Chapter 8

Tax Impacts on Wealth Accumulation and Transfers of the Rich

Wojciech Kopczuk and Joel Slemrod

After many years off the political radar screen, the U.S. estate and gift tax system

has recently received a lot of attention, culminating in the scheduled repeal of the tax in

2010 contained in the 2001 tax legislation. Opponents of this tax routinely deride it as

unfair and point to its deleterious effects on wealth accumulation and its impetus to tax

avoidance. Supporters tend to diminish these effects but at the same time often emphasize

its large effects on other aspects of behavior, in particular charitable giving. Thus, the

policy debates often make strange bedfellows with regard to behavioral responses –

taking seriously some margins of response but minimizing others. These positions are

not necessarily inconsistent, as it is certainly logically possible that some margins are

more responsive than others. However, it would be of interest to assess the behavioral

responses on a consistent basis. After all, the place of an estate tax within the overall tax

system does depend, *inter alia*, on how it affects behavior.

Unlike some other contexts, however, quantifying these behavioral responses is

not simply a matter of estimating the relevant elasticities within a well-accepted model of

choice under constraint. On the contrary, macroeconomists are engaged in an ongoing

and fierce debate about the very motivation for bequests, and the underlying model of

behavior. Moreover, estate planning usually occurs in the context of a family and

depends on the preferences of both spouses and their relationship. As a result, looking at

estate tax returns may shed some light on the appropriate model of family decision-making. We investigate spousal bequest decisions and use of a particular kind of trust (QTIPs) with this issue in mind. Finally, estate tax planning represents forward looking behavior in its most extreme form, as it pertains to what will happen after an individual's death and requires contemplating one's own death. Analysis of estate arrangements and their responsiveness to changes in tax policy might provide new evidence about the importance of various behavioral considerations as opposed to the "rational" and dynamically consistent standard model of behavior.

In this paper we review and extend what is known about the effect of estate taxes on wealth accumulation, the timing of intergenerational transfers, and the volume and timing of charitable giving. In so doing, we examine the findings with respect not only to their implications for optimal tax policy, but also their implications for the key macroeconomic controversies about the nature of intergenerational links and, by further implication, fiscal policies. In the process, we highlight findings that may be inconsistent with a unitary model of family and/or with forward-looking, dynamically consistent, behavior.

The one important caveat to all that follows is that estate taxes (at least the federal variety) are, and have always been, only for the rich. Over its history the U.S. estate tax has applied to at most the richest 6 percent of decedents, and in recent years has applied to a much lower percentage. This fact has two implications. First, generalizing any insights gleaned from the population subject to the estate tax to the whole population may be misleading. This will be especially true if behavior is not scalable. Second, because the tax applies only to the rich, it may have important implications for the distribution of

wealth, income, and well-being. For example, what to some observers is evidence of an unfortunate negative impact on wealth accumulation may to others be seen as evidence of a successful redistribution of wealth. This paper begins with a brief discussion of the U.S. estate and gift tax law and the population it applies to, and then turns to a discussion of its effects.

An Overview of Transfer Taxes

This section summarizes current law, presents the key features of the 2001 tax legislation, and provides some characteristics about estate tax returns.[1]

Current Law

Federal law imposes an integrated set of taxes on estates, gifts, and generation-skipping transfers.[2] By law, the executor of an estate must file a federal estate tax return within nine months of the death of a U.S. citizen or resident if the gross estate exceeds a threshold that in 2002 is $1,000,000. The gross estate includes all of the decedents' assets, his or her share of jointly owned assets, and life insurance proceeds from policies owned by the decedent. The gross estate also includes all gifts made by the decedent in excess

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1. For information on the history of the U.S. estate and gift taxes, see Appendix. See Joint Committee on Taxation (1998) for a more detailed treatment of current law and the legislative history of transfer taxes. Parts of this and the next section draw on Gale and Slemrod (2001).
2. States may also impose estate, inheritance, or gift taxes. The laws that govern how and to whom property may pass are the exclusive domain of the states. For example, many states provide a surviving spouse and minor children with some protection against disinheritance. In cases of intestacy, state laws provide a structure to guide succession.

of an annual exemption that in 2002 is $11,000 per recipient per year, and is indexed for inflation. The estate may also include other property over which the decedent had control, wealth transfers made during life that were either revocable or provided for less than full consideration, and qualified terminable interest property (QTIP).[3]

Typically, assets are valued at fair market value. But closely-held businesses are allowed to value real property assets, up to a maximum allowed value, at their "use value" rather than their highest alternative market-oriented value. In addition, it is often possible to discount asset value when such assets are not readily marketable or the taxpayer's ownership does not correlate with control.[4] The estate is usually valued as of the date of death, but alternatively may be valued six months after the death, if the value of the gross estate and the estate tax liability decline during this period.[5]

The estate tax provides unlimited deductions for transfers to a surviving spouse and contributions to charitable organizations. Deductions are also allowed for debts owed by the estate, funeral expenses, and administrative and legal fees associated with the estate. In addition, interests in certain qualified family businesses were allowed an extra deduction for the value of the business being transferred.

After determining the value of the net estate – gross estate less deductions – the statutory tax rate is applied. In 2002, the lowest rate that any taxable return faces is 41 percent. The tax rate rises in several stages to 50 percent on taxable transfers above $3 million. Another credit is given for state inheritance and estate taxes (but not for state gift

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3. Qualified terminable interest property (QTIP) is created when the estate of the first spouse to die receives an estate tax deduction for a wealth transfer that provides the surviving spouse an income interest only and provides the remainder interest to someone else. When the second spouse dies, the QTIP is included in his/her estate.
4. See Richard Schmalbeck (2001).

taxes).[6] The credit rate is based on the "adjusted taxable estate," which is the federal taxable estate less $60,000, and as of 2001 the allowable credit ranged from zero to 16 percent of the base; the 2001 tax law, though, phases out this credit until 2005, at which time state estate and inheritance taxes become deductible from federal taxable estate. Most states now levy so-called "soak-up" taxes that exactly mirror the credit limit, so that the state transfer taxes shift revenue from the federal to the state treasuries without adding to the total tax burden on the estate.

Tax payment is due within nine months of the decedent's death, although a six-month filing extension may be obtained. However, the actual timing of the tax payment can be flexible, as the law provides for ex post spreading out of tax payments over 14 years for closely-held family businesses. [7]

To reduce tax avoidance under the estate tax, the federal gift tax imposes burdens on transfers between living persons that exceed the annual gift exemption of $11,000. Although the estate and gift taxes are said to be unified, the taxation of gifts and estates involves some important distinctions. Gifts are taxed on a tax-exclusive basis, while estates are taxed on a tax-inclusive basis. This provides a sizable tax advantage to giving

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5. If the six-month alternative valuation date is used, assets that were liquidated in the interim are valued at their sale price.

6. Additional credits are also allowed for gift taxes previously paid, and for estate taxes that were previously paid on inherited wealth. The latter is phased out over ten years, in two-year intervals, from the date the wealth was inherited, and is intended to reduce the extent of (double) taxation of recently inherited wealth.

7. Moreover, in the presence of a well-functioning market for life insurance, a one-time estate tax liability at an uncertain future date can be transformed into a series of annual premium payments. In this context, it is interesting to note that the original estate tax law passed in 1916 contained a provision allowing for prepayment of estate tax liability with a 5 percent discount per year. This provision was eliminated by the Revenue Act of 1918.

gifts rather than bequests.[8] The taxation of *inter vivos* gifts also involves a disincentive to giving. When an appreciated asset is transferred as part of an estate, the asset's basis is "stepped up" (i.e., made equal to) to the market value at the time of death, thus exempting from future income taxation the appreciation during the decedent's lifetime. In contrast, if the asset is given *inter-vivos*, the donor's cost basis (often, but not always, the original purchase price) is "carried over" as the asset's basis. In this case, if the recipient sells the asset, capital gains that accrued before the gift was made would be taxed under the income tax.

Federal law also imposes a tax on generation-skipping transfers (GSTs). Under the estate and gift tax, a family that transferred resources over more than one generation at a time (for example, from grandparent to grandchild) could in principle reduce the number of times the wealth was subject to tax over a given period, and could greatly reduce its transfer tax liabilities. To close this avoidance mechanism, generation-skipping transfers in excess of $1 million per donor generate a separate tax, at rates up to 55 percent, above and beyond any applicable estate and gift tax. The GST tax raises virtually no gross revenue, but does appear to successfully close the loophole noted above.[9]

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8. Formally, if the marginal estate tax rate is e, the effective marginal gift tax is e/(1+e). For example, suppose the applicable estate tax rate is 50 percent and consider the implications of a giving a gift or a bequest that costs the donor $15,000, including taxes. If the funds are given as an *inter-vivos* transfer, the recipient would receive $10,000 and the donor would pay gift tax of $5,000 (50 percent of $10,000). If the funds are given as a bequest, the recipient would receive only $7,500, and the estate would owe $7,500 in taxes (50 percent of $15,000). Thus, in this example, the estate tax is 50 percent of the gross-of-tax bequest; the gift tax is 50 percent of the net-of-tax gift but only 33 percent of gross-of-tax gift by the donor.
9. See Schmalbeck (2001). Writing from the practitioner's perspective, Sherman (1992) claims that some estate plans are designed to make use of the $1,000,000 tax exemption.

George W. Bush campaigned on a pledge to eliminate the federal estate and gift tax over a ten-year period. The bill eventually passed by Congress and signed by President Bush did eliminate it, but only during the year 2010. Between 2002 and 2009, it provides for gradual reductions in tax rates and increases in the effective exemption level.[10] For 2002, it repeals the 5-precent surtax designed to phase out the benefits of graduated rates for large estates and increased the exemption amount to $1 million. Between 2002 and 2009, it provides for gradual decreases in the top rate to 45 percent, and increases in the exemption level to $3.5 million. Finally, the credit for state estate and inheritance taxes is also phased out, by being reduced by 25 percent in 2002, by 50 percent in 2003, by 75 percent in 2004, and repealed in 2005 and thereafter, when there will be a deduction paid for any state taxes.

The real excitement is scheduled to begin in 2010. The new tax law provides for the repeal of estate and generation-skipping taxes in 2010. Also in 2010, the top gift tax rate becomes the top individual income tax rate of that year; this was designed to eliminate income tax avoidance opportunities opened up by the repeal of the estate tax itself.

Repeal in 2010 is followed by reinstatement in 2011. As with all of the provisions of the 2001 tax law, the estate and gift tax provisions do not apply to 2011 and after, thus reinstating the tax law prior to the 2001 law. Thus, if the law were to unfold as

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10. Under prior law the exemption level was already scheduled to gradually increase to $1 million by 2006.

legislated, the estate tax would have a top rate of 45 percent in 2009, disappear in 2010, and return with a top rate of 55 percent in 2011 and after.

Characteristics of Estate Tax Returns

Besides shedding light on fundamental behavior patterns of families, the estate tax also serves a more prosaic role – it generates much interesting data. Evidence on the gross estate, deductions, and tax payments from estate tax returns filed can help shed light on several issues. Note, though, that most of the published data about estate tax returns does not distinguish between returns with a surviving spouse, and those without a surviving spouse. In the macroeconomics literature, though, the term "bequests" usually refers to an intergenerational transfer, and only rarely is it noted that most often it is a married couple making decisions about estate planning.[11]

In 1998, roughly 98,000 estate tax returns were filed, amounting to 4.3 percent of adult (age 20 or higher) deaths in the United States in 1997.[12] Total gross estate among 1998 returns equaled $173 billion, or less than 0.5 percent of privately held net worth.[13]

The size distribution of gross estates is highly skewed. The 89 percent of returns with gross estate below $2.5 million accounted for 53 percent of total gross estates. The 4.1 percent of estates valued in excess of $5 million accounted for 32 percent of gross estate value. Taxable returns, i.e., returns that paid positive taxes, accounted for 49 percent of all returns and 59 percent of total gross estates.

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11. Michael Hurd (1994) is an exception.
12. Hoyert, Kochanek and Murphy (1999).
13. Federal Reserve Board (2000).

Personal residence and other real estate accounts for about 19 percent of gross estates, stocks (other than closely held), bonds and cash account for 61 percent, and small businesses (closely held stock, limited partnerships, and other non-corporate business assets) account for 8 percent. Farm assets account for 0.5 percent of all gross assets in taxable estates.[14]

Deductions account for 41 percent of gross estate on average, but this ratio varies dramatically with estate size. For estates with gross assets below $1 million, deductions accounted for 25 percent of gross estate. For estates above $20 million, deductions were 56 percent of gross estate. The composition of deductions also changes with estate size. Bequests to surviving spouses account for between 60 and 75 percent of all deductions in each estate size category. In contrast, charitable contributions represent 11 percent of deductions for estates below $1 million, but rise to 27 percent of deductions for estates above $20 million.

Because differences in deductions relative to gross assets are the main reason why some estates are taxable and some are not, it is not surprising that deduction patterns vary by taxable status. Among taxable returns, overall deductions, spousal deductions and charitable contributions all rise as a share of estate as estate size rises. For nontaxable returns, deductions are much higher as a proportion of estate size, and in particular bequests to a surviving spouse are substantial. Martha Eller, Barry Johnson and Jakob Mikow provide extensive additional data on features of decedents and asset and deduction patterns in estate tax returns.[15]

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14. This figure excludes farm real estate, which accounted for 2.6 percent of gross estates. The remaining amount of gross estates is in insurance, annuities, and other assets. We thank Barry Johnson for providing this information.
15. Eller, Johnson and Mikow (2001).

The Impact of the Estate Tax on Wealth Accumulation and Avoidance

The estate tax increases the price of bequests relative to lifetime consumption. In the simplest model, an individual decides how to allocate resources (we denote them by W) between consumption (C) and a bequest (B). Both of these choices yield utility, as represented by the utility function $u(C,B)$. The individual is subject to a budget constraint that can be expressed as $C+X=W$, where X is the total estate. The estate finances both a bequest and the estate tax $T(.)$, so that it is equal to $X=B+T(X)$. This last identity defines the estate as a function of the bequest $X(B)$, and using the implicit value theorem yields $X'(B)=(1-T')^{-1}$, i.e., an increase of bequest by one dollar requires increasing the estate by $(1-T')^{-1}$ dollars. Setting the price of consumption to be one, the relative price of bequests to consumption is therefore $(1-T')^{-1}$, so that high marginal estate tax rates increase the relative price of bequests. This tradeoff is intuitive and well understood, although it should be pointed out that due to the interaction of income and substitution effects, the theory cannot unambiguously predict whether an increase in estate tax rates would increase or decrease the size of the estate.[16]

An enormous body of work attempts to measure the impact of various aspects of the tax system on various aspects of behavior. Some of it is relevant to the question of

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16. Note also that the presence of various means of avoiding the estate tax does not affect this relative price. On the margin, any avoidance activity will be performed to the point where its benefit (saving on the estate tax) is equal to its cost (consisting of direct administrative and tax planning costs, possible loss of control over assets, and other distortions). Therefore, as long as the estate tax is paid, the marginal tax rate is the marginal price one should concentrate on, just as the marginal income tax rate is the focus of attention in the modern analysis of income tax distortions (Feldstein 1995). Slemrod (2001) qualifies this statement. Applying his argument in this context, if marginal wealth accumulation reduces the marginal cost of a dollar of avoidance, the effective tax on wealth accumulation is less than the statutory rate.

how the estate tax affects behavior, even if the estate tax is not explicitly mentioned. For example, the literature on the effect of taxes on labor supply, which for the most part finds a fairly small aggregate labor supply elasticity with respect to the real after-tax wage, suggests that the estate tax is unlikely to have a large effect on that margin of behavior. The literature on how the income tax affects saving, which is largely inconclusive and riddled with econometric difficulties, suggests that demonstrating an impact of the estate tax on saving will be a daunting endeavor. A useful characterization of this vast literature, discussed at length in Joel Slemrod and Alan Auerbach and Slemrod, is that behavioral response conforms to a hierarchy.[17] Short-run timing decisions are the most responsive, followed by renaming and accounting responses, while real responses, such as labor supply and saving, are the least responsive.

Although there is no compelling evidence that taxes in general significantly reduce saving, at first blush there is a strong presumption that estate taxes may influence saving because the implied marginal tax rates on the return to saving from the estate and income tax can be very high. The implication is that the tax reduces significantly the after-tax return to saving done with the goal of providing an intergenerational transfer. The actual impact, though, depends on the response of both potential donors and potential inheritors to the lower after-tax return. What is known about this?

A few theoretical, or simulation, treatments address this issue. Kotlikoff and Summers estimate that a one-dollar decline in gross transfers reduces the capital stock by about 70 cents, but they do not estimate how transfer taxes affect gross transfer levels.[18] Jordi Caballe develops an altruistic model with endogenous growth, human capital, and

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17. Joel Slemrod (1990); Alan Auerbach and Slemrod (1997)

bequests and finds that estate taxes reduce the capital stock.[19] This model, however, focuses only on the special case where taxes on estates and on capital income have identical effects. Laitner provides the most sophisticated model of estate taxes to date, embedding them in an overlapping generations simulation model with altruistic bequest motives.[20] He finds that removing estate taxes would have a small positive effect on the long-term ratio of capital to labor. It is sometimes claimed that the growth effects of removing the estate tax would raise revenue more than sufficiently to offset the revenue loss from abolishing the estate tax. Laitner, however, finds that other tax rates have to increase to maintain revenue neutrality.

William Gale and Maria Perozek argue that the impact of transfer taxes on saving depends critically on why people give transfers.[21] If bequests are unintentional, estate taxes will not affect saving by the donor, but they will reduce the net-of-tax inheritance received by the recipient and thereby raise the recipient's saving. If bequests are payment for services provided by children, the impact of taxes depends on the elasticity of parents' demand for services. If demand is inelastic, higher taxes will raise total parental expenditure on services, and thereby rise their saving. If bequests are motivated by altruism, the effects are ambiguous, but simulations suggest that the effect will be positive or zero under many circumstances.

Empirical investigation of the impact of estate taxes is sparse, and the results are not definitive. That the latter is true should not be too surprising, in light of the generally

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18. Kotlikoff and Summers (1981).
19. Jordi Caballe (1995).
20. Laitner (2000).
21. William Gale and Maria Perozek (2001).

inconclusive empirical literature regarding the effect of taxes on saving in general.[22]

Most relevant is Kopczuk and Slemrod, who use estate tax return data from 1916 to 1996 to explore links between changes in the estate tax rate structure and reported estates.[23] These links reflect the impact of the tax on both wealth accumulation and avoidance behavior.[24] Figure 1 presents a plot of the dependent variable (total reported estates of the richest 0.5 percent of decedents, relative to aggregate wealth) and three measures of the tax rate: the top marginal tax rate (TTOP) and the tax rates evaluated at 40 and 100 times per-capita wealth in a given year (T40 and T100, respectively). This picture suggests that a negative relationship between estates and the marginal tax rates exists. Regression analysis shows that this negative association remains, even holding constant other influences.

In pooled cross-sectional analyses that make use of individual decedent information, however, the relationship between the concurrent tax rate and the reported estate is fragile and sensitive to the set of variables used to capture exogenous tax rate variation. The negative effect of taxes does, though, appear to be stronger for those who die at a more advanced age and with a will, both of which are consistent with the theory of how estate taxes affect altruistic individuals. Perhaps of most interest, the tax rate that prevailed at age 45, or ten years before death, is more clearly (negatively) associated with reported estates than the tax rate prevailing in the year of death. The estimated coefficient of the preferred specification implies that an estate tax rate of 50 percent reduces the reported estates of the richest half percent of the population by 10.5 percent

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22. See, e.g., Bernheim (1999).
23. Kopczuk and Slemrod (2001).

when its effect is fully realized. The explanatory power of the tax rate at age 45 suggests that future research should concentrate on developing appropriate lifetime measures of the effective tax rate.[25]

The Impact of the Estate Tax on Charitable Contributions

Because charitable bequests are deductible from the taxable estate, the estate tax lowers their price relative to a non-charitable bequest to $(1-T')$. It also reduces the relative price of charitable donations made during life relative to a non-charitable bequest to $(1-T')(1-t)$, where t is the marginal income tax rate.[26] Since the total effect of the tax on charitable giving involves both income (negative) and substitution (positive) effects, determining whether the total effect is positive or negative is an empirical issue.

Econometric analysis of the impact of the estate tax on charitable bequests faces a difficult problem in distinguishing the impact of the marginal estate tax rate – which varies as a function of estate size – from the impact of variations in wealth. As discussed earlier, charitable bequests as a fraction of the size of the gross estate increase with gross estate size. The key question is whether that empirical pattern is a result of a wealth elasticity greater than one, the result of a price elasticity, or some combination of the two. The problem is that the marginal estate tax rate is precisely, although nonlinearly, related

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24. Especially in the years before the unified estate and gift tax, avoidance may include inter-vivos gifts, offering another reason why changes in reported estates need not correspond to changes in intergenerational transfers.
25. Fiekowsky (1966) and Chapman, Hariharan, and Southwick (1996) also examine issues relating to the estate tax and saving.
26. These relative prices ignore the tax treatment of charitable gifts that include capital gains, and assume that the taxpayer is an itemizer for income tax purposes.

to the taxable estate. If the taxable estate is used as the measure of wealth, the price and wealth effects can be identified only through assuming the functional form of the relationship that links these variables. Since this functional form is not known, this is an arbitrary identifying assumption.

Although the complicated nature of the decision problem is often recognized, empirical work on charitable bequests has generally been based on a cross-section of estate tax returns filed within a given year. Charitable bequests are specified simply as a function of estate size, the price of charitable bequests relative to other bequests, and other standard socioeconomic determinants of giving. Most studies calculate the marginal estate tax rate as a "first-dollar" rate, i.e., the tax rate that would apply had the estate made no bequests to charity.[27]

Another important econometric issue is the treatment of spousal bequests, which are currently fully deductible in the calculation of the taxable estate. Almost all previous work calculates the marginal tax saving from a charitable bequest by assuming that spousal deductions are unchanged when charitable bequests increase; this means that non-spousal, non-charitable bequests are assumed to fall to offset the change. For a married decedent, the relative price of giving in terms of a non-spousal bequest is thus $(1-T_1')$, where T_1' is the marginal tax rate that applies to that decedent's bequest. In terms of a spousal bequest, the relative price of a charitable bequest is exactly one, because both are deductible in calculating the taxable estate. In other words, increasing the amount of charitable bequests and exactly offsetting that with a decrease in the spousal bequest will

have no effect on the estate tax liability of the first dying spouse. However, the reduced spousal bequest means that the second bequest will be lower as well – holding consumption constant – and ultimately the charitable bequest reduces the family's estate tax liability. In this case the true relative price of a charitable bequest from the first estate would be less than one, and under a reasonable set of assumptions the relative price becomes $(1-T_2')$, where T_2' is the marginal estate tax rate of the surviving spouse.

Assuming that an increase in charitable bequests by a married decedent reduces the bequest to someone other than the spouse, so that its relative price is $(1-T_1')$, is apparently extremely helpful in resolving the problem of separately identifying the effects of price and wealth on giving. Due to the fact that married decedents make substantial use of spousal bequests, the marginal tax (T_1') for married decedents is on average much lower for the same gross estate. This implies that, if married decedents have on average lower charitable bequests relative to their gross estate (as they do), the regression analysis will tend to ascribe some of that to a price effect.

Of course, as David Joulfaian notes, being married may also affect the propensity to give in other ways besides lowering the apparent price of giving.[28] To deal with this, he separately controls for marital status in the regression analysis. The results of this exercise are revealing. Compared to being married, widowed decedents are estimated (in his Table 6, column 1) to have a gift-to-wealth ratio that is 11.1 percent higher, controlling for the difference on price. The price of T_1' is estimated to have a significant

27. See Clotfelter (1985), McNees (1973), Boskin (1976), Joulfaian (1991), Auten and Joulfaian (1996), Joulfaian (2000), Joulfaian (2001). This "first-dollar" tax rate is sometimes used as an instrumental variable for the "last-dollar" tax rate that is presumed to determine the relative price of a charitable bequest relative to a non-charitable wealth transfer. Note that this a separate issue from the identification problem addressed above.

independent effect on charitable bequests. Tellingly, though, when the sample is split between married and unmarried decedents, the price term is not significantly different from zero for the unmarried, and the wealth term is not significantly different from zero for the married. This pattern of estimates strongly suggests that the assumption about the prevailing price is key to separately identifying the price and wealth effects.[29] It throws some doubt on the estimated price elasticity, because the effective marginal tax rate is clearer for the unmarried decedents.

The estate tax may well encourage giving during life as well. Indeed, this is precisely one of the avoidance techniques that Bernheim emphasizes could reduce both estate and income tax revenues.[30] Gerald Auten and David Joulfaian use a data set that matches the estate tax returns of 1982 decedents to both their 1981 federal income tax return and the 1981 income tax returns of their heirs.[31] They find that charitable bequests are sensitive to tax rates during life and at death. Joulfaian matches estate tax returns filed between 1996 and 1998 with the decedents' income tax returns for 1987 through 1996.[32] He notes that the relative composition of giving during life and at death changes markedly with wealth, with the extremely wealthy giving a much greater share of their contributions at death. His econometric analysis suggests that giving at death is sensitive

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28. David Joulfaian (2000).
29. In a log-linear specification, the price elasticities remain significant when the sample is split between the married and unmarried decedents. Joulfaian (2000) investigates two other procedures for calculating the effective tax price of charity. One calculates the marginal tax rate setting the marital deduction to zero, with an allowance for an additional deduction of $600,000 at the spouse's death. This is justified as being appropriate if the deceased retains full control over their estate, and is certain that all spousal bequests will be held to be transferred to the children by the surviving spouse. Finally, he calculates the tax price implied if all assets in a QTIP are planned to pass to heirs and none are to be consumed by the spouse. To calculate this, he reduces the reported spousal bequests by the amount set aside in a QTIP, and adjusts the marital deduction accordingly.
30. Bernheim (1987).
31. Auten and Joulfaian (1996).
32. Joulfaian (2001).

to the marginal estate tax rate.

The difficulty of separating out price and wealth effects of the estate tax in a cross-section suggests that much could be learned from examining the time-series evidence.[33] When the tax law changes, comparing data from both regimes means that families with the same wealth level faced a different set of relative prices. Their response to the different prices may help separate out the impact of the relative prices from the impact of the wealth level itself.

Figure 2 shows charitable bequests as a fraction of total gross estates from the inception of the U.S. estate tax to now. The figure reveals quite a lot of year-to-year volatility in the ratio, as well as a noticeable upward trend over the entire period. Compare this pattern with the pattern of marginal estate tax rates, shown at the bottom Figure 2. The top estate tax rate has two major periods of change. The first is between 1931 and 1936, when the top rate increased from 20 percent to 70 percent. The second is from 1981 and 1984, when the top rate fell from 70 percent to 55 percent. Figure 2 does not reveal any clear response to either of these episodes. To be sure, things are more complicated since factors other than the top estate tax rate also changed over this time. The real level of gross estate above which a return had to be filed changed, which means that the data of Figure 2 refer to a different swath of the wealth population before and after the change. This is especially problematic because the biggest change in this threshold happened between 1977 and 1987, when the filing threshold changed every year, increasing markedly from $120,000 to $600,000. Depending on the wealth elasticity and the price elasticity, this in itself could change the ratio of charitable bequests to total

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33. Alas, panel data is not likely to be available in the foreseeable future.

gross estates reported on estate tax returns.[34] During the same period of time, the top

marginal estate tax rates fell from 77 percent to 55 percent. Thus, it is difficult to separate

out the impact of the filing threshold from the impact of the reduced marginal tax rate

using only aggregate data. The analysis is further complicated by the fact that income tax

rates varied markedly over this period, as well.

The following regression analysis attempts to control for some of the factors that

could affect the ratio of charitable bequests to gross estates. The equations use as

explanatory variables each of three measures of the marginal estate tax expressed as the

logarithm of one minus the tax rate, the logarithm of one minus the top income tax rate

lagged five years, the real level of total net-of-tax estates per estate tax return,[35] the ratio

of estate tax returns filed to adult deaths as a measure of the effective filing threshold,

and a measure of income inequality used in Kopczuk and Slemrod.[36]

The results of these ordinary-least-squares regressions are presented in Table 1.

Six separate regressions are shown, for three different measures of the estate tax rate,

each with and without a linear time trend term. In the first panel of three regressions,

those without a time trend, the results reveal a significant price effect. Based on the

estimated coefficient using the TTOP price variable, a drop in the estate tax rate from 55

percent to 45 percent – the legislated decline between 2001 and 2010 – is associated with

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34. Another factor is that, in part due to the changing rules regarding their tax treatment, the relative level
of spousal bequests may have changed. With spousal bequests, the wealth of a family is effect counted
twice in these data. Because data on spousal bequests is not available over this entire period, this effect
cannot be well controlled for.
35. In constructing this variable, we subtract from total gross estates the total amount of estate taxes before
credits, on the ground that this best captures the reduction in disposable wealth due to state-levied estate
and inheritance taxes. In order to remove a source of potential endogeneity, we also subtract the value of
charitable bequests multiplied by the estate tax rate used in the appropriate regression; by so doing, we are
essentially disallowing the tax reductions that arise from the charitable bequests themselves. Because this
variable controls for changes in purchasing power due to variations in tax rates, we can interpret the
corresponding coefficient as the wealth (income) effect and the tax coefficient as the substitution effect.

a decline in the ratio of charitable bequests to gross estate of 0.004, or 5 per cent of the

1996 value of 0.075. The regressions using the other two price variables produce similar

price elasticities.

The coefficient on the log of real total net-of-tax estates per return reveals

information about the wealth elasticity of charitable bequests. The first regression, the

one that uses TTOP as the measure of the estate tax, suggests that the wealth elasticity is

significantly greater than one (because the ratio of charitable bequests to gross estates

increases with an increase in wealth). The coefficient from the first column implies that a

10 percent increase in real after-tax wealth per return is associated with a 0.0026[37]

increase in the charitable bequest ratio, a 3.4 percent increase over its 1996 value. The

magnitude of this coefficient suggests that, if the estate tax was a flat-rate tax (so that the

after-tax estate was proportional to one minus the tax rate), the wealth effect would

dominate the price effect; in this case, a tax decrease would increase charitable bequests,

because the effect of higher disposable wealth would dominate the reduced incentive to

donate disposable wealth. In reality, the estate tax is highly graduated, so for most tax

reforms the price variable will change proportionately more than the net-of-tax estate,

implying that the price effect will dominate and a tax decrease would decrease charitable

bequests. In any event, the second and third regressions feature a much lower estimated

wealth elasticity, so that the overall predicted effect of a tax decrease in those cases is

clearly to decrease charitable bequests.

The coefficient on the 5-year-lagged top income tax rate is positive and

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36. Kopczuk and Slemrod (2001).
37. The 0.0026 is the estimated coefficient of 0.026 multiplied by a change in the logarithm of the independent variable of 0.1, corresponding to a 10% increase in the unlogged value.

significantly different from zero when the TTOP variable is used, and is still positive although not significantly different from zero when either the T100 and T40 measures of relative price are used. The positive sign is consistent with the theory, as it implies that a higher income tax rate decreases charitable bequests by making charitable contributions during life relatively more attractive compared to charitable bequests.

The second group of three regressions highlights the importance of how one interprets the upward drift in the ratio of charitable bequests to total gross estates in Figure 2. Recall that the critical issue is separating a price elasticity from a wealth elasticity. If the upward drift is ascribed to a wealth elasticity greater than one, then this can become part of a story that the charitable bequest to gross estate ratio was higher than otherwise when the tax rate rose beginning in 1931, and was lower than otherwise after 1981–84 when the tax rate fell. Alternatively, if the upward drift in the ratio is attributed to a time trend unrelated to increasing wealth, these data shed less light. The regressions reveal that including a linear time trend as an explanatory variable eliminates the significant wealth effect when T100 and T40 are the price variables. Apparently T100 and T40 are too highly correlated with a linear time trend to confidently assert that the behavior of the charitable bequest ratio is not just an upward drift due to reasons that are not accounted for in the analysis.

Although these results are far from definitive, they offer some support for the view based on cross-section analysis that the estate tax induces more charitable bequests than would otherwise be made. The analysis does not, to be sure, account for many of the structural changes in the estate and gift tax over this period. A promising line of future research would be to make use of the individual estate tax returns over time in a pooled

cross-sectional analysis, while modeling the changing tax laws in more detail.

Bequests to Surviving Spouses versus Intergenerational Bequests

With just a few exceptions, both the theoretical and empirical investigations of how the estate and gift tax affects behavior has proceeded as if the potential bequeathor is a single person who eventually dies, rather than addressing the pervasive reality of a married couple facing the eventual death of one and then, at an uncertain interval later, the other. This is in the tradition of modeling family behavior as if the spouses were a single agent maximizing a utility function that depends on their joint consumption, subject to a joint budget constraint, the so-called "unitary" model. But it goes beyond that, because it assumes that whatever preferences governed decisions while both spouses are alive, regardless of how these preferences were determined, are still applicable after the death of one of the spouses. It also ignores the changed situation that follows the first death, including lower consumption needs, altered preferences regarding consumption, and the acceleration of the time of expected death of the last-to-die spouse.

Unitary models are subject to increasing criticism on both theoretical and empirical grounds.[38] As Lundberg discusses, on the theoretical level, the unitary model is unable to analyze the actual or hypothetical formation and dissolution of marriages, nor can family decisions depend on conditions external to the marriage. Lundberg argues that this shortcoming is particularly important in analyzing retirement because long-term decisions must take into account the probability of widowhood. For example, since

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38. Shelly Lundberg (1999).

wives typically live longer than men, women have more incentive than men to save for old age. On the empirical side, several recent studies have contradicted a central implication of unitary models – that the distribution of income among family members does not affect family demands. For example, several studies have demonstrated that the larger is the share of family income controlled by the mother, the greater is the well being of the children.[39]

Focusing on the disposition of the estate of the first dying spouse is particularly intriguing for a number of reasons. From the perspective of the first dying spouse, it is a disposal of that person's assets. However, from the perspective of the married couple, any bequests are *inter-vivos* transfers. It is also critical to understanding the effective tax margin on decisions made by both spouses of a married couple. Thus, examining this issue can provide insights into the nature of lifetime and end-of-life decisions as well as into the effect of the estate tax on behavior. Additionally, marital bequest behavior may also provide insights into intra-family decision-making and preferences.

The Model

The simple model sketched above more accurately describes the decision of a widow(er) than that of a married individual, even though most households subject to the estate tax consist of married couples. How then should the estate of the first spouse to die be divided among a spousal bequest, a charitable bequest, and an ordinary (say, to

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39. Lundberg, Robert Pollak, and Terence Wales (1997) show that when a U.K. policy change effectively transferred ownership of the child allowance from fathers to mothers, without changing the size of the allowance, household spending on women's and children's clothing rose relative to spending on men's clothing. See also Thomas (1990, 1994).

children) bequest? Two aspects of the tax system are relevant. First, since 1981 the estate

tax has included an unlimited deduction for spousal bequests. Second, the graduated

nature of the estate tax gives rise to an incentive to split the total non-spousal bequest

between the two estates.

Let the value of giving be represented by the function $v(B_1,B_2)$, where B_i is the

amount given by spouse i received by a child. We ignore gifts to charity for simplicity,

and because they are non-taxable for both spouses so that their allocation among spouses

has no direct estate tax consequences. A special case of this specification is $v(B_1+B_2)$,

which implies that gifts made by both spouses are perfect substitutes, so that it does not

matter who leaves a bequest. Spouses, however, may have different tastes regarding

transfers, in which case the gift made by a widow may be valued less by the husband. We

do not take a stand on the appropriate form of the v function. One thing that we explicitly

allow for is that $v_1>v_2$ *everywhere*, so that the husband prefers making a gift himself

rather than letting his wife do it.[40] Then the problem of the man facing the prospect of

death may be expressed as

$$\max u\left(C_2\right)+v\left(B_1,B_2\right), \tag{1}$$

subject to

$$W_1 - D = B_1 + T\left(W_1 - D\right) \quad \text{and} \quad D + W_2 = C_2 + B_2 + T\left(D + W_2 - C_2\right), \tag{2}$$

where W_1 and W_2 are wealth controlled by the first and second spouse, respectively, D is

the bequest transferred to the second spouse and C_2 is consumption of the widow after the

husband's death.

Solving the constraints for B_1 and B_2, substituting in the objective function, and differentiating the resulting expression with respect to D yields the first-order condition

$$-v_1\left(1-T_1{}'\right)+v_2\left(1-T_2{}'\right)+\left[u'-v_2\left(1-T_2{}'\right)\right]\mathrm{d}C_2\Big/\mathrm{d}D=0 \qquad (3)$$

Here, $T_1{}'$ denotes the marginal tax rate faced by the husband and $T_2{}'$ by the widow. The first two terms reflect the impact of the marital deduction on bequests. A larger spousal bequest reduces the "regular" bequest and saves T_1' in taxes on the margin. On the other hand, it increases the spousal bequest and, holding C_2 constant, increases the widow's bequest at the marginal tax cost of $(1-T_2')$.

The third term is due to a possible difference in tastes regarding the choice between consumption and bequests. If the widow's preferences regarding C_2 and B_2 coincide with husband's preferences, then the last term disappears. Otherwise, the decision regarding the choice of the spousal bequest is additionally affected by a misallocation (from the husband's point of view) of the widow's resources.

CONSISTENT TASTES. Consider first the case in which the spouses share the same preferences. In this case, $u'=v_2(1-T_2')$ and, if additionally the two types of gifts are perfect substitutes, so that $v_1=v_2$, the first-order condition yields

$$1-T_1{}'=1-T_2{}' \qquad (4)$$

The condition tells us that the two estates should be set so that the husband's marginal tax rate is equal to the wife's marginal tax rate. This plan, which is certainly not consistent

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40. An example of such a utility function is $v(B_1+sB_2)$, where $s<1$. The following ignores interest rates and discounting, which could be easily added to the model at the cost of additional notation.

with the man leaving all of his estate to the surviving wife, would fully take advantage of the opportunity of going through the graduated tax system twice.

INCONSISTENT TASTES. Husbands and wives may well not place the same values on bequests; the husband may trust his own judgment more than (or at least as much as) his spouse's (that is $v_2 < v_1$). In that case, the husband would not leave as large a spousal deduction as otherwise since the condition becomes $1 - T_1' = (1 - T_2') \, {}^{v_2}\!\big/\!{}_{v_1}$. However, reasons exist to consider the opposite situation. Conditional on holding on to wealth until death, it is conceivable that not parting with resources during lifetime has an "option" value. This may be due to an uncertain lifetime of the surviving spouse and the need for financing future consumption, or it may be due to uncertainty about future healthcare and nursing costs. We will consider the implications of such types of uncertainty in what follows.

OVERCONSUMPTION BY THE SPOUSE. If the widow does not trade off consumption and her own bequest exactly as her deceased husband would like her to, then the second term, $[u' - v_2(1 - T_2')]dC_2/dD$, becomes relevant.[41] If the husband believes his wife will over-consume, increasing the spousal bequest reduces utility. Thus, the spousal bequest should be lower than otherwise.

KINKS IN THE TAX FUNCTION. We have proceeded thus far as if the tax function was differentiable. This is not the case in practice – in fact, the estate tax schedule is

piecewise linear. One consequence of piecewise linearity is that husbands are likely to choose their marital deduction to be at the kinks of the tax function.[42] The most drastic jump in the marginal tax rate is at the point when the estate exceeds the exemption level and becomes subject to the tax, where the marginal tax rate schedule begins at 41 percent. The necessary condition for the marital deduction to wipe out all of the husband's tax is

$$v_1\left(1-t^0\right) \leq v_2\left(1-T_2{}'\right)+\left[u'-v_2\left(1-T_2{}'\right)\right]\frac{\mathrm{d}C_2}{\mathrm{d}D}, \tag{5}$$

where t^0 is the initial marginal tax. Limiting attention to the case without overconsumption by the spouse (overconsumption additionally reduces the incentive for using the spousal bequest deduction), this condition states that $1-t^0 \leq (1-T_2')v_2/v_1$. Given that under the progressive tax schedule $t^0 \leq T_2'$, it requires that $v_2/v_1 \geq 1$. In other words, for the husband to split a bequest so as not to face any tax liability, what is required is a *preference* for postponing gifts until the wife's death**.**

INTERACTION WITH OTHER TAXES. One tax wrinkle ignored in the discussion above is that postponing estate taxation via a spousal bequest allows for potentially tax-free accumulation of capital gains between the death of the husband and the death of the widow. When an asset is transferred by the husband to a child, the child assumes the asset's current value as the tax basis for measuring future capital gains taxes. If instead the transfer is postponed until the death of the widow, its then-current value will become the asset's basis, effectively allowing for the accumulation of capital gains tax-free during the period between the spouses' deaths. This strategy is valuable especially if the

41. This term vanishes also when $dC_2/dD=0$.

potential beneficiary does not plan to sell the asset during this period.

This may be a non-trivial benefit that can in some situations offset the potential estate tax savings from estate splitting.[43] The precise value of it depends on the number of factors, including expected future accumulation, the expected frequency of reinvestment, the expected time between spouses' deaths, and the capital gains tax rate. Denote the marginal cost of any additional capital gains tax if the asset is transferred to the child immediately by g, and introduce it in the model as an additional cost of the husband's transfer, so that

$$W_1 - D = B_1 + gB_1 + T\left(W_1 - D\right). \tag{6}$$

This decreases the net-of-tax rate to $\left(1 - T_1{}'\right)/\left(1 + g\right)$ or, in other words, increases the cost of a transfer from $T_1{}'$ to $\left(g + T_1{}'\right)/\left(1 + g\right)$. It clearly reduces the benefit from transferring funds from the first-to-die spouse to the children, and therefore acts to increase the optimal spousal bequest. In particular, in the baseline case of no overconsumption, it yields

$$1 - T_1{}' = \left(1 - T_2{}'\right)\left(1 + g\right)^{v_2}\Big/v_1. \tag{7}$$

Even when the husband prefers making gifts himself, it can no longer be presumed that the marginal tax rate of the first spouse should exceed that of the second because the magnitude of g matters. The presence of this effect provides an incentive to

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42. In the certainty case, kinks in the spouse's tax schedule should matter as well. In practice, however, due to the uncertainty of the time of death, this is only a theoretical curiosity.
43. For example, the capital gains effect can dominate the estate splitting effect for those very rich individuals who do not face significant progressivity, because the marginal tax rate for high estates is constant.

increase the spousal bequest.[44] However, it does not imply transferring everything to the spouse, except for couples that are not much above the tax-paying threshold.[45]

UNCERTAINTY. To address uncertainty, assume that the utility function is time-separable, and allow for uncertainty regarding future well-being, so that $v(B_1)+E[m_i w(B_2)]+E[\Sigma d_i u(C_i)]$, where E[.] denotes the expectation operator, $w(.)$ is the utility from bequests, and $d_i=1$ (and $m_i=1$) in the case of survival until (death in) period I, and is equal to zero otherwise. The uncertainty considered here may pertain to the timing of death, as well as to various other events such as realizations of health care costs or financial variables.[46] C is a vector of future consumption. Expressed in this way, the solution to the spousal bequest problem is analogous to the one before:

$$-v'\frac{1-T_1'}{1+g}+E\left[w'(1-T_2')\right]+E\left[\sum d_i \left(u_i{}'-m_i w'(1-T_2')\right)\frac{\mathrm{d}\,C_i}{\mathrm{d}\,D}\right]=0, \qquad (8)$$

and the interpretation is similar to the certainty case. The last term is non-zero when the widow has different preferences on the consumption/bequest margin than the deceased

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44. A qualification concerning the role of charitable bequests is in order. Charitable bequests are nontaxable and, because charities do not pay the capital gains tax, $g=0$. The calculations sketched below apply to the level of wealth that is intended to be transferred to children (or other taxable beneficiaries).
45. The upper limit for the value of g is the top (long-term) capital gains tax rate, which is now 20%. Abstract from the taste issue by assuming that $v_1=v_2$. There is no benefit to estate splitting if $(1-T_{min})/(1+g)$ $>(1-T_{max})$, where T_{min} is the lowest marginal tax rate and T_{max} is the tax rate if all money over the exemption level was transferred to the spouse. In practice, until 2001 $T_{min}=.37$ and with $g=.2$ the left hand-side of this expression is .525. Therefore, the first spouse should pay no tax only if the transfer to the surviving spouse results in a tax rate below 47.5%. This is approximately the tax rate that applies to an estate of about $2 million. This limiting value applies only if the whole value of the asset consists of capital gains that had appreciated since the husband's death. Usually, g will be significantly below this top value.

husband. When their preferences are identical, the first-order condition becomes

$$1 - T_1' = \mathrm{E}\left[\left(1 - T_2'\right) w'\!\big/\!v'\right], \tag{9}$$

which means that expected tax minimization applies except that future taxes are weighted by the marginal rate of substitution between the own and the spousal bequest. Introducing uncertainty may change the benefit to postponing giving, depending on the convexity/concavity of $(1 - T_2')w'$. In fact, with T_2' being a step function that is neither convex nor concave, it is not clear whether the effect is positive or negative.

AVAILABILITY OF QTIP TRUSTS. At the same time (1981) that the unlimited marital deduction was introduced, Congress also introduced the QTIP exception to the rule that terminable interest property does not qualify for the deduction. Under a QTIP trust, the husband's estate is formally transferred to the widow. The widow must be given access to the earnings of the trust, but can be prevented from accessing the principal. The principal in the trust is transferred to ultimate beneficiaries at the death of the surviving spouse according to the will of the husband who originally elected to set up the trust. The tax consequences are exactly as with a regular spousal bequest: wealth put in the QTIP trust is taxed upon death of the widow. As pointed out by Eller, Johnson and Mikow and elaborated on in the empirical section that follows, QTIP trusts are heavily

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46. A separate consideration involves what is sometimes called the "peso" problem: a small probability of an event with a huge impact if it were to occur, such that the effect on utility dominates the small probability. As an example, consider the possibility of a terminal illness that might be potentially cured if a sufficient amount of money is devoted to research. Such a possibility may not play any role in the plans of a typical individual, but may affect the decision of a rich (optimistic, possibly eccentric) person who would consider spending such an amount, as it creates a strong incentive not to part with wealth. Such events do not fit in the framework of our model, because they require that individuals be able to affect the chance of their death. They also require taking a stand about the form of utility from being alive.

used in practice.[47]

Why would a husband want to restrict the options of his wife in this way? One benefit of using the QTIP from the point of view of the husband is that he decides about the ultimate destination of the gift.[48] On the margin, this is valued as the difference between his value of giving and the value of his wife giving, v_1-v_2. Apart from that, the QTIP decreases the resources available to the spouse, which affects the magnitude of the overconsumption problem. There is, to be sure, the alternative of making a bequest to children, and transferring to the wife only what is truly intended to be transferred. In the context of our model, denoting the amount of money put in the QTIP trust by Q, the constraints of the individual optimization become

$$
\begin{aligned}
W_1 - D + Q &= B_1 + T\left(W_1 - D\right), \\
D - Q + W_2 &= C_2 + B_2 + T\left(D + W_2 - C_2\right), \\
D &\geq Q \geq 0.
\end{aligned}
\tag{10}
$$

The first-order condition for the interior choice of Q is

$$
v_1 - v_2 + \left[u' - v_2\left(1 - T_2'\right)\right] \frac{\mathrm{d}\,C_2}{\mathrm{d}\,Q} = 0,
\tag{11}
$$

When C_2 is a normal good and the widow is over-consuming, the last term in equation (11) is positive (because both factors are positive). If, as is likely, $v_1-v_2>0$, the left-hand side of equation (11) is always positive and no interior solution exists: all of the spousal bequest should be in the form of a QTIP. In the baseline case of consistent tastes and no over-consumption, all of the terms in the above condition are zero and a QTIP

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47. Eller, Johnson and Mikow (2001).

accomplishes nothing and costs nothing.

Without the availability of QTIPs, tax minimization is inextricably tied up with transferring the decision about the transfer of resources to the spouse, and a tradeoff between the two must be made. The QTIP option allows for separating these two decisions. Thus, the spousal bequest should be selected so that taxes are minimized, with the QTIP implementing how resources should be divided between bequests of both spouses. As a result, the estate tax does not affect the balance of power within the family. [49]

In sum, the graduated nature of the estate tax introduces an incentive to split the estate so as to go through the tax schedule twice. The incentive to do so would be weakened if the spousal bequest entailed losing control over who is going be the ultimate beneficiary. It is also weakened by the likelihood that the spouse will use intended intergenerational bequests for her own benefit. The effect of uncertainty is unclear. The availability of QTIPs resolves anxiety about the loss of control and overconsumption and restores tax minimization as the correct objective. An additional factor is the potential for avoiding capital gains taxes on the gains that accrue between the deaths of the two spouses. This effect increases the potential tax benefit to spousal bequests, but it is arguably not big enough to justify using the full marital deduction, with the exception of taxpayers who are only slightly above the filing threshold. Despite these offsetting

48. Of course, QTIPS could be used for other reasons. For example, it may be used to prevent a spouse who is financially inexperienced from making mistakes. See Sherman (1992) for a discussion of various circumstances that motivate the use of QTIPs. Also, see Madoff, Tenney and Hall (2001, chapter 6) for the discussion of legal options in marital estate planning.

considerations, tax minimization is a fairly robust prediction of the theory. We next

confront these predictions with the data.

Basic Facts about the Estates of First Dying and Surviving Spouses

Bernheim explores the sensitivity to estate tax provisions of the timing of

transfers to one's ultimate heirs by comparing estate tax return data from 1977 and

1983.[50] Most of the former data are for estates treated under 1976 law, before the

changes in the Tax Reform Act of 1976, and most of the latter data concern returns taxed

under Economic Recovery Tax Act of 1981, which removed the limitations on marital

deductions. He finds that, among estates with an approximately similar minimum value,

in 1977 married individuals left 48 cents out of every dollar to their spouses, but by 1983

this figure had increased to 59 cents. This change could be due to the introduction of the

unlimited marital deduction. He also finds that the fraction of married individuals who

claimed deductions for spousal bequests rose from 90 percent to 95 percent. This

increase is not likely to be due to the increase in tax-free spousal bequests, but is

consistent with the lower estate tax rates in 1983 reducing the penalties associated with

transferring wealth first to one's spouse, and then, upon the spouse's death, to one's

children.

If the increased spousal bequests are not offset somehow, one would expect to see

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49. Similar reasoning applies when there is a corner solution for the marital deduction or for the QTIP.
Interestingly, the QTIP not only implements the husband's objectives, but it also can reduce welfare of the
spouse. In our model, the QTIP simply increases spousal tax liability and, if it offsets the full marital
deduction, it does not bring any benefits to the spouse. In practice, the QTIP provides income to the spouse
that, at least partially, compensates for the increase in tax liability.
50. Bernheim (1987).

over time an increase in the share of decedents' wealth held by widowed decedents.[51] In

1983, married decedents accounted for 53.5 percent of estate tax returns and 56.7 percent

of total estate value, while widowed decedents represented 36.1 percent and 33.0 percent

of returns and estate value, respectively. By 1998, the proportions were dramatically

different. Married decedents accounted for 43.9 percent of returns and 48.3 percent of

total gross estate value, while widowed decedents accounted for 43.7 percent of returns

and 40.9 percent of gross estate value. What we do not know, but would like to know, is

whether this means that intergenerational transfers have been postponed.[52]

The second issue is whether the data are consistent with tax-minimizing behavior

that our model predicts. We focus on the differences between the estate tax returns of the

married and widowed decedents, shown in Panel B and Panel C of Table 2. In 1998,

these categories comprise 43.9 percent and 43.7 percent of the total returns filed,

respectively, and 48.3 percent and 40.9 percent of total gross estates, respectively.

Notably, for the married decedents, spousal bequests are 58.8 percent of the total gross

estate, and fully 86.5 percent (37,146 out of a total of 42,939) of the returns is non-

taxable, predominantly because deductible spousal bequests push the taxable estate below

the tax threshold. In fact, non-taxable returns constitute a significant share of all returns

of married decedents even for the very rich, although their frequency falls with the size of

gross estate. In particular, they are very common in the $1 million to $10 million range

where estate splitting produces significant tax savings. Our model predicts such behavior

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51. E.g., by increased consumption by the spouse.

only for couples that plan to leave only a small taxable bequest, and therefore the prediction of tax minimization does not appear to be supported by the data. Too little tax is paid by the first dying spouse.

Spousal bequests also have implications for the proper calculation of the effective tax rate imposed on families' estates. According to Table 2, the effective average tax rate is much lower for the married decedents, being 4.4 percent for that group compared to 19.4 percent for the widowed decedents. An approximation of the average tax rate on families is obtained by calculating the ratio of the tax paid by both married and widowed taxpayers to the sum of the total gross estate of both groups net of spousal bequests. This procedure yields $17.5 billion ($13.8 + $3.7) divided by $105.7 billion ($84.0 billion + $71.1 billion – $49.4 billion), or 16.6 percent, which is significantly more than the apparent overall average tax rate of 11.7 percent shown in Panel A of Table 2, and is a more appropriate estimate of the overall average tax rate imposed on families' estates. Table 3 presents the distribution of estate tax returns and gross estates by marital status and gender. In any given year about the same number of men and women die, but in as late as 1983 61.3 percent (38,774 out of a total of 63,251) of estate tax returns were filed by men, representing 64.4 percent of total estate value. Because of the well-known longer longevity of women, it is perhaps less surprising to observe the relationship between gender and marital status at death. Within the population of estate tax filers, in 1983 only 18.7 percent (6,538 of 34,972) of ever-married males died as widowers, while 75.1

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52. The Statistics of Income Division of the Internal Revenue Service publishes a voluminous amount of aggregated data from estate tax returns. However, in recent years none of this data differentiates the returns filed for married decedents from others. As Table 1 shows, this differentiation reveals several interesting patterns. The top panel of Table 1 aggregates all estate tax returns, while the next three panels disaggregate this data into categories depending on the marital status of the decedent: married, widowed, and single. We thank Barry Johnson of SOI for providing us with this data for 1998.

percent (16,284 of 21,685) of ever-married females died as widows. Note that this may simply reflect a bias in which spouse holds family wealth.

Table 3 documents that, perhaps partly due to increased spousal bequests, the percentage of estates held by females has risen by more than one-fifth since the early 1980's. The share of gross estates held by females increased from 35.6 percent in 1983 to 42.9 percent in 1998. Most of this increase can be explained by the increase in the share of estates held by widowed individuals, who are predominantly female. Over this period the composition of decedents' estates also shifted among married couples. Among married decedents, in 1983 14.2 percent ($4.07 billion of $28.6 billion) of estates was held by females; by 1998, this has risen to 20.7 percent ($17.4 billion of $84.0 billion). This trend is consistent with the parallel trend of increasing female labor force participation and earnings, which would in itself probably increase the amount of wealth held by women.

QTIPS

The fact that females decedents now account for a larger fraction of estates does not necessarily mean that they now exercise greater control over the disposition of wealth. As discussed earlier, for property to qualify as QTIP, the trust must provide a "qualifying income interest for life" to the surviving spouse, meaning that all trust income must be paid to the surviving spouse. Property qualifying as QTIP must be included in the value of the surviving spouse's estate.

As Johnson, Mikow, and Eller detail, QTIPs are now widely used.[53] For 1995 decedents, 27,066 married male decedents left bequests to surviving spouses, amounting to $33.5 billion. Of this total, 11,322 reported a QTIP trust, which totaled $16.4 billion. Among the decedents, 8,329 female married decedents left spousal bequests, totaling $7.4 billion. Of this total, 2,784 had QTIPs valued at $3.2 billion. Thus, men were more likely to restrict the use of a spousal bequest through a QTIP. 41.8 percent of men used one, comprising 49.0 percent of the value of their spousal bequests. Only 33.4 percent of women with a spousal bequest used one, covering 43.2 percent of the total spousal bequests.

Why are QTIP trusts so often used? As delineated in our model, one role that they can play is restricting the spouse's control over assets. Whether this is an intended objective of the majority of QTIPs cannot be ascertained using our data, because QTIPs may (but do not have to) allow the surviving spouse to access more than the interest on principal. We expect that many QTIP trusts do in fact restrict decisions of the spouses. To the extent they do, this casts additional doubt on a unitary model of transfer behavior, but it is consistent with a number of alternative hypotheses, such as heterogeneous tastes (e.g., about the most preferred charity, consumption versus bequests, remarriage), or paternalistic preferences (the widow or widower may be perceived as being unable to handle financial matters).

As addressed in the discussion of our theoretical model, using QTIPs allows for greater flexibility in pursuing tax minimization strategies. Therefore, it is surprising to observe that, although QTIPs are commonly used, the prediction of tax minimization

53. Johnson, Mikow, and Eller (2001).

does not seem to hold.[54]

Charitable Bequest Patterns by Marital Status and Gender

The patterns of charitable bequests vary markedly by marital status. The ratio of charity to gross estate is highest among the never-married taxpayers, at 13.4 percent (Table 2). This is consistent with the hypothesis that non-charity heirs have a smaller pull on the resources of single, and presumably mostly childless, individuals. Among individuals married at one time, charitable bequests tend to be postponed until the second death. For married decedents, charitable bequests make up only 1.5 percent of gross estates, compared to 9.7 percent for widowed decedents. Even comparing charitable bequests to gross estate net of spousal bequests yields an average ratio of only 4.3 percent for married decedents. Note the striking contrast to the evidence from income tax returns that married individuals give more to charity than unmarried individuals, including in the year prior to the date of death.[55] Of course, the use of aggregate evidence to suggest that charitable behavior depends on marital status may be misleading if groups differ in other ways, such as the average level of wealth and the after-tax price of giving for a widowed decedent.

According to Eller, females are much more likely to have some charitable

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54. This conclusion is strengthened by the fact that non-deductible (i.e., taxable) bequests of the first dying spouse can be structured, using trust instruments, so that the surviving spouse can have limited access to the income and principal. As with the QTIP, this possibility weakens the connection between the tax minimization strategy and who may benefit from the bequest, and makes the apparent failure of people to pursue tax minimization all the more puzzling. We are grateful to Ray Madoff for clarifying this issue for us.

55. See Randolph (1995) regarding giving during life, and Auten and Joulfaian (1996) on giving in the year prior to death.

bequest, 23.4 percent compared to 13.7 percent for male 1992 decedents.[56] The recipient

of charitable bequests also varies systematically by the gender of the donor. For male

decedents, private foundations comprised 37.6 percent of gifts, compared to only 18.7

percent for female decedents. Females gave much more to religious organizations, 14.3

percent versus 5.4 percent, and to educational, medical, and scientific organizations, 34.5

percent versus 21.5 percent. The systematic gender differences in charitable giving

patterns suggests that, to the extent that the estate tax induce changes in the effective

control over wealth, it will affect the volume and pattern of charitable giving.

Conclusion

The U.S. estate and gift tax significantly affects the relative reward of

consumption, charitable giving, and bequests for those Americans prosperous enough to

have wealth that exceeds the large exemption level. How that affects behavior depends

on the motivation for bequests and charity, as well as how substitutable people believe

them to be. Understanding the behavioral response is relevant to assessing the tax itself

and possible reform, but also to shedding light on such critical economic issues as

intergenerational altruism and rational behavior toward future, uncertain, and even

existential events.

Sparked partly by the legislative attention to the estate tax, recently several

studies have tried to assess the effect of the tax on wealth accumulation, *inter-vivos*

giving, and charitable donations. Among the important tentative – and we emphasize

tentative – conclusions are:

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56. Eller (1997).

- The estate tax reduces the accumulation of estates – or at least the reporting of estates – by as much as 10.5 percent among the richest 0.5 percent of wealth owners.

- The estate tax increases charitable bequests by as much as 12 percent.

- In spite of substantial tax reasons to favor *inter-vivos* gifts over bequests, *inter-vivos* gifts (or at least those reported to the IRS) are small relative to bequests.[57]

This paper adds to the existing literature in two ways: First, it uses the time-series variation in tax rates to help separate out the price and wealth elasticities of charitable giving, providing corroborating evidence that the estate tax increases charitable bequests. Our preliminary results suggest that the effect could be larger than the 12 percent figure cited above. Second, it explores bequest decisions by married couples. The patterns of bequests among spouses suggest that the inter-spousal division of assets is responsive to tax considerations. However, non-deductible (i.e., intergenerational) bequests of the first dying spouse are much lower than a tax minimization strategy would dictate. This is so even though tax minimization appears to be a robust prediction of theory. Moreover, the evidence is inconsistent with a unitary model of behavior, in which the two spouses have identical tastes.

Taken together, these findings have implications for both estate tax policy and for more general economic controversies. Estate tax policy must confront the classic tradeoff between equity and efficiency. Although the tax is by far the most progressive tax in the federal tax portfolio, it does have economic costs associated with reduced wealth accumulation, increased avoidance and evasion, or both. It probably also has the, arguably socially beneficial, impact of increasing charitable giving. To the extent that the

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57. This finding, not discussed in this paper, is addressed in Poterba (2001) and elsewhere.

tax reduces wealth accumulation, it no doubt also reduces the concentration of wealth but, in contrast to collecting tax from the most well-to-do without behavioral repercussion, it exacts some cost.

More generally, the results shed interesting new light on the role of altruism, both intergenerational, interspousal, and with respect to charities. The responsiveness of estate planning to the price of intergenerational transfers is consistent with altruism – if bequests were accidental and unvalued, they would not be price-responsive.[58] But some of the new evidence deepens the puzzle over why, if intergenerational transfers are motivated by altruism, they seem to be postponed to an extent that, for tax reasons, significantly reduces the eventual after-tax transfer. This phenomenon, which had previously been observed with respect to *inter-vivos* gifts, seems also to characterize the transfers made by married couples. Even more puzzling is that this strategy does not significantly benefit spouses because spousal bequests very often take the form of QTIP trusts that can be used to restrict the control of the spouse over their use. This suggests the need for future research that addresses intra-family dynamics and the strategic interactions between spouses and children.

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58. It is conceivable that bequests are not valued but are price-responsive, because they are useful as a strategic device to extract utility during life.

Appendix: Summary History of U.S. Estate and Gift Taxes, 1916-1993

The modern estate tax began with the passage of the Revenue Act of 1916. That act imposed a tax on the estate of a decedent at rates ranging from 1 percent for net estates of up to $50,000 to 10 percent on net estates over $5 million. The law provided an exemption of $50,000 and permitted the value of the estate to be reduced by the amount of funeral and administration expenses, debts, losses, and claims against the estate. Under the 1916 law, the value of an estate for tax purposes equaled the fair market value of the decedent's property at death. The value of the estate was increased by certain lifetime transfers, including transfers made in contemplation of death

Congress made numerous changes to the estate tax at various times from 1917 through 1926. The Revenue Act of 1917 increased rates by one-half, and later in 1917 Congress added two new rate brackets at the high end of the rate scale. At the end of 1917, estate tax rates ranged from 2 percent on net estates of less than $50,000 to 25 percent on net estates greater than $10 million. The Revenue Act of 1918 reduced the tax rates on estates of less than $1 million. The 1918 law also made charitable contributions deductible in computing the taxable estate, and broadened the tax base to include, among other items, the value of any property subject to a general power of appointment held by the decedent. In 1924 Congress increased the tax rates to a top rate of 40 percent on net estates of more than $10 million and instituted a gift tax – that is, a tax on gifts made during a person's lifetime. The new gift tax had the same rate schedule as the estate tax and permitted a lifetime exclusion of $50,000 in gifts and an annual exclusion of $500 in gifts per recipient. The 1924 changes also included certain adjustments to the estate tax base and the granting of a credit against up to 25 percent of the federal estate tax liability

for estate taxes imposed by states. In 1926 the gift tax was repealed. In that year, Congress also reduced estate tax rates, so that rates ranged from 1 percent on net estates under $50,000 to 20 percent on net estates of more than $10 million. It also increased the exemption from $50,000 to $100,000 and raised the maximum credit for state estate taxes from 25 percent to 80 percent of the federal estate tax liability.

The Revenue Act of 1932 increased estate tax rates at nearly all levels and added two new tax brackets for large estates. After the 1932 changes, rates ranged from 1 percent on net estates up to $100,000 to 45 percent on net estates of more than $10 million. The 1932 law also reduced the exemption to its 1924 level of $50,000, and reintroduced the gift tax and set rates at three-quarters of the estate tax rates. The new gift tax allowed a lifetime exclusion of $50,000 and an annual exclusion of $5,000 per recipient.

The Revenue Act of 1934 raised the maximum rate to 60 percent on net estates over $10 million, and the Revenue Act of 1935 further increased the highest rate to 70 percent on net estates of more than $50 million. The 1935 law reduced the estate tax exemption and the lifetime gift tax exemption to $40,000 each. The Revenue Act of 1940 imposed a 10 percent surtax on income, estate, and gift taxes. Another round of rate increases came in the Revenue Act of 1941: rates now ranged from 3 percent on net estates of $5,000 or less to 77 percent on net estates over $50 million. During this period, gift tax rates stayed at three-quarters of the estate tax rates.

Among other changes, the Revenue Act of 1942 increased the estate tax exemption to $60,000 and reduced the lifetime gift tax exclusion to $30,000 and the annual exclusion to $3,000 per recipient. The Revenue Act of 1948 introduced the estate

and gift tax marital deductions. This change was intended to equalize the tax treatment of couples from non-community-property states with those from community-property states. The estate tax marital deduction permitted a decedent's estate to deduct the value of property passing to a surviving spouse under will or otherwise. The deduction was, however, limited to one-half of the decedent's adjusted gross estate – that is, the gross estate less debts and administrative expenses – and community property was ineligible for the marital deduction. The gift tax marital deduction similarly allowed a donor spouse to deduct one-half of the amount of an interspousal gift, other than a gift of community property.

After 1948 few changes were made to the estate and gift tax laws until Congress passed the important Tax Reform Act of 1976. First, the 1976 act created a unified estate and gift tax framework: the law imposed a single graduated rate of tax on both lifetime gifts and testamentary dispositions. (Before the unified framework was established, gifts made during life were taxed at lower rates than were gifts made at death.) Second, the 1976 Act merged the estate tax exclusion and the lifetime gift tax exclusion into a single, unified estate and gift tax credit, which could be used to offset a donor's gift tax liability during his lifetime and, if not entirely used at death, could be used to offset the deceased donor's estate tax liability. The 1976 law retained the $3,000 annual, per recipient gift tax exclusion. The 1976 act also instituted a tax on generation-skipping transfers designed to ensure that transfers of wealth were taxed at each generation. It also increased the estate tax marital deduction available for certain taxpayers. The maximum deduction was increased to the greater of one-half of the adjusted gross estate or $250,000.

The Economic Recovery Tax Act (ERTA) of 1981 eliminated the quantitative limits on the amount of estate and gift tax deductions available for interspousal transfers, instead allowing unlimited tax-free interspousal transfers. ERTA also permitted a marital deduction for transfers of property in which the decedent's spouse had a life interest that was not terminable (property for which the spouse did not have the power to appoint beneficiaries at his death), so long as the property was "qualified terminable interest property" – that is, property in which the surviving spouse had the sole right to all income during life but over which he had no power to transfer the property at death.

ERTA also raised the unified estate and gift tax credit from $47,000 to $192,800 over a six-year phase-in period. This increased credit effectively raised the tax exemption for estates and gifts from $175,000 to $600,000. ERTA also raised the annual gift tax exclusion to $10,000 per recipient and allowed an unlimited annual exclusion for payment of a recipient's tuition or medical expenses. And ERTA reduced the top tax rate on estates, gifts, and generation-skipping transfers from 70 to 50 percent for transfers of more than $2.5 million. The rate reduction was to be phased in over a four-year period, but legislation in 1984 and 1987 delayed the decrease in the top tax rate from 55 to 50 percent until after then end of 1992. The 1987 Act also introduced a phase out of the initial exemption by imposing a higher 60 percent tax rate for taxable estates between $10 million and $21.4 million. In 1993 Congress decided not to decrease the top tax rates to 50 percent, retroactive to December 31, 1992.

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Table 1: Regressions of the Ratio of Total Charitable Bequests to Total Gross Estates Reported on Estate Tax Returns, Selected Years from 1921 to1998, For Three Measures of the Estate Tax

	TTOP	T100	T40	TTOP	T100	T40
Log[(real value of net-of-tax estates – charity*tax rate) / returns]	0.026 (2.15)**	0.004 (0.42)	0.002 (0.18)	0.020 (1.67)	-0.006 (0.63)	0.002 (0.19)
Log(1-TTOP)	-0.018 (2.48)**			-0.018 (2.65)**		
Log(1-T100)		-0.017 (1.55)			0.032 (1.10)	
Log(1-T40)			-0.022 (2.26)**			-0.025 (0.68)
Log(1-top income tax) (5-year lag)	0.011 (3.82)***	0.005 (1.30)	0.004 (1.02)	0.005 (1.31)	0.004 (1.10)	0.004 (0.99)
Log(inequality)	-0.015 (0.99)	0.000 (0.00)	0.009 (0.43)	0.018 (0.90)	0.001 (0.03)	0.009 (0.42)
Time Trend				0.000 (2.38)**	0.001 (1.82)*	0.000 (0.06)
Log(returns-deaths ratio)	0.015 (2.46)**	0.004 (0.67)	0.003 (0.65)	0.009 (1.37)	-0.003 (0.44)	0.004 (0.48)
Constant	-0.175 (1.22)	0.024 (0.23)	0.020 (0.21)	-0.235 (1.68)*	0.125 (1.08)	0.018 (0.18)
Observations	52	52	52	52	52	52
R-squared	0.40	0.35	0.39	0.47	0.40	0.39

Notes: Absolute value of t-statistics in parentheses. *significant at 10 percent level; ** significant at 5 percent level; *** significant at 1 percent level. Inequality is defined as the share of income received by the top 5 percent of the income distribution, as calculated in Kopczuk and Slemrod (2001). The other variables are defined in the text.

Table 2: Gross Estate, Spousal Bequests, Charitable Deductions, and Net Estate by Marital Status of Decedents, Returns Filed in 1998, Amounts in Millions of Dollars

	Gross Estate, Tax Purposes		Bequests To Surviving Spouse			Charitable Deductions			Net Estate Tax		
	Number	Amount	Number	Amount	Percent of Gross Estate	Number	Amount	Percent of Gross Estate	Number	Amount	Percent of Gross Estate
Panel A. All Decedents											
Total	97,868	173.8	41,463	49.4	28.4	16,983	10.9	6.3	47,483	20.3	11.7
Taxable	47,483	103.0	5,051	10.7	10.4	10,476	5.6	5.4	47,483	20.3	19.7
Non-taxable	50,385	70.8	36,412	38.7	54.7	6,507	5.3	7.5	0	0	0
Panel B. Married Decedents only											
Total	42,939 (43.9)	84.0 (48.3)	41,463	49.4	58.8	2,506	1.5	1.8	5,793	3.7	4.4
Taxable	5,793	25.9	5,051	10.7	41.3	849	1.2	4.6	5,793	3.7	4.4
Non-taxable	37,146	58.1	36,412	38.7	66.6	1,658	0.3	0.5	0	0	0
Panel C. Widowed Decedents only											
Total	42,722 (43.7)	71.1 (40.9)	0	0	0	10,590	6.9	9.7	32,938	13.8	19.4
Taxable	32,938	61.9	0	0	0	7,169	3.5	5.7	32,938	13.8	22.3
Non-taxable	9,384	9.2	0	0	0	3,421	3.4	37.0	0	0	0
Panel D. Single Decedents only											
Total	12,156 (12.4)	18.7 (10.8)	0	0	0	3,887	2.5	13.4	8,751	2.9	15.5
Taxable	8,751	15.2	0	0	0	2,458	0.9	5.9	8,751	2.9	19.1
Non-taxable	3,405	3.5	0	0	0	1,428	0.3	8.6	0	0	0

Source: Tabulations provided to authors by Barry Johnson of the IRS Statistics of Income Division. Numbers in parentheses are percentages for all decedents.

Table 3: Distribution of Estate Tax Returns and Gross Estate, By Marital Status and Gender of the Decedent, 1983, 1989, and 1998

		All		Male		Female	
		Returns	Gross Estate	Returns	Gross Estate	Returns	Gross Estate
All	1983	63, 251	50,390,376	38,774	32,429,386 (64.4)	24,478	17,960,990 (35.6)
	1989	50,376	87,171,506	28,031	52,273,459 (59.7)	22,345	34,898,047 (40.3)
	1998	97,868	173,817,315	52,015	99,332,317 (57.1)	45,854	74,484,818 (42.9)
Married	1983	33,835	28,552,205 (56.7)	28,434	24,484,130 (48.5)	5,401	4,068,075 (8.1)
	1989	23,897	44,748,218 (51.3)	18,554	36,172,087 (41.5)	5,343	8,576,131 (9.8)
	1998	42,939	83,987,450 (48.3)	32,253	66,579,251 (38.3)	10,687	17,408,199 (10.0)
Widowed	1983	22,822	16,643,974 (33.0)	6,538	4,792,632 (9.5)	16,284	11,851,342 (23.5)
	1989	20,342	32,128,779 (36.9)	6,075	9,799,980 (11.2)	14,267	22,328,799 (25.6)
	1998	42,772	71,092,804 (40.9)	13,509	22,361,078 (12.9)	29,264	48,731,725 (28.0)
Single	1983	4,171	3,164,920 (6.3)	n.a.	n.a.	n.a.	n.a.
	1989	3,952	6,116,650 (11.8)	2,153	3,782,278 (4.3)	1,799	2,334,374 (2.7)
	1998	12,150	18,736,881 (10.8)	6,253	10,391,987 (6.0)	5,903	8,344,894 (4.8)

Note: Gross estate is measured in thousands of dollars. The term n.a. means that in that year the data were not classified into that category. Figures in parentheses are the gross estate in that category as a percentage of the gross estate in that year for all returns.
Source: 1983 and 1989 are from IRS Statistics of Income publications. 1998 data is from tabulations provided to authors by Barry Johnson of the SOI.
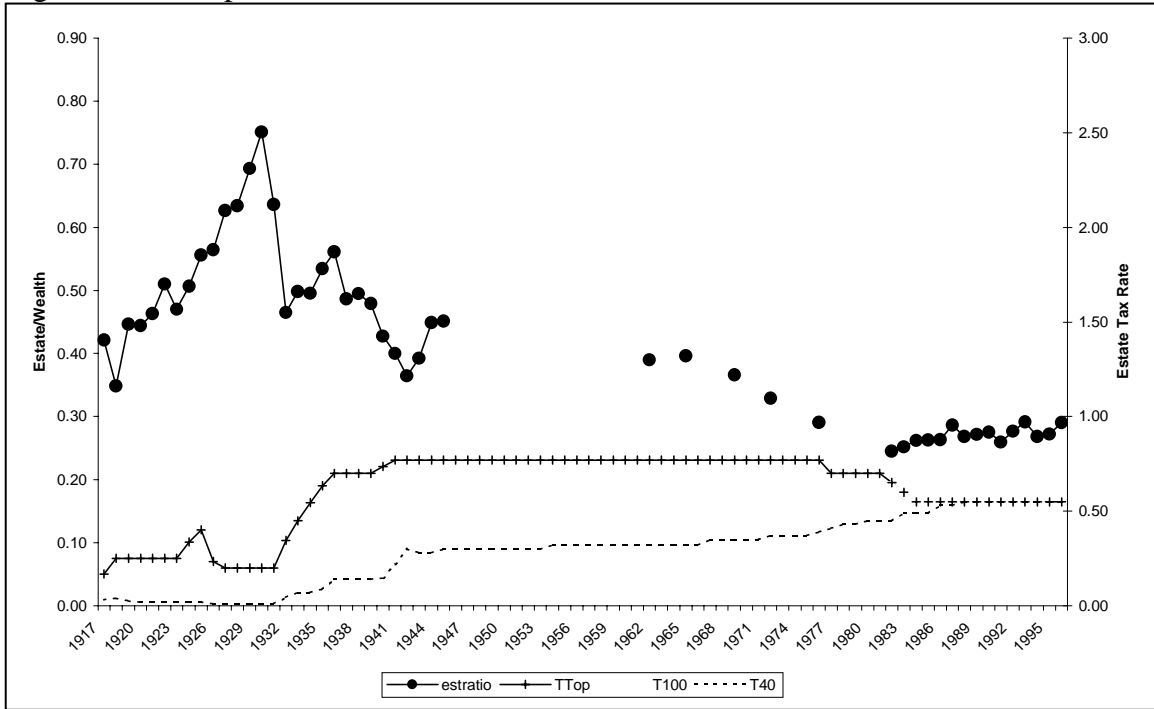
Figure 1: The Reported Estate/Wealth Ratio and Estate Tax Rates

Figure 2: The Charity/Estate Ratio and Estate Tax Rates