

A DYNAMIC ANALYSIS OF ESTATE TAX REPEAL*

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INTRODUCTION

UNDER CURRENT LAW, THE ESTATE TAX IS scheduled to expire for one year, 2010, after which tax rates and exemption levels would revert back to amounts in place prior to the enactment of the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA). The President's FY 2008 budget proposes to extend the repeal of the estate tax permanently. The likely economic effects of repealing the estate tax remain an unresolved issue in the economics literature. This stems from uncertainty about which theoretical model best explains why households leave bequests and the lack of robust empirical estimates of how households rich enough to face the estate tax respond to the taxation of estates.

This paper examines the effects of permanently repealing the estate tax on capital accumulation and output using two different approaches to modeling the economic distortions resulting from the estate tax. In the first approach, the estate tax acts as an additional tax on capital income. The estate tax rate can be converted into an annual accrual tax rate on capital income that leaves a household with the equivalent amount of after-tax bequest. Assuming the economy-wide marginal accrual estate tax rate equals 1.7 percent, repeal of the estate tax leads to a long-run increase in the capital stock of 1.8 percent when repeal is combined with contemporaneous reductions in lump-sum transfer payments. The capital stock increases by 0.9 percent if repeal is financed by increasing income tax rates in every year. The long-run increase in the capital stock would rise to 3.3 percent if the marginal accrual rate equaled 2.6 percent and lump-sum transfer payments declined annually with repeal of the estate tax.

In the second approach, bequests are taxed directly and the after-tax bequest is included in the household's utility function in a manner consistent

with what is known as the "joy of giving" bequest motive. Under this approach, the long-run capital stock declines when the estate tax is repealed, even when financed by contemporaneous reductions in lump-sum transfer payments. This decline is 0.7 percent when the initial marginal bequest tax rate equals the average rate of 20 percent, and the decline is 0.4 percent when the initial marginal bequest tax rate equals 41 percent.

In evaluating these results, there are two critical issues. First, which approach best captures the economic distortions of the estate tax? In other words, should the estate tax be viewed as an additional tax on capital income, or as a direct tax on bequests? Second, to what extent are households intentionally leaving bequests and sensitive to changes in the estate tax rate at the margin?

This paper is organized as follows. The next section briefly describes the related economics literature on bequest motives and reviews empirical evidence on the strength of bequest motives and other general equilibrium models that have evaluated estate tax repeal. We then describe the two approaches used to evaluate estate tax repeal and discuss the results produced from each. The final section concludes and provides some future research directions.

LITERATURE REVIEW

The Empirical Importance of Bequests and Bequest Motives

Household's save for many different reasons and economists have generally identified life-cycle saving (i.e., saving out of current earnings to fund consumption during periods of no or reduced wages) as the predominant motivation for household saving. However, other motives appear to be important as well. In particular, much of the accumulated wealth in the United States can be attributed to intergenerational transfers. There has been considerable discussion in the economics literature for more than 25 years regarding the relative empirical importance of life-cycle versus

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transfer motivated savings, with estimates of the intergenerational transfer share of wealth ranging from 20 to 80 percent. However, recent papers generally agree that when the attention is limited to the share of wealth attributable to transfers made at death (bequests), then the estimate of the transfer share of wealth ranges between 20 and 30 percent.¹

The more important task for our purposes is determining why households leave bequests, and consequently how sensitive wealth accumulation is to changes in estate tax rates. Economists have posited several different motivations for why households leave bequests. First, it is possible that bequests are accidental, as individuals die before consuming all of their wealth as a result of uncertainty and incomplete annuity markets. Second, individuals may leave bequests out of an altruistic desire to benefit their heirs. Third, households may use the promise of a bequest to motivate certain behavior from potential beneficiaries (the strategic or exchange motive). Finally, some have suggested that wealth or bequests provide social status or power or some other direct benefit and that wealth or bequests should be direct arguments in the utility function. When bequests are included directly in the utility function, this is often referred to as the “joy of giving” model.

These different bequest motives have different implications for how households leaving taxable estates would respond to changes in estate tax rates and rules. If bequests are purely accidental, then changing the taxation of such estates should result in no behavioral change on the part of donors.² If bequests are motivated by altruism and the estate tax is repealed, then income and substitution effects work in opposite directions and savings by the donor would increase if the substitution effect is larger.³ If bequests result from a strategic interaction between the donor and beneficiaries, then savings by donors will increase when the estate tax is repealed if the donor’s have an elastic demand for the services provided by the beneficiary. Also, under the joy of giving motive, the impact of estate tax repeal on saving depends on whether the corresponding demand for after-tax bequests is elastic.⁴

Unfortunately, the empirical evidence regarding the explanatory power of these various bequest motives is mixed for the general population and even less evidence exists for those who leave taxable estates. Laitner and Juster (1996) suggest that

altruistic motives are operative for approximately half of their survey population of TIAA-CREF retirees. They further calculate that intentional bequests account for nearly 20 percent of lifetime private net worth in their sample. Unfortunately, few households are wealthy enough to be subject to the estate tax in their sample and they do not estimate what effect estate taxes may have on bequest behavior.

Wilhelm (1996) uses estate tax return data and finds little evidence that bequests are given in a manner that are fully compensatory, noting in particular the strong tendency for estates to be equally divided among children. This suggests altruistic motives are weak, as strict forms of the altruistic model predict that bequests should reduce wealth inequalities among children. Wilhelm argues that his results are more consistent with a strategic motive for intergenerational transfers. Similarly, Altonji, Hayashi, and Kotlikoff (1992, 1997) find strong evidence that extended families do not pool financial resources in a manner consistent with the predictions of the altruistic model.

Kopczuk and Lupton (2007) use panel data from the Asset and Health Dynamics Among the Oldest Old (AHEAD) survey to estimate the importance of bequest motives. They estimate that approximately half of the wealth bequeathed by single households aged 70 or older is accounted for by a bequest motive. They do not find statistically significant evidence supportive of either the altruistic or strategic bequest motives and suggest that an egoistic (joy of giving) motive is the most likely explanation for bequests. Unfortunately, few individuals in their set of households have a net worth large enough to face the estate tax.

In summary, each motive appears to have some explanatory power, but none appear to dominate on aggregate.

Estimates of the Estate Tax on Wealth Accumulation

Two recent papers have estimated the effect of the estate tax on the amount of wealth subject to estate taxation. First, Kopczuk and Slemrod (2001) use pooled cross-sectional analyses that make use of individual estate tax returns. The effects of the contemporaneous estate tax rate on the size of reported wealth is weak. However, they find much stronger effects when the tax rate is measured using laws that prevailed at age 45 or 10 years before death. The estimates from their preferred

specification imply that a tax rate of 50 percent reduces reported wealth by the top 0.5 percent of the population by about 10.5 percent.

Second, Joulfaian (2006) employs aggregate time-series data on estate tax revenues for the years 1950 through 2000. These are normalized by using a predicted average tax rate and converted to taxable estates. He finds that the estate tax equivalent accrual income tax rate, lagged 10 years, has a 10 percent depressing effect on reported bequests.⁵ The dependent variable used in this analysis, reported bequests, equals net worth, less estate expenses, and less spousal and charitable bequests.

Both of these estimates can be extrapolated to the entire population to get a rough estimate of how much repeal of the estate tax would increase personal wealth. The top 0.5 percent of the population accounts for about 16 percent of the wealth in the United States.⁶ Based on the analysis in Kopczuk and Slemrod, personal wealth in the United States may grow by 1.7 percent in case of estate tax repeal. Kopczuk and Slemrod are silent on the behavior of those below the top wealth cohort. Furthermore, in 1998, the value of taxable estates for the entire population extrapolated from estate tax returns is about 21 percent of the \$37 trillion reported by the Flow of Funds.⁷ Based on the estimate in Joulfaian (2006), in the absence of the estate tax, household wealth may increase by 2 percent.

There are several reasons why these estimates are likely to overstate the likely effect of repeal of the estate tax on capital accumulation. In particular, avoidance behavior is not distinguished from changes in saving in the empirical estimates and the potential effects on heirs are not accounted for, as will be discussed below in greater detail. On the other hand, these estimates may not account for the entire population of households affected by the estate tax as some households may have changed their behavior in order to avoid filing an estate tax return.

General Equilibrium Analyses of Estate Tax Repeal

Three recent papers that have simulated the effects of estate tax repeal with a dynamic general equilibrium model are now briefly reviewed. Laitner (2001) builds a dynamic life-cycle model in which households with inelastic labor supplies have different earnings abilities and the possibility of varying degrees of altruism towards their descendants. The estate tax is modeled to reflect statutory rates. When all households are assumed to

be altruistic, the model does not generate the same level of wealth inequality as in the United States, although the average level of bequests is close to the observed level. In this case, replacing the estate tax with other taxes on capital income results in a very modest increase in the capital/output ratio of 0.25 percent in the long run. Alternatively, if only 5 percent of the households are assumed to be altruistic, then the distribution of wealth in the model matches the United States much more closely. However, the average size of bequests is higher than observed. Repealing the estate tax in this instance leads to a long-run increase in the capital/output ratio of 2.6 percent.

Castaneda, Diaz-Gimenez, and Rios-Rull (2003) develop a life-cycle model with altruistic households that face uninsured idiosyncratic shocks to their labor endowment. Smaller estates are exempted from tax and larger estates face an effective marginal rate of 17 percent. The authors cite the numerous ways that households are legally able to avoid estate taxes as to why they lower the effective rate below the statutory rate. The authors find that replacing the estate tax with a contemporaneous proportional increase in income tax rates leads to a long-run increase in the capital stock of 0.87 percent and a 0.35 percent increase in output.

Cagetti and De Nardi (2007) develop a life-cycle model with perfect intergenerational altruism. The model includes borrowing constraints and occupational choice in which they focus on the role of entrepreneurs. They target the revenue raised by estate taxes and the fraction of estates that pay estate taxes in calibrating their model, which results in an effective estate tax rate of 16 percent. When repeal of the estate tax is combined with a reduction in government spending, they estimate that the long-run capital stock increases by 2.4 percent and output increases by 1.3 percent. When the estate tax is replaced with a proportional increase in income tax rates, they find that output increases by just 0.1 percent in the long run and the capital stock increases by 0.8 percent.

DYNAMIC ANALYSIS OF ESTATE TAX REPEAL USING AN ACCRUAL ESTATE TAX RATE

For our analysis we employ the multi-sector overlapping generations model (MS-OLG) currently used by the U.S. Department of the Treasury for the purpose of providing dynamic analyses of

tax proposals.⁸ We have modified the model to examine the repeal of the estate tax using the two approaches discussed above: (1) the estate tax viewed as an annual accrual tax on capital income, and (2) bequests enter directly into a household's utility function with the estate tax viewed as a direct tax on bequests ("joy of giving").

In the first approach, we examine the economic effects of repealing the estate tax using an equivalent annual accrual tax rate on capital income, which we refer to as the accrual estate tax rate (or simply the accrual rate), hereinafter. The accrual estate tax rate on the return to saving is the capital income tax rate that would leave an individual at death with a net worth equal to the after-tax estate. For those households who care about the size of their after-tax bequest, the estate tax distorts the decision of how much to save over the life cycle and can be thought of as an additional tax on capital income.

Poterba (2000) was the first to use this approach to estimate the additional burden that the estate tax levies on the return to capital. He uses data from the Survey of Consumer Finances and estimates that the average estate tax rate adds an additional 1.7 to 2.5 percentage points to the effective tax rate on capital income. Joulfaian (2006) uses a somewhat different methodology using taxable estates and estimates the capital income equivalent rate on the *margin* for households of different ages. We adopt Joulfaian's methodology to calculate economy-wide marginal accrual estate tax rates as described in the next subsection.

Calculation of the Accrual Estate Tax Rate

The estate tax can be viewed as an excise tax on large bequests. This tax, which applies once to accumulated savings, is not directly comparable to the income tax which may apply annually to the return on saving. More specifically, the burden of the estate tax, unlike that of the income tax, may vary with the rate of return and the age of the bequest motivated saver.

To facilitate comparisons, this "excise" tax on bequests can be restated as an equivalent income tax that applies to annual accruals of the return to saving intended to fund the bequest. Assume that the bequest motive is the sole purpose for saving, say as in the "joy of giving" model of bequests. Then, a saver is indifferent between an estate tax that applies to bequests at death and a lifetime annual accrual income tax on the return to accu-

mulated wealth that leaves the size of transfers to the heirs unaltered.

Algebraically, with a marginal estate tax rate e , accrual estate tax rate τ , expected rate of return r , and life expectancy or holding period n , the accrual estate tax rate τ solves the equation:

$$(1) \quad E[(1+r)^n(1-e)] = E[(1+r(1-\tau))^n],$$

where E is the expectations operator, and r , e , and n are stochastic. Using expected rather than stochastic values for r , e , and n , (1) simplifies to

$$(1') \quad (1+r)^n(1-e) = [1+r(1-\tau)]^n.$$

An individual may save \$1 today and leave $(1+r)^n(1-e)$ to his heirs in period n . Under an accrual tax regime, the heirs receive $[1+r(1-\tau)]^n$. Equation (1') yields an accrual tax rate τ of:

$$(2) \quad \tau = \frac{(1+r) - (1+r)(1-e)^{1/n}}{r}.$$

It follows then that, for a given estate tax rate, the accrual tax rate declines with life expectancy and the expected rate of return. Alternatively stated, older individuals face a higher accrual tax rate. While those expecting high rates of return face low tax rates.

Assuming a rate of return of 10 percent, we can calculate an economy-wide marginal accrual rate, using shares of wealth as weights. If it is assumed all households desire to leave a bequest, the estate tax potentially could increase the economy-wide marginal effective tax rate on capital income by approximately 4.3 percentage points.⁹

Implementation of the Accrual Estate Tax Rate

How should this estimate of an economy-wide accrual estate tax rate be translated into an additional marginal tax rate on capital income that generates appropriate behavioral responses within Treasury's MS-OLG model under a simulated repeal of the estate tax? There are many issues to consider. What percent of households care about the size of their after-tax estate? Would households be less responsive to changes in the price of a bequest (heir's consumption) versus changes in the price of own consumption between two different years of the life cycle? How should the potential effects on heirs be addressed?

As discussed above, it does appear that many households expect to leave a bequest and desire to

leave a bequest. It is less known how that bequest is valued by the donor. The empirical evidence on altruistic bequest motives suggests that households place a lower value on consumption of their heirs than on their own consumption and hence would not be as responsive to changes in the after-tax rate of return. Other researchers have set the degree of altruism as part of the calibration process (Laitner, 2001).

Furthermore, the accrual approach (as implemented here) focuses on the effect of the estate tax on donors, but an increase in the size of inheritances received (which generally does not occur in the model under this approach) is also likely to influence the behavior of heirs. Several studies have found evidence that the receipt of an inheritance lowers labor supply and increases consumption of the recipient.¹⁰ This suggests that the economy-wide accrual rate should be reduced below any rate that generates the appropriate incentive effect when focusing only on donor behavior. Similarly, this suggests that the empirical-based estimates cited in the previous section may overstate the overall increase in the capital stock, even if they provide an accurate estimate of the increase in wealth held by households facing the estate tax.

Given this range of evidence, it appears appropriate to lower the accrual tax rate in the MS-OLG model from the estimated economy-wide marginal accrual rate. One can think of this exercise as finding the appropriate behavioral tax rate (τ_a) to use in the model that is the product of economy-wide accrual rate (τ) and an adjustment factor (λ), where $0 \leq \lambda \leq 1$.

$$(3) \quad \tau_a = \lambda \tau$$

Given the uncertainty on the appropriate accrual rate to employ, we will report a range of results using three different initial accrual rates of 1.0, 1.7, and 2.6 percent, which correspond to values of λ approximately equal to 0.2, 0.4, and 0.6, respectively. The accrual estate tax rate is applied to all capital gains, dividends, and interest received at the individual level.

Simulation Results

Table 1 reports the simulated economic effects of estate tax repeal under two different financing assumptions.¹¹ First, lump-sum government transfers to individuals are reduced in every year after reform in order to maintain government budget balance.¹² Second, all income tax rates increase proportionally in every year after reform in order to maintain the initial level of government consumption spending.

Column (2) of Table 1 reports results for when the initial marginal accrual tax rate equals 1.7 percent. This rate equals the average accrual rate needed to replicate the revenue raised by the estate tax.¹³ When government budget balance is maintained by reducing lump-sum transfers in every year, repealing the accrual estate tax rate generates a 1.8 percent increase in the capital stock in the long run, and real GNP increases by 0.6 percent. The 1.8 percent long-run increase in the capital stock is similar in magnitude to the empirical estimates of increased wealth accumulation as the result of estate tax repeal based on the work in

Table 1
Macroeconomic Effects of Repealing the Estate Tax Assuming an Accrual Estate Tax Rate: Percentage Change from Initial Steady-State Values

<i>Years after repeal</i>	<i>(1)</i>			<i>(2)</i>			<i>(3)</i>		
	$\tau_a = 0.01^*$			$\tau_a = 0.017^*$			$\tau_a = 0.026^*$		
	<i>1-5</i>	<i>6-10</i>	<i>Long-run</i>	<i>1-5</i>	<i>6-10</i>	<i>Long-run</i>	<i>1-5</i>	<i>6-10</i>	<i>Long-run</i>
Financed by Decreasing Lump-Sum Transfers in Every Year									
Real GNP	0.1%	0.1%	0.3%	0.2%	0.3%	0.6%	0.3%	0.5%	1.1%
Capital Stock	0.1%	0.4%	0.8%	0.2%	0.7%	1.8%	0.4%	1.2%	3.3%
Labor Supply	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%	0.1%	0.0%
Financed by Increasing Income Taxes in Every Year									
Real GNP	-0.2%	-0.2%	-0.3%	0.0%	-0.1%	0.1%	0.1%	0.2%	0.7%
Capital Stock	0.1%	0.1%	-0.2%	0.2%	0.4%	0.9%	0.4%	1.0%	2.6%
Labor Supply	-0.2%	-0.3%	-0.3%	-0.1%	-0.3%	-0.3%	0.0%	-0.2%	-0.2%

* τ_a is the accrual estate tax rate applied in the initial steady-state.

Kopczuk and Slemrod (2001) and Joulfaian (2006) discussed above.¹⁴

If, instead, the government’s budget is balanced by increasing income tax rates in every year, the long-run capital stock increases by 0.9 percent. Labor supply falls by 0.3 percent as a result of the shifting of the tax burden from capital income to labor income. As a result, real GNP increases by only 0.1 percent in long run. These changes in capital accumulation and output as a result of estate tax repeal are similar to the increases reported by Castaneda, Diaz-Gimenez, and Rios-Rull (2003) and by Cagetti and De Nardi (2007).

The other columns of Table 1 provide some sensitivity analysis regarding the accrual rate applied in the model. If the initial accrual estate tax rate is 1.0 percent, then the capital stock increases by 0.8 in the long run, and output increases by 0.3 percent (assuming a contemporaneous reduction in lump-sum transfers). Alternatively, if the initial accrual estate rate is assumed to be 2.6 percent, then the long-run capital stock increases by 3.3 percent and output increases by 1.1 percent.

There are several concerns with adopting the accrual estate tax approach to estimate the economic effects of repealing the estate tax. One concern, as discussed above, is that there is uncertainty regarding the fraction of bequests which are intentional and the resulting tax rate to apply in the model. Moreover, this approach does not capture possible effects upon heirs as the size of the inheritance received essentially remains unchanged in these simulations.

Another concern with the accrual-based approach is that it distorts life-cycle consumption decisions in a manner that the actual estate tax does not. The estate tax places a wedge, which can be substantial, between the value of end-of-life giving (consumption of heirs) and current consumption. The accrual approach as implemented in this model primarily places a tax wedge between consumption in every period over the life cycle. The accrual approach, for example, raises the price of consumption at age 30 relative to consumption at age 29, and raises the price of consumption at age 31 relative to the price at age 30. Stated another way, in the accrual approach used above, the estate tax primarily affects the slope of the consumption profile, as opposed to the level. This increases the simulated savings response of estate tax repeal.

DYNAMIC ANALYSIS OF ESTATE TAX REPEAL USING DIRECT TAXATION OF BEQUESTS

Implementation of Direct Taxation of Bequests Assuming Joy of Giving Motive

In our second approach to modeling the repeal of the estate tax, we modified Treasury’s MS-OLG model to include an intentional bequest motive. Bequests are assumed to directly enter the utility function according to the “joy of giving” motive discussed above. Prior to this, the model employed a simple target bequest motive. Bequests are given only in the last period of life and inheritances are received at model age 25, which corresponds to real life age 45. Death occurs with certainty at model age 55 (real life age 75).

More specifically, households born in year s , choose composite consumption (C), leisure (LE) and bequests (BEQ) to maximize a time-separable CES utility function, subject to a lifetime budget constraint that requires the present value of lifetime wealth including inheritances to equal the present value of lifetime consumption including bequests.

$$(4) \quad LU_s = \frac{1}{1 - \frac{1}{\sigma}} \left(\sum_{t=s}^{s+54} \omega^{t-s} (\alpha_c^{1/\gamma} C_t^{1-1/\gamma} + \alpha_c^{1/\gamma} LE_t^{1-1/\gamma})^{\frac{1-\frac{1}{\sigma}}{1-\frac{1}{\gamma}}} + \omega^{54} \alpha_b BEQ_{s+54}^{1-1/\sigma} \right)$$

where α_c , α_c , and α_b are the preference parameters for consumption, leisure and bequests, respectively, σ is the intertemporal elasticity of substitution, γ is the intratemporal elasticity of consumption between consumption and leisure and $\omega = 1/(1 + \rho)$ is a discount term where ρ is the rate of time preference.¹⁵

The estate tax is included as an excise tax on bequests, where households care about the after-tax value of their bequest, but their behavior does not depend on the circumstances of their potential beneficiaries, as with the altruistic motive. The estate tax increases the price of the bequest, leading to offsetting income and substitution effects. The substitution effect leads households to shift away

from bequests and towards consumption earlier in life, while the income effect leads to reduced consumption earlier in life, thus the overall effect on savings is ambiguous.

There is only one income group in the model and it is assumed that all bequests are potentially subject to the estate tax. The initial level of bequests is set so that an average estate tax rate of 20 percent raises the appropriate amount of estate tax revenue. The model also allows the marginal tax rate on bequests to be greater than the average tax rate. The choice of the effective marginal rate on bequests is subject to some of the same considerations as discussed above regarding the accrual estate tax rate, such as what portion of households have intentional bequest motives. According to our calculations, the weighted average marginal tax rate on estates, using wealth shares as weights, is approximately 41 percent.¹⁶

Simulation Results

We report simulation results in Table 2 for repeal of the estate tax and two different assumptions regarding the effective marginal tax rate on bequests: (1) the marginal tax rate is equal to the average tax rate of 20 percent (which assumes that approximately half of households are bequest motivated), and (2) all households have a bequest motive and face a marginal rate of 41 percent. When the initial marginal rate on bequests is assumed to be 20 percent and transfers are reduced in every period, then the long-run capital stock decreases by 0.7 percent, leading to a decline in real GNP of 0.2 percent. Labor supply does not

change. When the initial marginal tax rate on bequests is 41 percent (keeping the average rate at 20 percent), then the capital stock decreases by 0.4 percent in the long run, leading to a decrease in output of 0.1 percent

If income tax rates are increased proportionally to account for the loss in estate tax revenue, then the capital stock declines even further. The capital stock declines by 1.6 percent when an initial marginal bequest tax rate of 41 percent is repealed. The tax rates on labor income increase as well and the labor supply falls by 0.3 percent in the long run, which results in a decline in real GNP of 0.8 percent.

The repeal of the estate tax assuming a direct tax on bequests leads to a decline in capital accumulation regardless of the financing assumption. Why is this so? First, donors respond by lowering the amount of pretax bequest, which lowers the amount of savings needed to consume at the end of life. Repeal of the estate tax on bequests lowers the price of “consuming” bequests and bequests do increase in the simulations reported in Table 2. However, the demand for after-tax bequests is inelastic in the model, so the amount of the pre-tax bequest actually falls. For example, when the initial marginal tax rate on bequests is 20 percent, the after-tax bequest increases by approximately 9 percent in the long run, but the pre-tax bequest falls by about 13 percent. When the higher initial marginal tax rate on bequests of 41 percent applies, the increase in the after-tax bequest becomes 21 percent in the long run, while the pre-tax bequest falls by about 3 percent.

Table 2

Macroeconomic Effects of Repealing the Estate Tax Assuming “Joy of Giving” Bequest Motive and Direct Taxation of Bequests: Percentage Change from Initial Steady-State Values

Years after repeal	(1)			(2)		
	$\tau_b = 0.2^*$			$\tau_b = 0.41^*$		
	1-5	6-10	Long-run	1-5	6-10	Long-run
Financed by Decreasing Lump-Sum Transfers in Every Year						
Real GNP	-0.1%	-0.1%	-0.2%	0.0%	0.0%	-0.1%
Capital Stock	-0.2%	-0.4%	-0.7%	0.0%	-0.1%	-0.4%
Labor Supply	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Financed by Increasing Income Taxes in Every Year						
Real GNP	-0.4%	-0.6%	-0.9%	-0.3%	-0.4%	-0.8%
Capital Stock	-0.3%	-0.8%	-2.0%	-0.1%	-0.4%	-1.6%
Labor Supply	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.3%

* τ_b is the tax-inclusive tax rate applied to bequests in the initial steady-state.

Second, timing effects are important in OLG models, and levying a large tax on bequests in the final period of life forces households to save more compared to a revenue neutral income tax that raises more revenue earlier in life. Repealing the estate tax provides a windfall for elderly generations, but revenue neutrality requires younger generations to pay more in taxes, whether raised lump-sum or through increasing income tax rates. This intergenerational transfer of tax liabilities lowers capital accumulation in the long run.

Third, heirs respond to the receipt of a larger inheritance by saving less out of life-cycle earnings. For example, households anticipate the increased inheritance after estate tax repeal and lower capital accumulation prior to receipt of the inheritance.

The main advantage of this approach is that it accurately captures the distortion the estate tax creates between current consumption and “consumption” at the end of the life through giving a bequest. However, there are several concerns with the joy of giving approach as implemented in this paper. The empirical evidence cited above suggests that households respond to changes in estate tax rates by increasing pre-tax bequests by around 10 percent.¹⁷ Yet, the households in these simulations respond by lowering pre-tax bequests when the estate tax is repealed. This decrease in savings by donors is a product of the particular utility function specification used in this paper. Greater donor response to changes in estate tax rates can be generated by modifying the way the after-tax bequest enters the utility function. This will be done in future research.

In addition, the behavioral responses to the income effects in the model may be larger than what would actually occur if the estate tax were removed. Finally, the model only includes one type of household, a richer model with different earnings abilities, perhaps with idiosyncratic uncertainty and different preferences towards bequests, could lead to different results.

CONCLUSION

As stated in the introduction to this paper, the likely economic effects of repealing the estate tax remain an unresolved issue in the economics literature. This paper does not resolve this issue, but presents two possible modeling approaches: (1) the estate tax viewed as an accrual based tax

on capital income, and (2) the “joy of giving” approach where bequests enter a household’s utility function directly and the estate tax is modeled as a direct tax on bequests. Regardless of which approach is employed, more precise estimates of the strength of bequest motives and subsequent sensitivity to changes in estate tax rates would help narrow the range of plausible responses to reform of the estate tax.

Finally, the focus of this paper is admittedly narrow. We do not consider the effect of the current estate and gift tax system upon administrative and compliance costs. Nor do we consider the effect of the estate tax on efficiency or equity. Those issues are left to future research.

Notes

- ¹ This debate was sparked by Kotlikoff and Summers (1981) who suggested that as much as 80 percent of wealth could be attributed to intergenerational transfers, which was much higher than the prevailing conventional wisdom of 20 percent. Kotlikoff (1988) and Modigliani (1988) provide an overview of that debate and the definitional differences that contribute to the debate. More recent work by Barthold and Ito (1992) and Gale and Scholz (1994) suggest that limiting attention only to bequests (and not *inter vivos* transfers) implies that transfers account for 25 to 30 percent of wealth accumulation.
- ² Similarly, if bequests are the residual resulting from wealth entering the utility function directly, then the estate tax should not affect donor behavior.
- ³ Repeal of the estate tax reduces the price of funding consumption by heirs and which leads parents to shift resources towards their children, but it also increases the income of the dynastic family, which would lead to greater consumption by the parent household.
- ⁴ See Gale and Perozek (2001) for further details.
- ⁵ The concept of an accrual estate tax rate is explained below in detail.
- ⁶ See Kopczuk and Saez (2004). This may be larger as Kopczuk and Slemrod employ the gross estate (total assets) and not net worth.
- ⁷ The estimate is based on aggregate data for estate tax decedents whose age and wealth distribution may not be identical to that of top wealth holders in the population.
- ⁸ A similar model is described in U.S. Department of the Treasury (2006). Baseline behavioral parameter values reported in that study are adopted for the simulations reported in this paper. Output is generated by four production sectors—a corporate sector, a noncorporate sector, rental housing, and owner-occupied housing. Individual-level decisions made by representative

consumers determine the aggregate levels of labor and saving available in each year. Tax policy affects incentives to work, save, and invest; and representative consumers and firms incorporate future prices into current period decisions about how much to produce and about how to allocate capital among competing uses. The model used for these estimates is closed to international capital flows.

⁹ Details on the calculation of the economy wide accrual estate tax rate are in an appendix available upon request.

¹⁰ Joulfaian and Wilhelm (1994) find that labor supply and earnings fall by a small amount after receipt of an inheritance. Holtz-Eakin, Joulfaian, and Rosen (1993), using matched estate tax and income tax return data, estimate that receipt of a large inheritance reduces labor supply participation by approximately 12 percentage points compared to the receipt of a small inheritance (average inheritance increases by \$350,000 between the two groups). Brown, Coile, and Weisbenner (2006) use data from the Health and Retirement Survey to estimate that raising the size of the inheritance by \$100,000 increases the probability of early retirement by 3.8 percentage points when the inheritance is expected and 8.4 percent points if the inheritance is unexpected. Brown and Weisbenner (2002) find that the receipt of a transfer reduces life-cycle saving nearly dollar-for-dollar. In addition, Weil (1994) estimates that receiving an inheritance increases consumption. Using the PSID he estimates that families that expect an inheritance consume 4.8 percent more than families that do not and families that have received an inheritance consume 10.4 percent more than those that have not. His estimates imply that approximately 3 percent of consumption is due to past and expected bequests. Joulfaian and Wilhelm (1994) also find that consumption increases after receipt of an inheritance, although the overall effect is not large. On the other hand, Holtz-Eakin, Joulfaian, and Rosen (1994) find that receipt of large inheritances raises the likelihood of a household starting or expanding a business.

¹¹ This exercise essentially repeals the estate tax as existed under pre-2001 tax law, which will be in effect again under current law beginning in 2011. We abstract from any issues related to the current law reduction in estate tax rates and repeal of the estate tax which occurs for one year, 2010.

¹² In other words, lump-sum taxes are increased in order to maintain government consumption expenditures at values equal to the initial steady-state without allowing an increase in deficits.

¹³ The estate tax is assumed to raise revenues equal to 0.33 percent of GDP in the initial steady-state. Lump-sum transfers apportioned according to wealth holdings are made in the initial steady-state when the

marginal accrual rate diverges from the average rate to maintain the same level of revenue, which has the effect of allowing the marginal and average tax rates on capital income to diverge.

¹⁴ Cagetti and De Nardi (2007) find that capital accumulation increases by 2.4 percent when non-valued government purchases decline when the estate tax is repealed.

¹⁵ For the simulations reported in this paper, the intertemporal elasticity of substitution is assumed to be 0.35 and the intratemporal elasticity of substitution between consumption and leisure is assumed to be 0.8.

¹⁶ Author's calculations based on a sample of 1998 estate tax returns.

¹⁷ Kopczuk and Slemrod (2001) and Joulfaian (2006).

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