

# Choosing between gifts and bequests: How taxes affect the timing of wealth transfers

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Received 5 February 2003; received in revised form 16 July 2004; accepted 19 November 2004  
Available online 30 March 2005

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## Abstract

A number of theories have been advanced to explain the size and timing of intergenerational transfers. One factor only recently explored is the effects of taxes, and in particular the estate tax, on such transfers. This paper represents the first attempt to explore how capital gains and gift taxes, in addition to the estate tax, interact to influence incentives in the timing of transfers. Using estate tax data and exploiting variations in state inheritance, gift, and capital gains tax rates, this paper finds taxes to be an important consideration in the choice between gifts and bequests. In particular, each of capital gains and gift taxes are found to be important determinants of the timing of transfers. These findings are robust to a number of specifications that control for borrowing, charitable bequests, marital status, and the portfolio composition of wealth transfers.

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*JEL classification:* H31; D19

*Keywords:* Capital gains tax; Gift tax; Estate tax; Gifts; Bequests

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## 1. Introduction

Intergenerational transfers may take place during life, as in inter-vivos gifts, or as in bequests at death. A number of factors may explain the size and timing of these transfers.

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The tax treatment of each of these two modes of transfers may influence how total transfers are allocated between gifts and bequests. If gifts are accorded a preferential treatment, then more of transfers may take place during life, and vice versa. Of course, non-tax factors may also influence this allocation and parents may postpone transfers until death notwithstanding the tax consequences. Parents may give simply because they enjoy giving and not care much about timing their giving (Cox, 1987). Parents can also be strategic and may time their transfers so as to extract services from their children (Bernheim, Shleifer, and Summers, 1985). Indeed, and despite the income tax incentives for instance, the related literature on charitable giving shows that little of such transfers take place during life (Joulfaian, 2000a, Table 14; Joulfaian, 2001, Table 8-7).

Since the enactment of the gift tax in 1932, the decades' old conventional wisdom argued for the superiority of gifts over bequests as a tax minimization strategy. In part, this reflected the fact that gifts were taxed at statutory tax rates set below those of the estate tax that applied to bequests.<sup>1</sup> There is little doubt that the wealthy, particularly given resources at their disposal, are likely to consider differences in estate and gift taxes in allocating their intergenerational transfers between inter-vivos gifts and bequests. They may also consider the income tax treatment of such transfers. Gifts, for instance, are subject to a gift tax which effectively applies at a rate below that of the estate tax levied on terminal wealth. In addition, recipients of gifts carryover the donor's (adjusted) basis, and may become subject to capital gains taxes at the future sale or disposal of the underlying asset. In contrast, and under the income tax, bequests are accorded a step-up in basis; all gains accrued by the donor avoid capital gains taxes at death. Few studies, however, have examined the combined effects of all these taxes on the timing of transfers. Adams (1978) and Kuehlwein (1994), for instance, explore whether bequest and gift taxes are equalized in the timing of transfers. Bernheim (1987), Page (2003), Poterba (2001), McGarry (2000) and, more recently, Bernheim et al. (2001) argue that higher estate taxes encourage gifts.

The purpose of this paper is to examine the pattern of wealth transfers by the very wealthy, and gauge the effects of capital gains, gift, and estate taxes in contrast to the current literature which exclusively focuses on the latter. I trace the tax consequences of transfers and explore the conditions for the superiority of each of gifts and bequests. Next, I empirically explore whether taxes influence the allocation of transfers between lifetime gifts and bequests using information from federal estate tax records. In addition, I employ variations in state estate, gift, and capital gains taxes, to reduce the identification problem (Feenberg, 1987).

This paper is organized as follows. Section 2 provides a brief description of the federal estate, gift, and income tax treatment of transfers. Section 3 analytically explores how taxes may influence the choice between gifts and bequests. Gift and capital gains taxes raise the price of gifts, while the estate tax raises the price of bequests. Thus, two individuals with the same wealth, even same estate tax rate, may face different incentives in timing their transfers. Contrary to the decades old conventional wisdom, gifts are not

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<sup>1</sup> Through 1976, gift tax rates were set equal to 75% of the estate tax. The intent of the lower rates was to increase short run federal government revenues by accelerating transfers; effectively prepaying estate taxes. See Harriss (1940, p. 5).

necessarily the superior mode of transfers, particularly in the case of appreciated assets by donors with short life expectancies and married individuals, and in the presence of state gift taxes. Section 4 describes estate tax data and construction of variables related to modeling the timing of transfers. The data provide information on bequests in 1989 and cumulative lifetime gifts. Individuals required to file estate tax returns roughly represent the top 2% of the population, and are typically under-represented in survey data.<sup>2</sup> Indeed, estate tax returns provide the only source of information on cumulative lifetime gifts. The latter is not only important in modeling the pattern of transfers, but is also critical in calculating tax rates. Again contrary to the conventional wisdom, many in the sample are worse off under a gift regime. Section 5 provides empirical evidence on the effects of taxes. These are found to be an important consideration in determining lifetime gifts (Tables 7–9). Simulation results suggest that about two-thirds of gifts would not take place if estate and gift taxes were repealed. A concluding comment is provided in Section 6.

## 2. The tax treatment of transfers

The estate tax applies to stocks, bonds, real estate, businesses, life insurance proceeds, and pension assets, among other assets held at death. Estate expenses, outstanding debts, spousal bequests and charitable bequests are deductible in computing the taxable estate. In 2001, the tax is computed by applying to the taxable estate a rate schedule that ranges from 18% to 55%. A surtax of 5% applies to taxable estates between \$10 million and \$17 million, which has the effect of creating a marginal tax rate of 60%, as shown in the first column of Table 1.<sup>3</sup>

The tax is reduced by a number of credits in computing the final tax liability. The largest tax credit is the unified credit set at a value of \$220,550 in 2001, equivalent to an exemption of \$675,000 (\$600,000 for the years 1987–1997). The second largest credit is that for state death taxes. The credit rate ranges from 0% to 16% of the federal taxable estate, as shown in column 2 of Table 1. It has the effect of reducing the maximum statutory federal estate tax rate to 39%, as shown in the last column of Table 1.

As in the case of bequests, lifetime gifts are also subject to tax. The gift tax is integrated with the estate tax sharing a common tax rate schedule, and unified credit. The tax is computed annually by applying the tax rate schedule to gifts cumulated over life, with a credit for previously paid gift taxes. An unlimited exemption applies to gifts for tuition and medical expenses, in addition to an annual exemption of \$10,000.

A unique feature of the gift tax is that it applies on a tax exclusive basis. To illustrate the implications of this, consider an individual with tax rate of 0.5 and wealth of \$300. He transfers \$200 to his children and pays \$100 in gift tax, for total transfers of \$300; the effective tax rate is 0.33, or 100/300, and not 0.5 as under the estate tax where the tax

<sup>2</sup> The projected net worth of individuals potentially required to file estate tax returns in 1992 was \$5 trillion, of which \$1.5 trillion is in corporate equity; they represent 1.5% of the population (Johnson, 1998). The comparable figures from the Flow of Funds for the entire household (and nonprofit) sector are \$23 trillion and \$2.9 trillion, respectively. The estate tax filing threshold was \$600,000 in 1992.

<sup>3</sup> For an overview of historical developments and a more detailed description of estate and gift taxes, see Joulfaian (1998).

Table 1

Federal marginal tax rates after unified credit and the state death tax credit, 2001

Taxable estate (\$000's)		Estate or gift tax rate (%) (1)	State death tax credit rate (%) (2)	Net federal estate tax rate (%) (3)
Over	But not over			
Under	675	0.00	Varies	0.00
675	700	37.0	4.0	33.0
700	750	37.0	4.8	32.2
750	900	39.0	4.8	34.2
900	1000	39.0	5.6	33.4
1000	1100	41.0	5.6	35.4
1100	1250	41.0	6.4	34.6
1250	1500	43.0	6.4	36.6
1500	1600	45.0	6.4	38.6
1600	2000	45.0	7.2	37.8
2000	2100	49.0	7.2	41.8
2100	2500	49.0	8.0	41.0
2500	2600	53.0	8.0	45.0
2600	3000	53.0	8.8	44.2
3000	3100	55.0	8.8	46.2
3100	3600	55.0	9.6	45.4
3600	4100	55.0	10.4	44.6
4100	5100	55.0	11.2	43.8
5100	6100	55.0	12.0	43.0
6100	7100	55.0	12.8	42.2
7100	8100	55.0	13.6	41.4
8100	9100	55.0	14.4	40.6
9100	10,000	55.0	15.2	39.8
10,000	10,100	60.0	15.2	44.8
10,100	17,184*	60.0	16.0	44.0
17,184*	and over	55.0	16.0	39.0

(\*) 21,040 between 1988 and 1997.

liability would be \$150. Also in contrast to the estate tax, it does not provide a credit for state gift taxes.

The income tax treatment of transfers varies as well. In the case of bequests, accrued gains on appreciable assets, such as stock, escape capital gains taxation as the donor's basis in assets is stepped up to the value at death. In the case of gifts, the beneficiary retains the donor's adjusted basis.<sup>4</sup> Consequently, the donor may have to pay capital gains taxes on assets liquidated to pay the gift tax. In contrast to the gift tax, liquidating assets to pay the estate tax does not trigger capital gains taxes.

### 3. How taxes influence the timing of transfers

As eluded to earlier, individuals make transfers for a variety of reasons. The motives for the size and the timing of such transfers can be altruistic or that parents may derive joy from

<sup>4</sup> This basis, however, is stepped up by the amount of the gift tax paid on the accrued gains share of the asset transferred.

giving, and not care much about timing. They can also be strategic as parents consider the services provided by their children, and more likely postpone much of their transfers.

Consider a very wealthy individual with wealth  $W$ , who wishes to transfer it to his heirs. Assuming the joy of giving is the primary motivation, this individual may time his transfers so as to maximize the share of  $W$  received by his heirs, but is otherwise indifferent to the timing. Some of these transfers may take place during life, as in *inter vivos* gifts ( $G$ ), or at death, as in bequests ( $B$ ). The total amount received or available to the heirs,  $T$ , at a cost of  $W$  to the donor, is:

$$T = G + B \quad (1)$$

or,

$$T = \frac{\alpha W}{P_G} + \frac{(1 - \alpha)W}{P_B} \quad (1')$$

where  $\alpha$  is the share of wealth transferred during life, and  $P_G$  and  $P_B$  are the gift and bequest prices, respectively. Following first-order conditions, the individual maximizes the size of transfers  $T$  by setting  $\alpha$  at the point where  $P_G/P_B=1$ . Gifts are more attractive when the relative price of gifts is less than 1, but beyond this point, bequests become more attractive.

In the case of the wealthy, the measurement of taxes can get pretty complicated as much of their wealth is held in the form of business, real estate, or publicly traded stocks (Eller, 1997). If such wealth is held until death, in year  $n$ , the estate tax liability is:

$$TAX_E = \frac{\tau_e W(1 + \pi)^n}{(1 + \delta)^n} \quad (2)$$

where  $\tau_e$  is the estate tax rate,  $\pi$  is the rate of return or the rate at which assets appreciate, and  $\delta$  is the individual discount rate. From Eq. (2), it follows that the price of bequests can be defined as:

$$P_B = \frac{(1 + \delta)^n}{(1 + \pi)^n(1 - \tau_e)} \quad (3)$$

as in Boskin (1976), or  $P_B=1/(1-\tau_e)$  when  $\pi=\delta$ .

If instead, the individual transfers his appreciable wealth to the beneficiaries during life, or year 0, then the expected tax on gifts in period  $n$  will be:

$$TAX_G = \left( \frac{\tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta} + \frac{\tau_c \beta (1 - \tau_g)}{(1 + \delta)^n} + \frac{\tau_c [(1 + \pi)^n - 1]}{(1 + \delta)^n} + \frac{\rho \tau_e \tau_g}{(1 + \delta)^n}}{1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta}} \right) W \quad (4)$$

where  $\tau_g$  is the gift tax rate,  $\tau_c$  the capital gains tax rate,  $\beta$  the share of accrued gains, and  $\rho$  the probability of dying within 3 years from the date gifts were made. The first term

reflects the gift tax paid by the donor. The second term reflects capital gains taxes that the donor may have to pay if assets are liquidated to pay the gift tax. The third term reflects capital gains taxes expected to be paid by the beneficiary on gains accrued by the donor.<sup>5</sup> Such gains, however, are reduced by gift taxes to avoid double taxation. The fourth term reflects capital gains taxes on gains accrued by the donee. The fifth term accounts for additional estate taxes on gifts made within 3 years of the date of death. If the donor dies within 3 years, the gift tax itself becomes taxable under the estate tax; gifts lose much of the benefit of getting taxed on a tax exclusive basis.<sup>6</sup> Eq. (4) is derived in Appendix A.

From Eq. (4), it follows that the price of gifts is:

$$P_G = \frac{(1 + \delta)^n \left( 1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta} \right)}{(1 + \pi)^n - \tau_c \beta (1 - \tau_g) - \tau_c [(1 + \pi)^n - 1] - \rho \tau_e \tau_g} \quad (5)$$

Using Eqs. (3) and (5), the relative price of gifts becomes:

$$\frac{P_G}{P_B} = \frac{\left( 1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta} \right) (1 - \tau_e) (1 + \pi)^n}{(1 + \pi)^n - \tau_c \beta (1 - \tau_g) - \tau_c [(1 + \pi)^n - 1] - \rho \tau_e \tau_g} \quad (6)$$

When the underlying asset is cash or equivalent, and say pays interest as in the case of bonds and notes, Eq. (6) simplifies to:<sup>7</sup>

$$\frac{P_G}{P_B} = \frac{(1 + \tau_g)(1 - \tau_e)(1 + \pi)^n}{(1 + \pi)^n - \rho \tau_e \tau_g} \quad (6')$$

or, in the absence of the 3-year recapture rule, the more familiar:

$$\frac{P_G}{P_B} = (1 + \tau_g)(1 - \tau_e) \quad (6'')$$

At a tax rate of 0.55, and using Eq. (6'), the relative price is 0.67 and gifts are the superior mode of transfers.

The advantage of one mode of transfer over another critically depends on the values of the various parameters in Eq. (6). Assume away confiscatory taxes ( $0 \leq \tau_c < 1$ ,  $0 \leq \tau_e < 1$ , and  $0 \leq \tau_g < 1$ ), set  $\rho = 0$ , and, for notational convenience, define the denominator in Eq. (6) as  $A$ :

$$A = \tau_c - \beta \tau_c + \beta \tau_c \tau_g + (1 + \pi)^n - \tau_c (1 + \pi)^n > 0$$

<sup>5</sup> Recall that gifts, unlike bequests, do not benefit from a full step up in basis.

<sup>6</sup> This equation can be further complicated by introducing borrowing and transferring cash as a way to avoid capital gains taxes (Auten and Joulfaian, 2001), or endogenizing portfolio allocation between cash or equivalent and appreciable assets.

<sup>7</sup> Here  $\pi$  may denote the interest rate net of ordinary income taxes. To simplify the analysis, and to the extent that this tax would apply under the two modes of transfers, I assume this is equivalent to the rate at which assets appreciate. This is irrelevant in case of Eq. (6').

which is unambiguously positive ( $0 \leq \beta < 1$ ,  $0 \leq \tau_c < 1$ ,  $0 \leq \tau_e < 1$ , and  $0 \leq \tau_g < 1$ ). Differentiating the relative price of gifts with respect to the estate, gift, and capital gains tax rates, respectively, yields,

$$\begin{aligned}\frac{\partial(P_G/P_B)}{\partial \tau_e} &= -\frac{(1 - \beta\tau_c + \tau_g)(1 + \pi)^n}{(1 - \beta\tau_c)A} < 0 \\ \frac{\partial(P_G/P_B)}{\partial \tau_g} &= \frac{(\beta\tau_c - 1)^2[(1 + \pi)^n - 1](1 - \tau_c)}{(1 - \beta\tau_c)A^2} > 0 \\ \frac{\partial(P_G/P_B)}{\partial \tau_c} &= \frac{(1 - \tau_e)(1 - \beta\tau_c + \tau_g)(1 + \pi)^n(\beta - \beta\tau_c + (1 + \pi)^n - 1)}{(1 - \beta\tau_c)A^2} \\ &\quad + \frac{\beta(1 - \tau_e)(1 + \pi)^n\tau_g}{(1 - \beta\tau_c)^2A} > 0\end{aligned}$$

The relative price of gifts, rises with capital gains and gift tax rates, and declines with the estate tax rate. The effects of the various taxes on the relative price are further illustrated in Fig. 1, which assumes  $\tau_e = \tau_g = 0.55$ ,  $\tau_c = 0.25$ ,  $n = 0$ ,  $\beta = 0.5$ , and  $\pi = 0.08$ .

To numerically compare the advantages of gifts over bequests, I continue to assume that assets appreciate at the rate  $\pi = 0.08$ . The capital gains tax rate is set at  $\tau_c = 0.25$ , which approximates the combined state and federal tax rates. Federal statutory estate and gift tax rates are set at 0.55, or  $\tau_e = \tau_g = 0.55$ , and  $\rho = 0$  except when  $n \leq 3$  where  $\rho = 1$ . Eq. (6) is evaluated using these parameters. Table 2 reports values for the relative price of gifts for values of  $\beta$  ranging from 0 to 1, with values of  $n$  ranging from 0 to 40 years. When the relative price equals one, estate and gift tax prices are equalized; bequests are preferable to gifts when it exceeds one, and when it is less than one, gifts are preferable. As demonstrated, the advantages of making bequests, or gifts, depend on the size of accrued gains and the length of  $n$ . Gifts are generally preferable, except when  $n \leq 3$ , but their desirability diminishes with the size of accrued gains,  $\beta$ , and  $n$ .

The bottom panel of Table 2 replicates the figures in the top panel but sets the capital gains tax rate to zero ( $\tau_c = 0$ ). The reported relative price of gifts drops across the board by as much as a third.<sup>8</sup> Except in the rare case of instant death,  $n = 0$ , gifts are by far superior. Capital gains taxes, and as already demonstrated in Fig. 1, go a long way in bridging the gap between the tax treatments of gifts and bequests.

The figures in Table 2 provide a measure of the relative price of gifts in the general case. They do not account for preferential treatment accorded certain transfers, nor do they account for state gift taxes. In the presence of state gift taxes the relative price of gifts is likely to be higher; unlike bequests, they do not benefit from a credit for state taxes. In 1999, for instance, the maximum combined state and federal estate and gift tax rates in New York were 0.60 and 0.76, respectively.<sup>9</sup> If Table 2 were to be updated to reflect these

<sup>8</sup> Note that the outcome can be different within the range of the progressive rate schedule where gifts are made before wealth appreciates in value.

<sup>9</sup> The maximum estate and gift tax rate in New York was 0.21 before 2000.

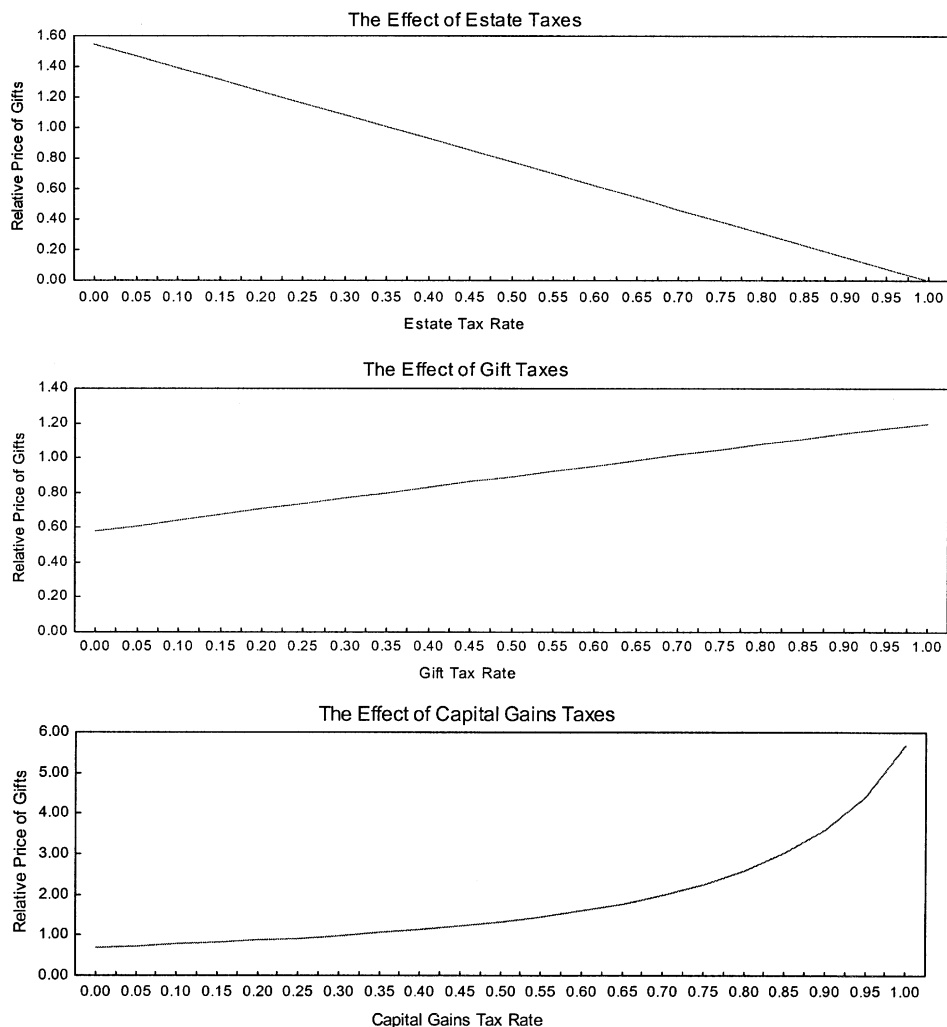


Fig. 1. The Effect of Taxes on the Relative Price of Gifts. (20-yr holding period, 8 percent appreciation rate, and 50 percent accrued gains share).

tax parameters, it would show that gifts are inferior to bequests for any combination of  $n$  and  $\beta$ .<sup>10</sup>

Also the analysis thus far compares bequests to gifts. An alternative strategy may dictate the postponement of gifts until the death of the second spouse. Given the unlimited marital deduction under the estate tax and step-up in basis at death, bequests to spouse and the deferral of gifts can be superior to outright gifts to children. If the individual bequeaths

<sup>10</sup> These figures are available from the author upon request.



Table 2

Years ( <i>n</i> )													
$\beta$	0	1	2	3	5	10	15	20	25	30	35	40	
<i>Relative price of gifts to price of bequests</i>													
0.00	1.000	0.994	0.989	0.985	0.758	0.806	0.842	0.868	0.887	0.900	0.910	0.916	
0.25	1.067	1.057	1.049	1.041	0.792	0.837	0.871	0.895	0.913	0.925	0.933	0.939	
0.50	1.143	1.129	1.116	1.104	0.831	0.873	0.904	0.926	0.942	0.953	0.960	0.966	
0.75	1.231	1.211	1.193	1.177	0.875	0.913	0.941	0.961	0.975	0.985	0.991	0.996	
1.00	1.333	1.306	1.282	1.260	0.925	0.959	0.983	1.001	1.013	1.021	1.027	1.031	
$\pi=0.08$ , $\tau_c=0.25$ , and $\tau_g=\tau_g=0.55$ .													
<i>Zero capital gains taxes</i>													
0.0–1.0	1.000	0.969	0.942	0.918	0.697	0.697	0.697	0.697	0.697	0.697	0.697	0.697	0.697

his wealth to his spouse in period  $n$ , who in turn transfers them to the children immediately, the expected tax on such bequests would be:

$$\text{TAX}_E = \left(1 + \frac{\rho\tau_c}{(1+\delta)^m}\right) \left(\frac{\tau_g}{1+\tau_g}\right) \frac{W(1+\pi)^n}{(1+\delta)^n} \quad (2')$$

where  $\rho$  reflects the probability that the surviving spouse dies within 3 years ( $m \leq 3$ ), when additional estate taxes apply. The tax price becomes:

$$P_W = \frac{(1+\tau_g)(1+\delta)^{n+m}}{[(1+\delta)^m - \rho\tau_c\tau_g](1+\pi)^n} \quad (7)$$

If the death of the surviving spouse occurs after 3 years ( $\rho=0$ ), this simplifies to:

$$P_W = \frac{(1+\tau_g)(1+\delta)^n}{(1+\pi)^n} \quad (7')$$

Comparing Eq. (7) and particularly Eq. (7') to Eq. (5), it is obvious that  $P_W < P_G$  as the numerator is larger and the denominator smaller in the latter; holding parameters constant, the optimum strategy for married individuals is to forego (postpone) gifts. As further demonstrated in Table 3, this strategy is superior to making of non-cash gifts by married couples for any set of values for  $n$  and  $\beta$ .<sup>11</sup>

#### 4. Data sources and construction of variables

The above suggests that the advantages of lifetime gifts decline with gift and capital gains taxes, and rise with the estate tax. In addition, they suggest that married individuals may have the least incentive to make gifts of non-cash assets. To empirically gauge how the wealthy respond to taxes in the timing of transfers, I employ data drawn from the estate tax returns of decedents in 1989. The sample is limited to the estates of parents with total

<sup>11</sup> To clarify the comparison, I focus on  $n \leq 5$  and  $m > 3$ .

Table 3

Relative price of gifts by married couple to price of bequests to and gifts by surviving spouse

Years ( <i>n</i> )								
$\beta$	5	10	15	20	25	30	35	40
0.00	1.087	1.155	1.207	1.244	1.271	1.291	1.304	1.313
0.25	1.136	1.200	1.248	1.283	1.308	1.326	1.338	1.347
0.50	1.191	1.251	1.295	1.327	1.350	1.366	1.377	1.384
0.75	1.254	1.309	1.349	1.377	1.397	1.412	1.421	1.428
1.00	1.326	1.374	1.410	1.435	1.452	1.464	1.473	1.479

 $\pi=0.08$ ,  $\tau_c=0.25$ ,  $\tau_e=0$ , and  $\tau_g=0.55$ 

assets in excess of \$600,000, the filing threshold in 1989. Estate tax returns provide information on wealth and its composition. Information is available on assets held, debts, funeral expenses, and expenses of settling the estate such as attorney, and executor commissions. More importantly, they also provide information on the cumulative amount of lifetime taxable gifts made from 1977 through 1989. These gifts are transfers in excess of the annual exemption, and do not include payments for tuition and medical expenses, all of which are tax-free. Demographic information is available on age of the decedent, marital status, gender, and state of residency. For this data set, the number and relationship of beneficiaries is also available.

Wealth is defined as the maximum amount that can be transferred, and is measured as net worth at death less life insurance proceeds and estate expenses, plus lifetime gifts and gift taxes.<sup>12</sup> I exclude observations with negative wealth. Business ownership is measured as the fraction of the estate in the form of farm, noncorporate businesses, and closely held corporate stock.

Individual annuitant mortality tables are employed in determining life expectancies and the probability of dying within 3 years of the date of the gift.<sup>13</sup> The mortality rates in these tables are lower than those for the general population. Given that the individuals in this sample represent the wealthiest segment of society using the latter would overstate the mortality rates (Poterba, 1997).

For each individual, the marginal federal estate tax rate is computed by adding \$1000 to wealth using 1987 law and assuming all wealth is transferred to the children at death. Conversely, the marginal federal gift tax rate is computed assuming all wealth is transferred during life. The federal capital gains tax rate is set equal to the maximum statutory rate of 0.28.

Many of the years prior to 1987 represent a transition period. The Economic Recovery Tax Act (ERTA) of 1981 increased the size of gifts and bequests exempt from taxation, in steps over 6 years, from \$175,625 in 1981 to \$600,000 in 1987. Thus, gifts (or bequests) in the amount of \$600,000 in 1987 would be fully exempt, but would be partially taxable if made in earlier years. Similarly, ERTA lowered tax rates from a maximum of 70% down to 50%. Thus gifts made in 1981 would be subject to a maximum tax rate of 70%, while gifts or bequests in 1984 would be taxed at a rate of 55%. Given these rate differentials, it is easy

<sup>12</sup> These gifts are in nominal values as the years when the gifts were made are not known.

<sup>13</sup> The rates for males and females rates are obtained from the 1983 Individual Annuity Mortality (IAM) table from [www.soa.org](http://www.soa.org).

to demonstrate the inferiority of gifts and the wisdom of scaling back of such transfers. While this can be used to debunk the conventional wisdom, one needs to look beyond the transition period, where many may have postponed gifts, and hence my choice of 1987.

A common problem encountered in studies of the effects of taxes on economic behavior is how to identify the tax price effects separately from the effects of income (Feenberg, 1987), or, in this case, wealth. This problem arises because the marginal tax rate can be determined by other regressors, wealth in particular, which confounds the measurement of tax effects. Consequently, I employ state taxes which introduce variations in tax rates independent of wealth, especially in the case of the gift tax which applies in seven states (see Table 4).<sup>14</sup> In addition, I employ relative prices constructed with maximum tax rates as instruments, which should be completely independent of wealth.

Federal tax rates are augmented with state estate, gift, and capital gains tax rates also in effect in 1987.<sup>15</sup> For each of the 50 states and the District of Columbia, I compute the estate tax rate net of the federal credit for state death taxes. All jurisdictions tax bequests as they set the federal credit as their minimum tax. In 1987, 25 states employed a “pick-up” tax where the state rate is set equal to the maximum available federal tax credit.<sup>16</sup> The net tax rate for these jurisdictions is zero. Seven states levied their own estate taxes, while the remaining 19 states levied inheritance type taxes; all employ the federal credit as their alternative minimum tax. Table 4 provides the maximum estate and gift tax rates for these states, before applying the federal credit.<sup>17</sup> The capital gains tax rate is set equal to the maximum tax rate in effect in each of the 51 jurisdictions. These are also reported in Table 4. The combined federal and state capital gains tax rate is computed as  $0.28 + (1 - 0.28)\tau$ , which accounts for the deductibility of state income taxes.

The computed tax rates and mortality rates are incorporated in Eq. (6) to compute the relative price of gifts. This measure, however, is likely to be sensitive to the composition of wealth. If wealth is mostly cash or equivalent, then  $\beta = t_c = 0$  as in Eqs. (6') and (6''). Thus, the price is computed as a weighted average price of cash and non-cash transfers using estate portfolio shares as weights.<sup>18</sup> For non-cash assets, the share of accrued gains ( $\beta$ ) is set equal to 0.5.<sup>19</sup> Furthermore, assets are assumed to appreciate at the rate  $\pi = 0.08$  over individual life expectancies.

<sup>14</sup> States with gift taxes account for about 17% of the national terminal wealth reported on estate tax returns. See Eller (1997, Table 5, column 2).

<sup>15</sup> The results reported below change very little when 1989 law, the year of death, is used. The 1987 and 1989 state and federal laws are similar except for Wisconsin which phased out its gift tax over the period 1988 through 1992.

<sup>16</sup> These states are Alabama, Alaska, Arizona, Arkansas, California, Colorado, District of Columbia, Florida, Georgia, Hawaii, Illinois, Maine, Minnesota, Missouri, Nevada, New Mexico, North Dakota, Oregon, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

<sup>17</sup> Detailed estate and gift tax rate schedules are available upon request. Both schedules are obtained from the Advisory Commission on Intergovernmental Relations (1987, p. 71).

<sup>18</sup> Ideally, the share of assets in the estate plus those transferred during life should be used. The assets composition of the latter, however, is not observed. Anecdotal evidence suggests that gifts by the very wealthy are more likely to be non-cash in nature. To test for the robustness of the results, I assume all gifts are cash in an alternative set of estimates.

<sup>19</sup> This is based on data from long-term gains realized in 1985 (Auten and Wilson, 1999, p. 125). The observed value does not vary with age, contrary to expectations, which perhaps is a reflection of a portfolio optimization strategy. Following a tax minimization strategy, as in Balcer and Judd (1987), individuals may sell asset with high basis and hold those with low basis until death. This assumption is relaxed in sensitivity analyses below.

Table 4  
Maximum estate, gift, and capital gains tax rates by state, 1987

State	Estate <sup>a</sup>	Gift	Gains
Alabama	16.00	0.00	5.00
Alaska	16.00	0.00	0.00
Arizona	16.00	0.00	3.20
Arkansas	16.00	0.00	7.00
California	16.00	0.00	9.30
Colorado	16.00	0.00	5.00
Connecticut	16.00	0.00	2.80
Delaware	16.00	6.00	8.80
District of Columbia	16.00	0.00	10.00
Florida	16.00	0.00	0.00
Georgia	16.00	0.00	6.00
Hawaii	16.00	0.00	10.00
Idaho	16.00	0.00	3.28
Illinois	16.00	0.00	2.50
Indiana	16.00	0.00	4.20
Iowa	16.00	0.00	4.31
Kansas	16.00	0.00	9.00
Kentucky	16.00	0.00	2.40
Louisiana	16.00	3.00	6.00
Maine	16.00	0.00	10.00
Maryland	16.00	0.00	4.50
Massachusetts	16.00	0.00	5.00
Michigan	16.00	0.00	4.60
Minnesota	16.00	0.00	9.00
Mississippi	16.00	0.00	5.00
Missouri	16.00	0.00	6.00
Montana	16.00	0.00	11.00
Nebraska	16.00	0.00	5.90
Nevada	16.00	0.00	0.00
New Hampshire	16.00	0.00	0.00
New Jersey	16.00	0.00	3.50
New Mexico	16.00	0.00	8.50
New York	21.00	21.00	7.50
North Carolina	16.00	12.00	7.00
North Dakota	16.00	0.00	14.00
Ohio	16.00	0.00	6.90
Oklahoma	16.00	0.00	6.00
Oregon	16.00	0.00	9.00
Pennsylvania	16.00	0.00	2.10
Rhode Island	19.14	0.00	7.58
South Carolina	16.00	8.00	7.00
South Dakota	16.00	0.00	0.00
Tennessee	16.00	9.50	0.00
Texas	16.00	0.00	0.00
Utah	16.00	0.00	7.75
Vermont	16.00	0.00	8.75
Virginia	16.00	0.00	5.75
Washington	16.00	0.00	0.00

Table 4 (continued)

State	Estate <sup>a</sup>	Gift	Gains
West Virginia	16.00	0.00	6.50
Wisconsin	16.00	12.50	2.77
Wyoming	16.00	0.00	0.00

<sup>a</sup> These rates are gross of the federal credit for state death taxes (maximum credit rate of 0.16). The rate schedules for states with own estate or inheritance taxes, before the “alternative minimum tax,” are available from Joulfaian (2000c) or the author upon request.

The share of wealth held in the form of business assets is employed as a control variable. Business assets are defined to include farms, noncorporate businesses, and closely held stock.<sup>20</sup> These assets may represent the source of livelihood of the parent, and thus reflect some measure of unwillingness to part with them or give up control. Unfortunately, we do not observe the asset composition of gifts made during life, and consequently the share in terminal wealth is employed.

Table 5 provides sample statistics for select variables. For the sample of 2361 estates, we observe mean wealth of \$10.7 million, with a standard deviation of \$23.5 million. The mean gift is \$0.3 million, which represents about 2% of wealth.<sup>21</sup> The average age is 77.5 years, measured at 1987 levels, with 45% of the individuals widowed. The gift tax rate is about 55%, the estate tax rate is 0.52, and the capital gain tax rate is 31%; the average price of gifts is 0.95. On average, business assets represent about 14% of the gross estate.

## 5. Empirical findings

### 5.1. Basic statistics

Columns 2 and 3 of Table 5 provide statistics on the attributes of those with and without gifts. About 60% of the sample, or 1433 estates, did not report lifetime gifts. Their mean wealth is \$8 million. On average, these individuals are 74.4 years old, with 41% widowed. In contrast, those who reported gifts are much wealthier and slightly older. The mean wealth is \$14.4 million with mean age of 77.3 years. They are also more likely to be widowed consistent with the expectations in Table 3. The average gift is about \$0.74 million, with a ratio of gifts to wealth of 5.2%. The estate and gift tax rates are slightly larger and the capital gains tax rate slightly smaller, but, given the large standard deviations, not statistically different from non-donors. Similarly, little variation is observed in the business share of wealth. Most importantly, the relative tax price of gifts is 0.91, smaller than the price of 0.98 for non-donors.

Table 6 provides further detail on the pattern of gifts disaggregated by size of wealth. The top panel shows the pattern of giving and the associated attributes of donors. The

<sup>20</sup> Closely held stock includes ownership of a minimum of 20% of a firm, publicly traded or otherwise.

<sup>21</sup> Recall that these gifts are in excess of the annual exclusion (\$10,000 or \$3000 pre-1982) and do not include transfers to cover medical and tuition expenses.

Table 5

Sample statistics for selected variables (standard deviations in parentheses)

Item	Observations		
	All	Without gifts	With gifts
Wealth (\$ millions)	10.7341 (23.5298)	7.4627 (13.9303)	14.3511 (30.2214)
Gifts (\$ millions)	0.2928 (1.5211)	0	0.7449 (2.3565)
Gift/wealth	0.0203 (0.0566)	0	0.0517 (0.0808)
Age	75.5371 (11.2110)	74.3740 (11.9548)	77.3330 (9.6895)
Widowed	0.4473 (0.4973)	0.4082 (0.4917)	0.5070 (0.5002)
Male	0.6146 (0.4861)	0.6462 (0.4783)	0.5657 (0.4959)
Cash share	0.2751 (0.2361)	0.2674 (0.2374)	0.2872 (0.2338)
Gift tax rate ( $\tau_g$ )	0.5477 (0.1291)	0.5260 (0.1487)	0.5813 (0.0800)
Estate tax rate ( $\tau_e$ )	0.5231 (0.1185)	0.5008 (0.1398)	0.5581 (0.0601)
Capital gains tax rate ( $\tau_c$ )	0.3140 (0.0246)	0.3157 (0.0245)	0.3113 (0.0246)
Relative price of gifts, Eq. (6)	0.9518 (0.1447)	0.9791 (0.1589)	0.9095 (0.1065)
Relative price instrument	0.9278 (0.0799)	0.9341 (0.0818)	0.9180 (0.0760)
Business/wealth	0.1363 (0.2386)	0.1335 (0.2374)	0.1406 (0.2405)
Observations	2361	1433	928

average gift rises with wealth, but without a clear pattern for the fraction of wealth transferred. When compared to the tabulations in the middle panel, donors are more likely to be widowed, and are slightly older. They face higher gift tax rates, but also face higher estate tax rates with slightly lower capital gains rates. One striking difference between the two groups is that donors face a lower relative price of gifts than non-donors at every wealth level.

Turning to all individuals in the sample, the bottom panel of Table 6 shows that the relative frequency of gifts rises with wealth. In addition, the amount, but not the share of wealth, transferred during life rises with wealth, consistent with the top panel of Table 6. These figures also show the share of business assets to rise with wealth.

Tables 5 and 6 show that those who make lifetime gifts face lower prices of gifts relative to bequests. Table 7 provides further evidence on the effects of the tax price on the probability of making gifts. It breaks down the sample by size of the relative price of gifts, ranging from a price below 0.80 to a price above 1.15. Over half of those who face a price below 0.8 provide for lifetime gifts. This fraction gradually declines to a low of 5% when the price is over 1.15, a pattern pointing to the disincentive effects of taxation.

## 5.2. Multivariate analyses

While the above basic statistics, particularly Table 7, suggest that taxes are an important consideration, I resort to multivariate analysis to shed further light on the determinants of gifts and gauge the effects of taxes. I estimate a number of equations to explore the determinants of lifetime gifts, and report the results in Table 8. While the tax price is the primary variable of interest, the explanatory or control variables include wealth, marital status, gender, age, number of children, and business ownership.

Column 1 of Table 8 provides Probit IV estimates of the probability of making gifts. The instrument is the relative price of gifts measured using the maximum values of state

Table 6  
Sample attributes by size of wealth and giving status

Size of wealth (\$000's)		Observations			Sample mean									
		All	With gifts		Wealth (\$000's)	Gifts (\$000's)	Gifts/wealth	Gift tax rate	Estate tax rate	Gains tax rate	Price of gifts	Fraction widowed	Age	Business share
			Number	Percent										
Individuals reporting gifts														
0	1000	28	28	100	799	87	10.4	37.9	34.9	30.8	111.1	67.9	79.0	7.7
1000	2500	17	17	100	1586	161	8.9	45.5	44.7	30.9	99.9	47.1	81.0	14.3
2500	5000	53	53	100	4428	125	2.9	56.9	55.3	31.0	92.4	45.3	73.0	13.1
5000	10,000	459	459	100	6948	358	5.1	57.4	55.4	31.2	91.6	53.8	77.0	12.9
10,000	20,000	228	228	100	13,895	646	4.5	63.6	60.5	31.3	85.9	48.7	78.0	14.0
20,000	50,000	105	105	100	30,041	1919	6.2	57.8	55.4	31.0	91.9	41.9	77.0	17.5
50,000	and over	38	38	100	116,810	4379	4.5	57.3	55.4	30.7	90.5	47.4	78.0	24.6
All		928	928	100	15,339	745	5.2	58.1	55.8	31.1	91.0	50.8	77.0	14.1
Individuals not reporting gifts														
0	1000	266	0	0	691	0	0.0	29.9	27.3	31.5	116.6	60.5	76.0	4.6
1000	2500	106	0	0	1425	0	0.0	44.6	44.4	31.5	102.7	50.0	76.0	5.5
2500	5000	173	0	0	4262	0	0.0	58.0	55.9	32.0	94.9	36.4	70.0	14.5
5000	10,000	640	0	0	6766	0	0.0	57.9	55.5	31.5	93.3	35.5	75.0	16.0
10,000	20,000	169	0	0	13,278	0	0.0	64.1	60.1	31.2	87.0	31.4	75.0	16.4
20,000	50,000	61	0	0	28,211	0	0.0	61.3	56.8	32.2	96.1	41.0	75.0	22.1
50,000	and over	18	0	0	96,756	0	0.0	59.7	56.1	31.4	95.8	16.7	77.0	24.7
All		1433	0	0	7752	0	0.0	52.6	50.1	31.6	97.9	40.8	74.0	13.4
All individuals														
0	1000	294	28	9.5	701	8	1.0	30.6	28.0	31.4	116.1	61.2	76.0	4.9
1000	2500	123	17	13.8	1448	22	1.2	44.7	44.4	31.4	102.3	49.6	77.0	6.7
2500	5000	226	53	23.5	4301	29	0.7	57.7	55.7	31.7	94.3	38.5	71.0	14.2
5000	10,000	1099	459	41.8	6842	149	2.1	57.7	55.4	31.4	92.6	43.1	76.0	14.7
10,000	20,000	397	228	57.4	13,632	371	2.6	63.8	60.3	31.3	86.3	41.3	76.0	15.0
20,000	50,000	166	105	63.3	29,368	1214	3.9	59.1	55.9	31.5	93.4	41.6	76.0	19.2
50,000	and over	56	38	67.9	110,364	2971	3.1	58.1	55.6	30.9	92.2	37.5	78.0	24.7
All		2361	928	39.3	10,734	293	2.0	54.8	52.3	31.4	95.2	44.7	76.0	13.6

Table 7

Probability of making gifts by price of gifts

Relative price of gifts <sup>a</sup>		Sample size	Number with gifts	Percent with gifts
Under	0.80	189	103	0.55
0.80	0.85	275	145	0.53
0.85	0.90	397	185	0.47
0.90	0.95	478	212	0.44
0.95	1.00	418	166	0.40
1.00	1.05	250	70	0.28
1.05	1.10	145	29	0.20
1.10	1.15	69	11	0.16
1.15	and over	140	7	0.05
All		2361	928	0.39

<sup>a</sup> Price as defined in text.

and federal capital gains, estate and gift tax rates.<sup>22</sup> The estimates in this criterion equation show that the probability of making gifts rises with wealth. The estimated coefficient is 0.42 with a corrected standard error of 0.04. This suggests that the probability of making a gift rises by 0.15 percentage points for every 1% increase in wealth.

Married parents are less likely to engage in lifetime transfers than their widowed counterparts, consistent with theory and the pattern reported in [Tables 3 and 6](#). The estimated coefficient is  $-0.22$  with standard error of 0.07. When compared to widowed individuals, the probability of making gifts is 8 percentage points lower. Similarly, male individuals seem the least likely to give; the estimated coefficient is  $-0.18$  with a standard error of 0.07. Compared to their female counterparts, the probability of giving is 7 percentage points smaller. The probability of making gifts rises with age as well, but at a declining rate. The number of children and business ownership have positive, albeit imprecisely measured, effect on giving.

Turning to the key finding of interest, the probability of reporting gifts declines with the relative tax price, consistent with a tax minimization strategy and the pattern observed in [Table 7](#). The estimated coefficient is  $-1.16$  with a standard error of 0.38. The marginal effect is  $-0.43$ ; for every 10% increase in the relative price, the probability of making gifts drops by 4.3 percentage points.

The second column of [Table 8](#) reports 2SLS estimates of the level of gifts, augmented with the inverse mill's ratio and corrected standard errors, following [Lee et al. \(1980\)](#) extension of [Heckman \(1979\)](#). The estimated coefficient on the share of wealth transferred during life seems unaffected by the size of wealth. This is consistent with the pattern reported in [Table 6](#). As with the Probit estimates, gifts are greatest for widowed individuals; the fraction of wealth transferred is 4 percentage points lower for married individuals. Business ownership and the number of children seem to have little effect on giving.

Again highlighting the importance of taxes, the estimated coefficient on the price of gifts is  $-0.17$  with a standard error of 0.06; the implied elasticity with respect to the price

<sup>22</sup> The simple correlation coefficient between the tax price and wealth is 0.57, compared to 0.002 for wealth and the price constructed using maximum tax rates.



Table 8  
Determinants of lifetime gifts (standard errors reported in parentheses)

Variable	Criterion	Level	Tobit
Constant	−11.0810* (1.3084)	−0.4046 (0.4538)	−0.8070* (0.1254)
ln wealth	0.4157* (0.0379)	0.0094 (0.0151)	0.0262* (0.0033)
Male	−0.1806* (0.0678)	—	−0.0217* (0.0058)
Married	−0.2167* (0.0725)	−0.0391* (0.0122)	−0.0255* (0.0061)
Number of children	0.0337 (0.0225)	0.0008 (0.0026)	0.0027 (0.0021)
Age	0.1108* (0.0296)	0.0057 (0.0050)	0.0088* (0.0028)
Age <sup>2</sup> /1000	−0.6906* (0.1999)	−0.0314 (0.0322)	−0.0523* (0.0187)
Business share	0.0892 (0.1237)	0.0207 (0.0127)	0.0182 (0.0116)
ln relative price of gifts	−1.1562* (0.3752)	−0.1671* (0.0600)	−0.1493* (0.0338)
$\lambda$	—	0.0590 (0.0536)	—
$\sigma$	—	—	0.0993* (0.0012)
$\Phi(z)$	0.3709		0.3201
Log-likelihood	−1377	1039	6923
Observations	2361	928	2361

\* Significant at the 5% level.

is −2.9, evaluated at mean values. For the most part, these findings are reinforced in the Tobit (FIML) estimates reported in the last column of Table 8. The estimated coefficient on price is −0.15 with a standard error of 0.03, which implies a price elasticity of −2.3.

### 5.2.1. Alternative estimates

In the earlier estimates, the price constructed using the maximum values of estate and gift tax rates was used as an instrument. Now, as an alternative, consider the use of the actual tax parameters directly. As shown in the first panel of Table 9, the Probit and Tobit coefficients are slightly smaller than the estimates reported in Table 8 and continue to be significant, unlike the estimated coefficient in the level equation. Moving to the second panel of Table 9, however, reveals that the estimates are little affected when the maximum estate and gift tax rates are used directly in constructing the relative price.

A primary assumption in the above estimates is that parents choose between transferring their wealth to their children during life and at death. No allowance is made for inter-spousal transfers as in Eq. (7'), or the consumption of wealth by the surviving spouse. The latter may reduce the size of wealth available for intergenerational transfers, and, by reducing the size of taxable estate, may also lead to an erroneous measure of the tax price.<sup>23</sup> As a robustness check on the estimates, and their sensitivity to the treatment of spouses, Table 8 is reproduced by dropping married individuals from the sample. For the sub-sample of 1056 widowed individuals, and as shown in panel 3 of Table 9, the estimated coefficients on price continue to be negative and significant but slightly larger than those reported in Table 8.

The earlier estimates in Table 8 are also potentially biased if some individuals have changed their state of residence. In this case, an individual may have made gifts as a resident of one state but retired and died in another state which is recorded as the state of

<sup>23</sup> Note, however, that much of the spousal bequests of the wealthy take the form of trusts (QTIP) intended to benefit the children. See the last column of Table 9 in Joulfaian (2000a).

Table 9

Alternative estimates of lifetime gifts (standard errors in parentheses)

Variable	Criterion	Level	Tobit
<i>1. Use actual tax rates (no instruments)</i>			
ln relative price of gifts	−0.954* (0.273)	−0.055 (0.039)	−0.108* (0.002)
$\lambda$ or $\sigma$		0.022 (0.041)	0.099* (0.002)
<i>2. Use maximum estate and gift tax rates</i>			
ln relative price of gifts	−1.110* (0.360)	−0.127* (0.042)	−0.143* (0.032)
$\lambda$ or $\sigma$		0.009 (0.038)	0.099* (0.025)
<i>3. Exclude married individuals (n=1056)</i>			
ln relative price of gifts	−1.596* (0.599)	−0.279* (0.125)	−0.221* (0.063)
$\lambda$ or $\sigma$		0.116 (0.086)	0.117* (0.002)
<i>4. Exclude Florida residents (n=2068)</i>			
ln relative price of gifts	−1.224* (0.408)	−0.146* (0.067)	−0.148* (0.038)
$\lambda$ or $\sigma$		0.039 (0.059)	0.101* (0.001)
<i>5. Reduce wealth by charitable bequests</i>			
ln relative price of gifts	−1.180* (0.377)	−0.170* (0.061)	−0.151* (0.034)
$\lambda$ or $\sigma$		0.062 (0.055)	0.097* (0.002)
<i>6. Assume all gifts are cash in nature</i>			
ln relative price of gifts	−2.036* (0.377)	−0.533* (0.169)	−0.302* (0.034)
$\lambda$ or $\sigma$		−0.192 (0.111)	0.097* (0.001)
<i>7. Account for borrowing</i>			
ln relative price of gifts	−1.199* (0.376)	−0.162* (0.058)	−0.159* (0.033)
$\lambda$ or $\sigma$		0.042 (0.050)	0.099* (0.001)
<i>8. Exclude observations with wealth &lt; \$3.5 million</i>			
ln relative price of gifts	−1.175* (0.390)	−0.085* (0.048)	−0.143* (0.032)
$\lambda$ or $\sigma$		−0.044 (0.042)	0.090* (0.001)
<i>9. Replace price with maximum gift tax rate</i>			
Gift tax rate	−0.781* (0.379)	−0.041 (0.041)	−0.075* (0.034)
$\lambda$ or $\sigma$		0.005 (0.038)	0.100* (0.002)
<i>10. Replace price with maximum capital gains tax rate</i>			
Capital gains tax rate	−4.977* (1.135)	−0.013 (0.155)	−0.389* (0.101)
$\lambda$ or $\sigma$		0.021 (0.037)	0.100* (0.002)

\* Significant at the 5% level.

residence. In a not too unrealistic example, consider the case of a New York resident, a state with a gift tax, who makes lifetime gifts and then retires to sunny Florida, a state without a gift tax. The maximum state and federal gift tax rate in New York is 0.76 compared to 0.55 in Florida; 0.60 and 0.55 for the estate tax. The data would show a Florida resident to have made lifetime gifts and lead to an erroneous measure of the gift tax. As a test of the robustness of the above results, I exclude estates with reported Florida

residency, some 293 observations. The estimated coefficient on the price for this sub-sample, and as shown in panel 4, remain virtually identical to those reported in Table 8.

Charitable bequests may also complicate the picture. These transfers are part of the wealth variable but are not received by the beneficiaries in life or at death. If these transfers are tax motivated perhaps the treatment thus far is reasonable. Alternatively, individuals may set aside funds for charity without any consideration for the heirs or taxes (Joulfaian, 2000b). In this case, both the dependent variable and the wealth variable on the right-hand side are potentially measured with errors. This error can be compounded by the fact that lifetime charitable contributions, which are not observed, are already excluded from wealth. As a robustness check on the estimates, wealth is reduced by the full amount of charitable bequests.<sup>24</sup> As reported in panel 5 of Table 9, the estimated coefficients on the price are identical to those reported in Table 8.

To the extent that we do not observe the composition of gifts, the price is potentially measured with error if this composition deviates from that observed for terminal wealth, used to construct price measure. In an additional experiment, the price is measured by assuming all gifts are cash in nature. Such transfers are added to terminal wealth, and the cash share is re-calculated.<sup>25</sup> Using this alternative measure of price, the estimated coefficients are qualitatively similar to those reported earlier, albeit larger in absolute value (panel 6).

Borrowing is another consideration as it represents one approach to avoiding capital gains taxes (Auten and Joulfaian, 2001). An individual may borrow against his assets without having to liquidate them, and transfer the proceeds during life. At death, the assets, fully stepped up, may be sold to settle the debts. To control for such strategy, the regressors in Table 8 are augmented with the ratio of debts to assets held at death, plus gifts.<sup>26</sup> As can be seen for the figures reported in panel 7 of Table 9, the basic set of estimates remain unaffected.

The federal progressive rate schedule, and the combined nature of the estate and gift tax, may introduce incentives for early transfers as a means of “freezing” the estate and avoiding estate taxes on future appreciation. Given the aggregate nature of the data, such behavior may introduce errors in measurement, particularly of wealth. As such, I exclude all observations with wealth under \$3.5 million, some \$0.5 million above the level which triggers the maximum federal tax rate in 1987. Gauging from the estimates reported in panel 8 of Table 9, this treatment has little effect on the earlier estimates.

The estimated equations in Table 8 are further replicated by replacing the relative price of gifts with the maximum gift tax rate (panel 9) and alternatively with the maximum capital gains tax rate (panel 10). These variables certainly do not capture all the tax consequences of transfers, especially as they ignore the tax treatment of bequests. However, they are unaffected by any of the assumptions related to appreciation rates and intergenerational portfolio preferences made in constructing the relative price. These

<sup>24</sup> The mean of the dependent variable becomes 0.0219 (se=0.0631).

<sup>25</sup> The mean share slightly increases to 0.2874 (se=0.2376).

<sup>26</sup> The mean value of this ratio is 0.0401 (se=0.0894). Large donors during life seem to carry greater debts.

estimates, which ignore life expectancies and the interaction between the various taxes implicit in Eqs. (6) and (6'), are qualitatively similar to those reported in Table 8, and continue to highlight the importance of taxes.

### 5.2.2. Some simulations

Using Eq. (6), I employ the parameters from Table 8 to simulate the effects of a number of tax regimes on the pattern of gifts observed in the sample. First, I set estate, gift, and capital gains tax rates to the values reported in Table 5, or 0.5231, 0.5477, and 0.3140, respectively. I assume a time horizon of 20 years ( $n=20$ ,  $\rho=0$ ),  $\beta=0.5$ , and the sample mean cash share of wealth of 0.28.

The estimated coefficients in the Tobit equation suggest that repealing estate and gift taxes would reduce gifts by about 64%. Here assets are passed to the heirs free of capital gains and estate taxes at death, but continue to be exposed to capital gains taxes when transferred during life as basis is carried over. On the other hand, if, in addition, capital gains taxes were also repealed, then gift would decline by only 7%.

If instead, gifts were to be taxed on a tax inclusive basis, lifetime transfers would decline by some 71%. This would also require setting the statutory gift tax rate to 110%, which is equivalent to an estate tax rate of 52.31% on a tax inclusive basis. While this regime equalizes estate and gift taxes, capital gains taxes continue to apply in the case of gifts. In contrast, repealing the capital gains tax only ( $\tau_c=0$ ) would increase gifts by 64%. This change would significantly reduce the price of gifts as shown in the bottom panel of Table 2.<sup>27</sup>

Not surprisingly, these estimates suggest that estate and gift taxes have significant implications for lifetime transfers by the wealthy. These estimated effects are in harmony with the observed historical pattern of gifts. In 1976, for instance, the maximum gift tax rate was increased from 0.5775 to 0.7, and the estate tax rate reduced from 0.77 to 0.70. In anticipation of the increase in gift tax rates at the beginning of 1977, gifts increased substantially in 1976. Gift tax receipts were \$1.8 billion in 1976 (1977 fiscal year) compared to only \$0.4 billion in 1975, and \$0.16 billion in 1977.<sup>28</sup> Similarly, gift tax receipts in New York dropped by some 36% in 1999 (FY2000), from \$125 to \$79.5 million, as the gift tax expired in 2000.<sup>29</sup>

While these findings suggest that taxes are an important consideration in the timing of transfers, they are subject to a number of caveats. Because gifts in this data represent transfers over a lifetime, the resulting aggregation bias may preempt us from accurately gauging the effects of taxes and determinants of gifts in general. On the other hand, and notwithstanding the aggregation bias, cumulative lifetime transfers are essential in computing tax rates. More importantly, they are likely to be more informative than gifts reported in a single year.

<sup>27</sup> While the selection variable is not precisely measured, the simulated effects from the level equation are slightly larger than those derived from the Tobit estimates.

<sup>28</sup> See Joulfaian (2000a, Fig. 1).

<sup>29</sup> The combined state and federal maximum gift tax rate dropped from 0.71 in 1999 to 0.55 in 2000, while the estate tax rate dropped from 0.60 to 0.55.

## 6. Conclusion

This paper explores the tax treatment of different modes of wealth transfers, with a special emphasis on the behavioral responses of the rich. It traces the effects of income, estate, and gift taxes on the price of wealth transfers. Capital gains taxes, in addition to gift taxes, are shown to significantly raise the cost of lifetime gifts. In contrast to the conventional wisdom, gifts are not universally superior.

The empirical results demonstrate that taxes have significant effects on the timing of transfers. This finding suggests that the wealthy are influenced by taxes in setting their lifetime transfers, which adds another dimension to the literature on intergenerational transfers. While addressing how taxes influence the disposition of wealth, however, the paper does not examine how wealth accumulation itself, and consequently overall transfers, might be affected by taxes (Stiglitz, 1978; Holtz-Eakin, 1996; Kopczuk and Slemrod, 2001).

## Acknowledgements

The paper greatly benefitted from the comments of seminar participants at OTA, Tax Economist Forum, George Washington, Rutgers, and Georgia State universities, and in particular of two anonymous referees. An earlier version of this paper was released by the US Department of the Treasury as OTA Paper 86, May 2000. The views expressed are those of the author and do not necessarily reflect those of the Department of the Treasury.

## Appendix A

In the case of the wealthy, who hold very little of their assets in the form of cash, capital gains taxes may apply in addition to gift taxes. The donor (donee) pays the gift tax,  $T_G$ , by selling a fraction of the asset, which also results in capital gains tax  $T_D$ . The latter is defined as:

$$T_D = \tau_c \beta (T_G + T_D) \quad (\text{A1})$$

or,

$$T_D = \frac{\tau_c \beta}{1 - \tau_c \beta} T_G \quad (\text{A1}')$$

where  $\tau_c$  is the capital gains tax rate, and  $\beta$  is the appreciation component or accrued gains share of the asset. The gift tax paid,  $T_G$ , depends on the applicable gift tax rate,  $t_g$ , and the amount received by the beneficiary,  $W - T_G - T_D$ . The tax is defined as:

$$T_G = \tau_g (W - T_G - T_D) \quad (\text{A2})$$

or,

$$T_G = \frac{\tau_g}{1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta}} W. \quad (A2')$$

Capital gains taxes,  $T_B$ , may apply at the disposition of the assets by the beneficiaries,  $n$  years in the future. These taxes apply to gains accrued by the donor in the past, and gains accrued by the donee over  $n$  years. As stated earlier, the donee retains the donor's basis adjusted for gift taxes. The adjustment is equal to the amount of the gift tax attributable to the amount of gains accrued by the donor,  $\beta T_G$ . More specifically, the present value of future capital gains taxes is defined as:

$$T_B = \frac{\tau_c [\beta(W - T_G - T_D) - \beta T_G]}{(1 + \delta)^n} + \frac{\tau_c (W - T_G - T_D)[(1 + \pi)^n - 1]}{(1 + \delta)^n} \quad (A3)$$

or, using Eqs. (A1') and (A2'),

$$T_B = \frac{\frac{\tau_c \beta (1 - \tau_g)}{(1 + \delta)^n} + \frac{\tau_c [(1 + \pi)^n - 1]}{(1 + \delta)^n}}{1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta}} W \quad (A3')$$

where  $\pi$  is the rate at which the asset appreciates, and  $d$  the discount rate. The first term measures the capital gains tax on gains accrued by the donor and the second term the tax on gains accrued by the beneficiary.

If the donor dies within 3 years from the date of making the gifts, the gift tax is added to the taxable estate, and additional estate taxes may apply. This additional tax, with probability of  $\rho$  dying within 3 years, is defined as  $T_{E,G} = \rho \tau_e T_G / (1 + \delta)^n$ .

The combined sum of capital gains and gift taxes is  $T_D + T_G + T_B + T_{E,G}$ , or:

$$TAX_G = \left( \frac{\tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta} + \frac{\tau_c \beta (1 - \tau_g)}{(1 + \delta)^n} + \frac{\tau_c [(1 + \pi)^n - 1]}{(1 + \delta)^n} + \frac{\rho \tau_e \tau_g}{(1 + \delta)^n}}{1 + \tau_g + \frac{\tau_c \beta \tau_g}{1 - \tau_c \beta}} \right) W \quad (A4)$$

which is Eq. (4) in the text.

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