 1995), in which we also use aggregate time-series evidence to demonstrate that the income tax has a small but statistically significant impact on the decision to marry.

Because of the difference in these results, it is of some interest to explore potential reasons for the alternative findings. It is also important to examine briefly other sources of empirical evidence on marital responses to the marriage tax/subsidy. Finally, it is useful to present some estimates of the magnitude of the marriage tax/subsidy, in part to assess whether it is at all plausible to believe that these tax

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effects are of sufficient magnitude to affect such intimate decisions as those surrounding marriage and divorce. We discuss these different aspects of the income tax in this paper. Our conclusion is that there are good—if not conclusive—reasons for believing that the income tax affects a range of marital decisions.

THE MAGNITUDE OF THE MARRIAGE TAX AND SUBSIDY

Consider first the magnitude of the marriage tax and subsidy. Recent work by several researchers makes it clear that the tax consequences of marriage, both positive and negative, can be large. For example, Feenberg and Rosen (1995) estimate that 52 percent of American couples in 1994 pay a *marriage tax* that averages $1,244. In general, these are families in which there are two earners with higher incomes and with children. For this group, the average marriage tax for families making less than $10,000 in taxable income is $278, and the tax generally rises with family income, reaching an average of $9,980 for families above $200,000; even for families with taxable income less than $50,000, the average tax always exceeds $400 and can be more than $800. Similarly, for the 38 percent of families that receive a *marriage subsidy*, the average subsidy is $1,399, and ranges from a low of $440 (for families with income less than $10,000) to a high of $9,157 (for families with income greater than $200,000). In most cases, families with a single earner receive a subsidy. On average, all married couples in 1994 incurred a marriage tax of $124. Estimates by others (Rosen 1977, 1987; Brozovsky and Cataldo 1994), as well as work that we have done, also show a large and variable marriage tax/subsidy, one that depends closely on the family's characteristics and one that has changed significantly over time.

The standard economic model of marriage (Becker, 1973, 1974) generates the conclusion that an increase in the marriage tax will reduce the likelihood of individuals choosing to get or to stay married (Alm and Whittington, 1995; Sjoquist and Walker, 1995). However, to say that in *theory* individuals will respond to these taxes and subsidies is not to say that in *practice* they will respond. We believe that there are compelling reasons for the presence of some behavioral responses: the sizes of these tax effects seem likely to draw the attention of many individuals (especially those couples in which both members work); the size of the marriage tax calculations represents only the annual tax effects of marriage; and there is some related evidence that the financial effects of welfare programs, effects that are generally much smaller in absolute if not in relative income terms, influence the marital decisions of welfare recipients (Moffit 1992). However, in the end the question must be resolved by looking at empirical evidence. We turn to this next.

AGGREGATE TIME-SERIES EVIDENCE

One source of evidence is time series information on aggregate marriage rates in the United States. It is straightforward to estimate in a reduced-form equation the impact of various factors on marriage, including the marriage tax/subsidy. Using this approach, Sjoquist and Walker find no significant effect of taxation on the marriage decision. We also use this methodology, and we find that an increase in the marriage tax has a negative and statistically significant effect, although the magnitude of this effect is small. Our estimated marriage-tax elasticity is generally less than -0.05, so that the marriage tax would have to fall by 20 percent to elicit an increase in marriage of 1 percent. We find this basic result in several different specifications, including those with log transformations of the variables and with various lag structures on the independent variables.

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Although there are some general similarities between our approach and that of Sjoquist and Walker, there are at least five ways in which our work differs from theirs:

(1) They use a different time period, 1948–87 versus our 1947–88.
(2) They use a different estimation method, Cochrane-Orcutt correction for first-order autocorrelation versus our maximum likelihood estimation (MLE) with correction for first-order autocorrelation.
(3) They use a different measure of marriage as the dependent variable, a flow variable versus our stock variable.
(4) They use a different set of explanatory variables.
(5) Even where a given explanatory variable has a similar general definition, they use a different measure of the variable, especially for the marriage tax/subsidy.

We do not have the Sjoquist and Walker variables, so we cannot examine the impact of the last difference. However, we can test the sensitivity of our results to the other four differences.

Denote our choice of the time period as *T,* the estimation method as *M,* the dependent variable as *Y,* and the independent variables as *X,* and denote the alternative choices of Sjoquist and Walker with a prime. We have estimated all 16 possible combinations of the alternative methodological assumptions. Table 1 reports the coefficient estimates on the marriage tax variable, the coefficient of determination R^2, and the *F*-statistic for 6 of these 16 different combinations. These combinations include our basic specification (or *T-M-Y-X*), the Sjoquist and Walker specification (or *T'-M'-Y'-X'*), and those combinations in which only one assumption is changed at a time (or *T'-M-Y-X, T-M'-Y-X, T-M-Y'-X, T-M-Y-X'*). For example, the combination *T'-M-Y-X* means that we change our time period to that of Sjoquist and Walker, and maintain our other assumptions on the estimation method, the dependent variable, and the independent variables. Results for the other combinations and variables are not reported here but are available upon request. The coefficients on the other variables are fairly consistent across the different equations. Note again that, in those equations in which our choice of independent variables *X* is replaced by the Sjoquist and Walker choice *X'*, we use our measures of their variables.

Time Period

Our estimation period (1947–88) is slightly longer than that of Sjoquist and Walker (1948–87). As shown in Table 1, this difference has a large impact on our results. When only the time period is changed from our basic specification (equation 1 versus 2), the marriage tax variable retains its negative sign but is no longer significant. This result also occurs in all other combinations in which, among other changes, the time period is altered from our original specification to the shorter period of Sjoquist and Walker.

The two years (1947 and 1988) that differ across the specifications are characterized by significant changes in several relevant variables. Some of the largest (positive) changes in our stock measure of marriage occur from 1947–9, so that by omitting 1947 some of this variation is lost; also, the marriage tax for these years is significantly below its average over all years, so that marriage is clearly not penalized by the tax system during this time. Perhaps more importantly, there are substantial changes in the marriage tax after the Tax Reform Act of 1986, including declines in the marriage tax in 1987 and especially 1988 as the tax provisions become fully phased in. Because these

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TABLE 1
AGGREGATE TIME-SERIES EVIDENCE

Specification	Coefficient Estimate on Change in Tax Liability (*t*-statistic)	R^2	*F*
1: *T-M-Y-X* (Alm and Whittington)	−0.016[a] (−1.883)	0.925	43.889
2: *T′-M-Y-X*	−0.004 (−0.625)	0.829	8.839
3: *T-M′-Y-X*	−0.016[a] (−1.854)	0.762	11.023
4: *T-M-Y′-X*	0.001 (0.087)	0.927	43.073
5: *T-M-Y-X′*	−0.011[b] (−1.658)	0.901	51.659
6: *T′-M′-Y′-X′* (Sjoquist and Walker)	−0.004 (−0.330)	0.441	4.204

[a]Significant at the 5% level.
[b]Significant at the 10% level.

changes in the marriage tax come at a time when there is also a slight upward trend in marriage, the omission of 1988 also has a major impact on our results.

In fact, when we reestimate the combination *T′-M-Y-X* but extend the Sjoquist and Walker estimation period by the single year 1947 at the beginning of the period (so that the estimation period is 1947–87 but our other specifications on the estimation method, the dependent variable, and the independent variables are maintained), the coefficient on the marriage tax variable changes to −0.013 and becomes significant at the 10 percent level (*t*-statistic = −1.630). Further, when we reestimate the combination *T′-M-Y-X* but now extend the Sjoquist and Walker estimation period by adding the single year 1988, so that the period is 1948–88 but our other basic specifications are again maintained, the results are now virtually identical to those with our basic specification in equation 1 of Table 1: the coefficient on the marriage tax becomes −0.016 (*t* statistic = −1.831), the R^2 is 0.924, and the *F*-statistic equals 41.904. The omission of the years 1988 and, to a lesser degree, 1947 therefore misses some important developments in marriage and the marriage tax that have a marked effect on the estimation results.

Estimation Method

Our MLE is slightly more efficient than the Cochrane-Orcutt estimation because the latter loses one observation when it corrects for first-order autocorrelation. This effect is negligible in large samples, but it can be significant in the smaller samples that often typify much time-series work. Although our results change when we use the Cochrane-Orcutt estimation, notably in terms of the overall goodness of fit, the effects on the marriage tax variable are minor; in particular, compare equations 1 and 3 in Table 1.

Dependent Variable

We use as the dependent variable the percentage of women aged 15 to 44 years who are married, a stock variable. Sjoquist and Walker use as the dependent variable the fraction of unmarried females older than the age of 15 years who marry each year, a flow variable. This difference has a major impact on our results. When we replace the stock varia-

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ble for marriage with the flow variable, the significance of the marriage tax variable disappears, even when the other specifications are unchanged (equation 1 versus 4). In no combination with the flow measure of marriage is the marriage tax ever significant.

Examination of the time paths of the two alternative measures of marriage gives some reason for this result. The percentage of women who are married (the stock variable) generally falls ever since the later 1940s, with a slight increase in the late 1970s. The fraction of females who marry each year (the flow variable) falls initially and again in the early 1970s, but is fairly constant for the remaining years. Given that our measure of the marriage tax tends to rise somewhat sporadically after about 1970, it is not too surprising that our estimation generates a negative and significant coefficient on the marriage tax when it is related to the stock variable, but an insignificant coefficient when related to the flow variable.

As Sjoquist and Walker discuss, there are good reasons for using the flow variable. There is also strong justification for using the stock variable. The economic theory of marriage and divorce clearly indicates that the marriage tax affects both the incentive to marry and the incentive to stay married. The variable that best captures both influences is the stock variable. It is largely for this reason that we use the percentage of women who are married. Most other studies of the economic determinants of marriage also use a stock variable.

Explanatory Variables

The choice of independent variables also has some impact on the results, although the effects are not as large as with the time period or the dependent variable. Our basic specification includes the change in income taxes with marriage (or the marriage tax/subsidy), the change in marginal tax rates with marriage, the ratio of female to male median income, a constructed series for female wages, the percentage of males aged 15 to 44 years who have graduated from high school, the ratio of females to males aged 15 to 44, the ratio of immigrants to the resident population aged 15 to 44, the percentage of the population aged 15 to 44 who are white, and the percentage of the population aged 15 to 44 who are unemployed. Sjoquist and Walker use their measure of the marriage tax/subsidy, the ratio of females to males older than the age of 15, the relative incomes of females and males, earnings of single females, the unemployment rate for males, and the percentage of the population that is Catholic.

Both specifications are plausible applications of the economic theory of marriage and divorce, with variables included to capture the labor market opportunities for men and women, the conditions for men and women in the "marriage market," and various demographic factors. However, several features of these alternative specifications merit some attention. First, where possible, our choice of independent variables controls explicitly for the age distribution of the population, and controls for the same ages (15 to 44) as our dependent variable; the Sjoquist and Walker specification does not always and explicitly control for age. Second, as the theory of marriage clearly suggests, we include a variable for labor market opportunities facing males (or the percentage of males aged 15 to 44 who have graduated from high school) as well as the unemployment rate; Sjoquist and Walker include only the unemployment rate for males. Third, our measure of female labor market opportunities is based on female *wages;* Sjoquist and Walker use instead female *earnings,* a variable

that clearly depends on female labor force participation and so is likely to be determined jointly with female marriage decisions. Fourth, our measure of the marriage tax/subsidy seems to accord more closely with other discussions and estimates of its evolution over time than does the Sjoquist and Walker measure (Rosen, 1977, 1987; Brozovsky and Cataldo, 1994; Feenberg and Rosen, 1995). In particular, the Sjoquist and Walker variable is essentially zero until the mid-1960s, despite suggestions that there was a large and growing marriage subsidy during much of this period; it also varies relatively little in the decade immediately before the Tax Reform Act of 1986, despite evidence that the marriage tax increased significantly until 1981 and then varied in nontrivial ways due to tax changes in virtually every year through 1986.

Having said all this, the marriage tax still retains its negative and significant coefficient even when we use the Sjoquist and Walker collection of independent variables with our other assumptions (see equation 5). We have also estimated several variants on the basic Sjoquist and Walker specification: replacing female earnings with female wages, adding male education, adding race, adding immigration, and so on. As long as we retain our choices of the time period and the dependent variable, the coefficient on the marriage tax remains negative, significant, and small.

Summary

We believe that there are good reasons for the procedures that we followed in our time-series work. In all equations that retain our assumptions about the time period and the dependent variable (or equations 1, 3, and 5 in Table 1), the marriage tax has a negative and significant impact on the decision to marry, one whose magnitude is always small; further, other variables in our specifications have effects that are consistent with theory, and the goodness of fit is high. Nevertheless, we believe that the procedures that Sjoquist and Walker followed are also well justified. Given their results, together with our new results in Table 1, we must acknowledge that it is hard to avoid the conclusion that the time-series evidence is sensitive to the precise specification, particularly the time period and the measure of marriage. Such sensitivity is common in much time-series work and suggests that use of time-series results, especially those based on aggregate indicators of behavior, is risky. If evidence on the behavioral effects of the income tax was based solely on our time-series results, we would be hesitant to conclude that taxes affect marital decisions. However, other empirical evidence is available that we find persuasive. We discuss this evidence next.

INDIVIDUAL LONGITUDINAL EVIDENCE

In a series of recent papers, we have used longitudinal data from the Panel Study of Income Dynamics (PSID) to examine a range of behavioral effects of the income tax treatment of the family. These data track individuals over time, and include detailed information on their financial and personal characteristics. In 1985 the PSID collected a retrospective marital history from all respondents and updated this history in 1989. This information allows us to estimate the many factors—including the income tax treatment of the family—that affect the decisions to marry and to divorce and the timing of those decisions.

It is not possible to present these results in much detail. Instead, we give summary statistics of the tax impacts in Table 2, measured by the elasticity of relevant response with respect to the marriage tax/subsidy. More detailed results are available upon request.

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TABLE 2
INDIVIDUAL LONGITUDINAL EVIDENCE

Probability of Marital Decision	Elasticity of Probability with Respect to Change in Tax Liability	Statistically Significant?
Marriage	−0.012	Yes, all specifications
Divorce		
Females	0.020 to 0.282	Yes, all specifications
Males	0.031 to 0.037	Yes, some specifications
Delaying marriage	0.782 to 1.540	Yes, all specifications
Speeding divorce	0.188 to 0.365	No

The Decision to Marry and to Divorce

We have estimated a discrete time approximation to a continuous hazard of the time to first marriage using a logit model, where one independent variable is the change in income tax liability that would be generated by marriage. As shown in Table 2, we find that the probability of marriage falls as the marriage tax increases, a relationship that is statistically significant at the 1 percent level. The probability-tax elasticity is small (or −0.012) when measured at the mean values of the variables. However, this elasticity is substantially larger in absolute value at the extremes of the tax and subsidy, reaching −1.368 at the maximum tax and 0.998 at the maximum subsidy. We have also used the same approach to estimate the impact of the marriage tax/subsidy on the probability of first divorce. Again, we find evidence that individuals respond to tax incentives. An increase in the marriage tax increases the probability of divorce, especially for women, although the elasticity is relatively small for both men and women.

The Timing of the Marriage and Divorce Decisions

As Sjoquist and Walker demonstrate, the income tax may influence the timing of marital events even if it does not affect the probability of the event ever occurring. Using PSID data, we have estimated the probability of a couple delaying marriage from the last quarter of one year to the first quarter of the next year, thereby avoiding one year of the marriage penalty, as a function of those measurable characteristics that can change over such a short period. Like Sjoquist and Walker, we find that taxes have a statistically significant impact on the timing of marriage, with an elasticity that is close to unity. Similar models of the probability of speeding divorce to the current year in order to avoid the marriage tax do not yield any significant results.

Conclusions

The tax consequences of marriage and divorce can be substantial, and there are many reasons of both a theoretical and empirical nature for believing that some individuals respond in predictable ways to these incentives. However, even in those cases in which a behavioral response is clearly documented, it should be remembered that the magnitude of this response is small. In short, we believe that a careful interpretation of the available evidence—and one with which Sjoquist and Walker would agree—suggests that taxes affect at least some marital decisions of at least some individuals, but that for many individuals taxes are largely irrelevant.

ENDNOTES

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