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## Tax Shelters and Passive Losses after the Tax Reform Act of 1986

Andrew A. Samwick

The Tax Reform Act of 1986 (TRA86) was the culmination of a concerted effort by the Congress and the president to improve the efficiency and perceived equity of the federal tax system. As conspicuous examples of special tax treatment for particular types of income (and particular groups of taxpayers), investments known as tax shelters received a great deal of attention in the legislative debate.<sup>1</sup> Tax shelters are investments designed to create losses for tax purposes that, when added to income earned from other sources in the calculation of a taxpayer's total income, "shelter" that income from taxation. Investments in real estate, oil and gas exploration, and other favored sectors, especially when debt financed, can create such tax losses even while generating positive economic income and cash flows.

Tax shelters are typically organized as limited partnerships in which the investor has no management role. An otherwise high-income taxpayer could, with very little direct effort, utilize tax shelter losses to lower his or her average tax rate below that of a low-income taxpayer without tax shelter losses, thereby undermining the vertical equity of the federal tax system. As an indication of how important tax shelters were in reducing the tax liabilities of high-income taxpayers, Petska (1992) reports that for the group of taxpayers in 1986 with

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1. U.S. Congress (1985) represents the legislature's perspective on tax shelters during the formulation of TRA86. McLure and Zodrow (1987) discuss the resemblance of TRA86 to the administration's proposals for tax reform.

at least \$250,000 in positive income and an average tax burden of 5 percent or less on it, partnership losses offset over 40 percent of positive income.<sup>2</sup>

The direct assault on this type of "abuse" of tax shelters came from the new "passive loss" rules enacted by TRA86 in section 469 of the Internal Revenue Code. These rules limited the extent to which losses from activities in which the investor did not "materially participate" could offset positive income from other sources such as wages, capital gains, and dividends. For investments made after TRA86, passive losses can be offset only against income from passive activities. Any excess losses are disallowed as a current deduction until the taxpayer disposes of the activity that generates the loss or realizes sufficient passive income to apply against the losses.<sup>3</sup> In order to satisfy the material participation standard, a taxpayer's involvement in the activity must be regular, continuous, and substantial. Although material participation in more than one activity is possible, a taxpayer is most likely to materially participate only in his or her principal trade or business. More important, limited partnership interests are automatically presumed to be passive activities. The passive loss rules therefore effectively sever the link between the tax losses from a shelter and the tax liability due on other forms of income in a given year.

There is little doubt that investments in tax shelters have all but disappeared since the enactment of TRA86. Tabulations of form D filings with the Securities and Exchange Commission compiled by Robert A. Stanger & Co. show that public sales of limited partnerships fell from \$13.1 billion in 1986 to \$7.6 billion in 1989 and \$2.6 billion in 1992 after 15 prior years of growth. Tabulations of partnership schedule K returns in Wheeler (1994) show a similar pattern in net income from limited partnerships. Between 1983 and 1986, aggregate net losses increased from \$18.7 to \$35.5 billion. By 1989 and 1992, net losses had fallen to \$21.6 and \$3.3 billion, respectively. It is steadfastly believed that the passive loss rules were the death blow to abusive tax shelters, where abuse can generally be said to occur when a taxpayer invests solely to lower tax liability, without any regard for economic profit.<sup>4</sup> According to IRS Deputy Chief Counsel Peter K. Scott, "The passive loss rules pretty much put the final nail in the coffin, in terms of the tax shelter business" (quoted in Moriarty and Rosen 1988, 920). The passive loss rules were also cited as critical to the elimination of tax shelters in economic analyses of TRA86.<sup>5</sup>

2. Positive income here refers to the total of all positive sources of income before the netting out of any losses.

3. For investments made prior to TRA86, the passive loss limitations were phased in over five years: 35 percent in 1987, 60 percent in 1988, 80 percent in 1989, and 90 percent in 1990. During the phase-in period, any passive losses not disallowed were included as a tax preference in the calculation of the alternative minimum tax. Becker (1987), Brumbaugh and Ward (1987), and Keligan (1987) provide detailed descriptions of the passive loss rules.

4. Cordes and Galper (1985) present a more systematic classification of popular and legal definitions of tax shelters.

5. See, e.g., Auerbach (1987), Musgrave (1987), and Pechman (1987) in the symposium on TRA86 in the inaugural issue of the *Journal of Economic Perspectives*.

Assigning the passive loss rules the credit for killing the tax shelters on the basis of the decline of tax shelters since its adoption may be premature because TRA86 also squeezed tax shelters in two other ways that were unrelated to the passive loss rules. The first was by reducing the magnitude of the losses that could be generated by a given tax-sheltered investment. The schedules for the depreciation of some assets typical of tax shelters, most notably real estate, were lengthened. The longer the time period over which an asset must be depreciated for tax purposes, the lower is the present value of the depreciation deductions. TRA86 also repealed the investment tax credit (ITC), which had previously allowed up to 10 percent of the cost of an investment to be deducted from the investor's tax liability in the year it was purchased. The second was by reducing the tax benefit that a taxpayer could claim from a given loss. TRA86 reduced marginal tax rates on ordinary income at the high end of the income distribution and repealed the 60 percent exclusion on long-term capital gains. These two measures reduced the after-tax value of losses while the asset was held and raised the tax rate paid on the gain generated when the asset was sold, respectively.

Accurately determining the importance of the passive loss rules in eliminating tax shelters is of economic significance because the passive loss rules do not distinguish between abusive tax shelters and legitimate economic enterprises that are organized as partnerships and happen to lose money. The passive loss limitations are so broadly applicable that they may also be disallowing the deductibility of genuine economic losses and thereby discouraging ex ante productive investment. Although the passive loss rules have been criticized by legal scholars,<sup>6</sup> the supposition that in the absence of these rules there would still be tax shelter abuse is held out as an offsetting benefit. The notion that the declining marginal tax rates or the repeals of the ITC and long-term capital gain exclusion could have played an important role in the demise of tax shelters is absent from the textbook legal analysis of the effect of TRA86 on tax shelters (Chirelstein 1994, 268). Given the potential for the passive loss rules to inhibit productive economic investments, that they may have been sufficient to eliminate tax shelters is not the relevant issue. The purpose of this paper is to answer the more important question of whether they were *necessary* to accomplish that goal, given the other changes enacted by TRA86.

This paper is organized as follows. Sections 7.1 and 7.2 address the issues related to legitimate tax shelters, that is, those in which transactions are assumed to take place at a fair market value. Section 7.1 illustrates with three examples the operation of tax shelters before TRA86, the impact of the changes enacted by TRA86, and the role of the passive loss rules in eliminating tax shelters. The substantive conclusion is that the passive loss limitations only affect the deferral of income. To the extent that tax shelters provide other bene-

6. Examples include Bankman (1989), Peroni (1988), Zelenak (1989a, 1989b), and Sims (1994). Johnson (1989) argues in support of the passive loss rules, in a response to Zelenak (1989a).

fits, such as the conversion of ordinary income to capital gains, the passive loss limitations were of secondary importance. The repeal of the ITC and long-term capital gain exclusion were more important by comparison. Section 7.2 discusses the implications of these results for the existence of a clientele for tax shelters after TRA86 by examining the change in the distribution of marginal tax rates in a panel of tax returns. Once again, the reforms other than the passive loss rules are shown to be critical, this time in removing the positive correlation between the after-tax rate of return on a tax shelter and the investor's marginal tax rate.

The emphasis is then shifted in section 7.3 to so-called abusive tax shelters, more precisely, those in which the asset's basis for depreciation can be artificially overstated to achieve arbitrarily large depreciation allowances without subsequent recapture. Such transactions are pure deferral; hence, the passive loss rules will eliminate them. As Sims (1994) argues, however, a more sensible policy could have been formulated by focusing on the loopholes that enable the basis to be overstated without sufficient penalty rather than the appearance of losses in general. Section 7.4 investigates another hypothesis for why passive loss limitations were enacted, namely, to satisfy short-term distributional goals in a comprehensive tax reform. Using cross-sectional tax return data, it is shown that approximately half of the passive losses disallowed during the phase-in period for the new rules were realized by the top 0.60 percent of the income distribution. Section 7.5 concludes.

## 7.1 Tax Shelters before and after TRA

The basic idea underlying a tax shelter is alarmingly simple: to take a dollar of income and lower the value of the taxes that must be paid on it. Although investments commonly known as tax shelters are not the only ways to exploit the tax preferences in the Internal Revenue Code, they are among the least straightforward.<sup>7</sup> This section begins by describing the salient features of a tax-sheltered investment and then illustrates these features, and the changes enacted by TRA86, using examples of tax shelters typical of the pre-TRA86 period.

### 7.1.1 Components of a Tax Shelter

There are two principal ways that income tax burdens can be lowered in a tax shelter. The first is by deferring the tax liability into future years. If interest rates are positive, then the present value of a tax payment can be lowered by shifting it into later years because the investor can earn interest on the tax

7. A much simpler way to confer a tax advantage is to simply exempt the asset's return from taxation, as in the case of municipal bonds. Fierro (1981) is an informative—and entertaining—introduction to tax shelters.

liability during the interim. The second is by converting the taxable income from ordinary income to capital gain income, which has typically been taxed at a lower rate. Without deferral or conversion, there is no tax shelter. The source of both deferral and conversion is depreciation—not the actual physical deterioration of capital—but the magnitude of the deduction from income that the owner of the asset is allowed to claim for tax purposes. If the depreciation allowances correspond to the economic depreciation of the asset, then there is no tax advantage to the investment under an income tax system.<sup>8</sup> In practice, the tax advantage comes from depreciation allowances that are larger than economic depreciation during the earlier years of the investment.<sup>9</sup> Even if the amount taken in depreciation is added (for tax purposes) to the proceeds from the eventual sale of the asset, the investor benefits by deferring the tax until the date of the sale. Depreciation allowances become even more valuable if, when the asset is sold, the proceeds are taxed at a lower rate, such as that prevailing on capital gains before TRA86. In this way, the depreciation allowances are converted from ordinary to capital income.

As will be shown in section 7.2, an investment in a depreciable asset is not likely to function as a tax shelter unless it is debt financed. By borrowing a portion of the funds required for the initial investment in the asset, the investor can claim the depreciation on the full investment, deduct the interest payments on the borrowed funds from taxable income, and pay off the debt when the shelter is disposed of. Investors with the highest marginal tax rates naturally benefit most from the deductibility of interest payments. As the leverage in the deal is increased, the tax losses grow relative to the personal funds contributed by the investor, thereby allowing more of the investor's other income to be sheltered from taxation for a given depreciable asset. The associated economic cost of leverage is that it also increases the investor's exposure to risk. Additionally, it is the use of leverage to finance tax-sheltered investments—and the notion that higher leverage might in some cases not actually imply an increase in exposure—that has historically drawn the scrutiny of the Internal Revenue Service (IRS) and motivated congressional reforms such as the passive loss rules.

Investors in tax shelters are almost always purchasing interests in limited partnerships, either publicly traded or privately placed. The pooling together of numerous investors confers the advantages of diversification and economies of scale in transactions. Beyond pooling, the limited partnership has two features that recommend it as the organizational form for tax shelters. First, the partnership itself is not a taxable entity. Instead, income and losses from the investments “pass through” to the individual partners' tax returns. There is also

8. This point is well demonstrated by Warren (1985) and other comparisons of income and consumption tax systems.

9. Scholes and Wolfson (1992, 393) define a tax shelter in precisely this way: “an asset in which the investment cost can be deducted from taxable income at a rate that exceeds its economic depreciation.”

flexibility in the allocation of income and losses to different partners over time. If the same investment were made by a C-corporation, the investors (as stockholders) would have no flexibility in allocations and any income produced by the investment would be subject to both corporate and personal income tax. Second, the liability of a limited partner is restricted to the amount of money contributed or pledged by that partner to the partnership, just as a corporate stockholder's liability is confined to the amount of stock purchased. If the investment were made by a sole proprietor, his liability would be unlimited. The examples that follow can easily be understood as the investor's share of interests in a limited partnership.

### 7.1.2 Cattle Feeding

A straightforward example of a tax shelter that produces only the deferral of income tax is that of cattle feeding. The idea behind the shelter is to purchase steers that weigh up to 700 pounds, fatten them up through six months of constant feeding, and then sell them to slaughterhouses at weights of over 1,000 pounds. The investment is a shelter because the feed consumed by the cattle plus all the fees incurred for veterinary services and management of the feedlot are considered to be tax deductible in the year they are incurred. However, the income realized from the sale of the cattle will not be taxed until the date of sale. Cattle-feeding shelters are organized in July or August for potential sale in the early months of the following year. With good timing, all of the expenses can be made in the first year and all sales can be made in the subsequent year.

The risks involved with the cattle-feeding shelter are that the market for fattened cattle is highly competitive and that the actual amount of weight that can be put on a steer is subject to random events such as cold weather and disease. Although futures markets exist for both cattle and grain, they have typically locked in very slim profit margins, and the use of futures markets to hedge risk may draw the attention of the IRS. Swanson and Swanson (1985) cite a cattle-feeding tax shelter from November 1979 in which feeder cattle were selling for \$0.80 per pound, the expenses for fattening were estimated at \$0.47 per pound, and the futures price of fully fattened cattle for delivery in April 1980 was \$0.725 per pound. Using these estimates, purchasing a 650-pound steer and adding 450 pounds to it would have cost the investor  $520 + 252 = \$772$ . Selling a cattle future for delivery in April would have yielded  $1,100 * 0.725 = \$797$ , for a profit of \$25. For tax purposes, the investor would have shown a \$252 loss in 1979 and \$277 in income in 1980.

In a cattle-feeding shelter, both the loss and the income are treated as ordinary income, so there is no conversion into capital gains. Moreover, since the fattening process takes only six months, such a shelter is really useful only when the taxpayer can foresee a reduction in his marginal tax rate during the following year. A taxpayer who has temporarily high income due to a capital

gain or one who is planning to retire the next year would be a good candidate for the cattle-feeding shelter. The shelter operates, in essence, by exploiting the progressivity of the tax schedule. By adding losses in the year in which the marginal tax rate is high and income in the year in which the marginal tax rate is low, the taxpayer can lower his overall tax liability.

Table 7.1 shows the extent to which taxpayer can utilize a deferral shelter in the pre-TRA86 (1986) and post-TRA86 (1988) periods. Four sets of income declines over a two-year period are presented. The first three rows of the table show the effects for a taxpayer with a first-year income of \$96,000 and a second-year income of \$32,000 using a deferral shelter to transfer \$32,000 of this income from the first year to the second, thereby equalizing a tax liability across the two years.<sup>10</sup> Using the 1986 tax table for a joint return, this results in a decline in the two-year tax liability of \$2,537. The three other examples in the table also show gains from the tax shelter, ranging from \$850 when the taxpayer shifts only \$24,000 to \$3,531 when the taxpayer defers \$60,000 in income. The tax savings are on the order of 5 percent of the unsheltered tax liability.<sup>11</sup>

To demonstrate the effect of TRA86 on pure deferral shelters, the analogous tax savings are computed for the four shelters using the 1988 tax schedule.<sup>12</sup> TRA86 compressed the existing tax schedule with 14 tax brackets and a top marginal tax rate of 50 percent into a 2-bracket schedule with a top marginal tax rate of 28 percent. The table shows that the tax savings are generally smaller in absolute magnitude after TRA86. The decline is particularly apparent for the last shelter, which involves the highest income and the most deferral because TRA86 lowered the marginal tax rates most dramatically at the high end of the income distribution. The exception to this pattern is the second shelter, in which the amount of deferral increases using the post-TRA86 schedule. The reason is that the 1988 schedule imposed a 5 percentage point surtax on a range of income to phase out the benefits of the lower inframarginal tax rates for taxpayers above targeted income levels. When the phase-out was completed, the taxpayer had a 28 percent average tax rate on all taxable income, but within the phase-out range, the marginal tax rate was 33 percent. Since the phase-out range for a joint return was \$71,900–\$149,250, smoothing income to exactly \$72,000 in 1988 was particularly advantageous.<sup>13</sup>

To summarize, pure deferral shelters such as the cattle-feeding shelter de-

10. For simplicity, the discounting of the tax losses from the second year that is appropriate for these comparisons is omitted.

11. The tension between horizontal equity and a progressive tax schedule has been the subject of numerous articles on "the marriage tax." See, e.g., Rosen (1987).

12. The 1988 schedule is used because the 1987 schedule was a transitional one to allow for the phase in of the marginal tax rate changes. The top marginal tax rate in 1987 was 38.5 percent.

13. This "bubble" in the marginal tax rates also accounts for the negative gain from deferral in the fourth shelter, as this shelter shifts income in both years into the phase-out range from the 28 percent marginal rate regions on both sides of it. The bubble was replaced in 1990 by a top marginal tax rate bracket of 31 percent.



**Table 7.1** Effects of Deferral Shelter before and after TRA86

Item	Without Cattle Shelter		With Cattle Shelter		Tax Gain from Shelter <sup>a</sup>
	Year 1 (1)	Year 2 (2)	Year 1 (3)	Year 2 (4)	
Income	96,000	32,000	64,000	64,000	
Tax (1986) <sup>b</sup>	29,603	5,102	16,084	16,084	2,537
Tax (1988) <sup>b</sup>	24,218	5,093	14,053	14,053	1,205
Income	96,000	48,000	72,000	72,000	
Tax (1986)	29,603	10,075	19,414	19,414	850
Tax (1988)	24,218	9,573	16,298	16,298	1,195
Income	120,000	60,000	90,000	90,000	
Tax (1986)	40,481	14,564	26,974	26,974	1,097
Tax (1988)	32,138	12,933	22,238	22,238	595
Income	180,000	60,000	120,000	120,000	
Tax (1986)	69,929	14,564	40,481	40,481	3,531
Tax (1988)	50,400	12,933	32,138	32,138	-943

<sup>a</sup>Difference between the total tax paid without the shelter (sum of cols. [1] and [2]) and the total tax paid with the shelter (sum of cols. [3] and [4]).

<sup>b</sup>Tax (1986) and Tax (1988) are the tax liabilities on the taxable income specified in the top row of each group according to the tax tables for the respective years, assuming the taxpayer files a joint return.

scribed here typically offered modest tax relief in the pre-TRA86 period for taxpayers confronted with a one-time change in income levels. The magnitude of the tax gain from deferral was generally reduced by TRA86, especially at high income levels, where due to an oddity in the tax schedule, deferral could have actually increased the tax liability.<sup>14</sup> Finally, it is important to note that the passive loss limitations put an end to short-term deferral shelters used in this manner by disallowing the loss in the first year, forcing it to be realized in the second year when the cattle were sold, unless the temporarily high income in the first year was itself due to passive income.

### 7.1.3 Equipment Leasing

Equipment leasing was among the most popular tax shelters other than real estate in the pre-TRA86 period, thanks in large part to the implementation of the accelerated cost recovery system (ACRS) and a more generous ITC under the Economic Recovery Tax Act of 1981. ACRS is a schedule of depreciation allowances that permits depreciation to be taken for tax purposes over 3-, 5-, or 10-year periods; in each case, the depreciation period is considerably less

14. Curiously, the enactment of TRA86 itself caused a one-time opportunity for all high-income taxpayers to profit by deferral of income from the calendar year 1986 to 1988 because TRA86 reduced top marginal tax rates from 50 to 28 percent. The *Stanger Report* discussed an investment strategy that capitalizes on this opportunity. ("Hoof It to Cattle in 1986" 1986).

than the useful life of the investment. The ITC was an even more generous tax incentive, returning up to 10 percent of the cost of an asset in the year it was purchased. Because the ITC is a credit rather than a deduction, it reduces the investor's tax liability (not the investor's taxable income) dollar for dollar. TRA86 repealed the ITC, and although it did not directly alter ACRS for equipment, the reduction in top marginal tax rates lowered the after-tax value of depreciation deductions. Because the sale of leased equipment generates ordinary income rather than a capital gain, equipment leasing did not shelter income through conversion, and TRA86's repeal of the 60 percent exclusion does not come into play.

The customers of an equipment-leasing partnership are corporations that, for any of a number of reasons, prefer not to own their machinery. The most compelling reason is that because of low income or unused tax losses, the corporation cannot benefit from depreciating the assets it owns. By leasing, it can share the benefits of the tax deductions taken by the partnership. Alternatively, the corporation may choose to lease to avoid a long-term commitment to a particular level of technology or to reduce monthly payments and conserve on cash flows. The benefits to the partnership are the rents that it charges its customers, the depreciation deductions and ITC taken on the equipment, and the residual value of the equipment at the end of the lease.

As with any tax shelter, there are several risks associated with equipment leasing. The major risk is that the equipment will become obsolete due to technological advances in the relevant industries. If the equipment becomes obsolete, then the partnership will have a difficult time setting up subsequent leases after the initial one or recouping any of the original value through the sale of the equipment. The government has also increased the risk associated with leasing by requiring that the lease be short term (no more than half the depreciable life of the asset) in order to qualify for the ITC. The other requirement for the ITC is that the lease be actively managed, which in practice requires that 15 percent of the rent on the equipment be paid out for maintenance and related expenses. The most straightforward way to avoid these risks is to lease equipment that has little chance of becoming obsolete, like a box. When was the last time technology improved on a rectangle? Commonly leased equipment includes boxcars, shipping containers, and barges. The low risk of obsolescence ensures continuity of leasing customers or potential buyers for a sale of the equipment.

The important elements of an equipment lease are presented in table 7.2.<sup>15</sup> The investor purchases a \$10,000 interest in a partnership that uses no debt in purchasing the assets (the leveraged investment will be presented in table 7.3). The assets are assumed to have a depreciable life of five years under ACRS, and for simplicity, it is assumed that the partnership can obtain three identical

15. The structure of this tax shelter is based on those described in "Equipment Leasing Partnerships" (1984) and Swanson and Swanson (1985).

**Table 7.2** Unleveraged Equipment-Leasing Tax Shelter before and after TRA86

Cash Flow	Year						
	0	1	2	3	4	5	6
<i>A. Assumptions</i>							
Initial outlay	-10,000						
Debt and interest	0	0	0	0	0	0	0
ITC		-1,000					
Rental income		1,200	1,200	1,200	1,200	1,200	1,200
Management fees		-180	-180	-180	-180	-180	-180
Depreciation (ACRS)		-1,500	-2,200	-2,100	-2,100	-2,100	0
Residual value							9,000
<i>B. Pre-TRA86 with ITC</i>							
Taxable income		-480	-1,180	-1,080	-1,080	-1,080	10,020
Taxes paid		-1,240	-590	-540	-540	-540	5,010
After-tax cash flow	-10,000	2,260	1,610	1,560	1,560	1,560	5,010
IRR		<b>8.22</b>					
<i>C. Pre-TRA86 without ITC</i>							
Taxable income		-480	-1,180	-1,080	-1,080	-1,080	10,020
Taxes paid		-240	-590	-540	-540	-540	5,010
After-tax cash flow	-10,000	1,260	1,610	1,560	1,560	1,560	5,010
IRR		<b>5.64</b>					
<i>D. Pre-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	5,120
Taxes paid		0	0	0	0	0	1,560
After-tax cash flow	-10,000	1,020	1,020	1,020	1,020	1,020	8,460
IRR		<b>6.58</b>					
<i>E. Post-TRA86 without PLL</i>							
Taxable income		-480	-1,180	-1,080	-1,080	-1,080	10,020
Taxes paid		-134	-330	-302	-302	-302	2,806
After-tax cash flow	-10,000	1,154	1,350	1,322	1,322	1,322	7,214
IRR		<b>7.24</b>					
<i>F. Post-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	5,120
Taxes paid		0	0	0	0	0	1,434
After-tax cash flow	-10,000	1,020	1,020	1,020	1,020	1,020	8,586
IRR		<b>6.78</b>					

Note: See text (sec. 7.1.3) for assumptions. IRR values are percentages.

two-year leases and then sell the equipment for 90 percent of the original purchase price. This generates an ITC of \$1,000, available in the first year of operation. Rental income is assumed to be 12 percent of the initial outlay. In order to qualify for the ITC, management and other fees of 15 percent of gross rent are paid out each year. The depreciation schedule allowed by ACRS generates deductions of 15 and 22 percent in the first two years and 21 percent in the remaining three years.

Panel B computes the after-tax cash flows of the investment during the pre-TRA86 period with the ITC in place. Taxable income each year is the rental income less management fees and depreciation. Taxes paid in each year are simply 50 percent of the taxable income for this high-income investor. In the first year, the taxes paid are reduced by the full amount of the ITC. Note that in every year, taxable income is negative. This is the amount of income from other sources that can be sheltered, and the after-tax value of the shelter is given by the negative taxes paid. The after-tax cash flows are the rental income less management fees and taxes paid. Since the sale of the equipment in year six is treated as ordinary income, it can be added directly into the taxable income and after-tax cash flow for that year. Because the equipment was fully depreciated by the date of the sale, the full amount of the sale is taxable. This is known as “recapture” of the depreciation allowances, because every dollar taken in depreciation in an earlier year is subject to tax when the equipment is sold. Note, however, that the investor still enjoys the benefit of deferring the taxes until the sixth year.<sup>16</sup>

The internal rate of return (IRR) for this investment is computed to be 8.22 percent.<sup>17</sup> The IRR is the interest rate such that, when the after-tax cash flows are discounted at this rate, the net present value of the investment is zero. Panel C shows that if the only change made by TRA86 was to repeal the ITC, then the IRR would fall to 5.64 percent. Incorporating another change enacted by TRA86, the reduction of the top marginal tax rate to 28 percent, in the calculations in panel E increases the IRR to 7.24 percent. The seeming paradox that lowering the after-tax value of the depreciation deductions raises the IRR of the investment is resolved by noticing that, because there is no conversion of income to capital gains in an equipment-leasing shelter, the lower marginal tax rate increases the after-tax cash flow from the residual value of the equipment. The two effects tend to offset each other; if the residual value were lower, then lowering the marginal tax rate might have further reduced the IRR. Thus, a natural consequence of the base broadening (repeal the ITC) and rate reduction of TRA86 would be the shift toward the leasing of equipment with higher residual values.

Panel F demonstrates the effect of the passive loss limitations (PLL) on the IRR, assuming that the investor has no sources of passive income in any of these years. In each year, the taxable income in the post-TRA86 scenario was

16. Recapture will be a more interesting phenomenon in the real estate tax shelter discussed in the next example.

17. That is,  $r$  such that

$$\sum_{t=0}^T C_t(1+r)^{-t} = 0.$$

When the cash flows have exactly one change in sign, the IRR is uniquely defined and projects with the higher IRRs have higher net present values. Some examples presented below will also have a negative cash flow in the last period, but it will never be large enough to invalidate the correspondence between a higher present value of the investment and a higher IRR. All IRRs are presented in nominal terms on after-tax cash flows.

negative. The passive loss rules prevent this negative income from being used to reduce the investor's tax liability until the equipment is disposed of in year six. As in the cattle shelter discussed in the previous example, the passive loss rules in this case simply reduce the deferral built into the tax shelter. Compared to the removal of the ITC, the passive loss rules have a relatively minor effect on the value of the shelter when viewed appropriately as an investment in a depreciable asset.<sup>18</sup>

Table 7.3 repeats the analysis of the equipment-leasing tax shelter assuming that the partnership borrows an amount equal to the partners' equity investments. In other words, to obtain the same equipment, the partners contribute only \$5,000 and borrow \$5,000 to be repaid at the end of six years. The annual interest rate on the loan is assumed to be 10 percent; the payments incurred by the loan are shown in the second row of the table. The most important feature of the leverage is that it does not necessarily reduce the value of the ITC or depreciation deductions the investors can claim; ACRS and ITC are based on the value of the equipment only. Leverage enables tax shelter investors to generate higher tax losses for a given amount of equity investment.

The second important feature of leverage is that the interest paid on the debt is tax deductible; therefore, the opportunity cost of funds is equal to  $(1 - \tau) \cdot \rho$ , where  $\tau$  is the marginal tax rate and  $\rho$  is the interest rate on the debt. For the pre-TRA86 period, this amounts to 5 percent. Borrowing at 5 percent to invest in a project with an IRR of 8.22 or 5.64 or 6.58 percent is a value-enhancing undertaking; hence, the IRRs rise to 14.38, 6.81, and 7.47 percent for the three pre-TRA86 scenarios. With leverage, the loss of the ITC is even more detrimental to the IRR of the investment, and its consequences are still larger than those of the passive loss limitations. For the post-TRA86 period, the marginal tax rate is 28 percent, yielding an after-tax cost of funds of 7.2 percent. Since this rate is just slightly below the 7.24 percent IRR on the post-TRA86 shelter, the IRR is increased trivially to 7.28 percent by the borrowing. When the passive loss limitations are incorporated, leverage actually decreases the IRR on the investment to 5.81 percent. Note that if the marginal tax rate were still 50 percent, the IRR in this case would increase, but borrowing at 7.2 percent to invest at 6.78 percent is value-reducing transaction. Thus, the reduction in marginal tax rates can under some scenarios discourage the use of leverage after TRA to invest in tax shelters. By reducing the deferral and hence the IRR of a tax shelter, the passive loss limitations enhance this effect.

Before concluding the analysis of equipment leasing, a word of caution is in order about the use of debt in a tax shelter. During the tax reforms of 1976 and 1978, Congress enacted the "at-risk" rules for investments in order to curb

18. This statement is true both before and after TRA86. Panel E imposes the passive loss limitations on the pre-TRA86 shelter, yielding an IRR of 6.58 percent, under the assumption that the passive loss limitations would have also affected the ITC (if they did not, their effects would be even smaller).

**Table 7.3 Leveraged Equipment-Leasing Tax Shelter before and after TRA86**

Cash Flow	Year						
	0	1	2	3	4	5	6
<i>A. Assumptions</i>							
Initial outlay	-10,000						
Debt and interest	5,000	-500	-500	-500	-500	-500	-5,500
ITC		-1,000					
Rental income		1,200	1,200	1,200	1,200	1,200	1,200
Management fees		-180	-180	-180	-180	-180	-180
Depreciation (ACRS)		-1,500	-2,200	-2,100	-2,100	-2,100	0
Residual value							9,000
<i>B. Pre-TRA86</i>							
Taxable income		-980	-1,680	-1,580	-1,580	-1,580	9,520
Taxes paid		-1,490	-840	-790	-790	-790	4,760
After-tax cash flow	-5,000	2,010	1,360	1,310	1,310	1,310	-240
IRR		<b>14.38</b>					
<i>C. Pre-TRA86 without ITC</i>							
Taxable income		-980	-1,680	-1,580	-1,580	-1,580	9,520
Taxes paid		-490	-840	-790	-790	-790	4,760
After-tax cash flow	-5,000	1,010	1,360	1,310	1,310	1,310	-240
IRR		<b>6.81</b>					
<i>D. Pre-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	2,120
Taxes paid		0	0	0	0	0	60
After-tax cash flow	-5,000	520	520	520	520	520	4,460
IRR		<b>7.47</b>					
<i>E. Post-TRA without PLL</i>							
Taxable income		-980	-1,680	-1,580	-1,580	-1,580	9,520
Taxes paid		-274	-470	-442	-442	-442	2,666
After-tax cash flow	-5,000	794	990	962	962	962	1,854
IRR		<b>7.28</b>					
<i>F. Post-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	2,120
Taxes paid		0	0	0	0	0	594
After-tax cash flow	-5,000	520	520	520	520	520	3,926
IRR		<b>5.81</b>					

Note: See text (sec. 7.1.3) for assumptions. IRR values are percentages.

the use of leverage to purchase depreciable assets. The at-risk rules distinguish between nonrecourse and recourse debt. A nonrecourse debt contract limits the borrowers exposure to the value of the asset. A common example is the typical home mortgage. If the homeowner defaults, he loses his house, but if the value of the house is less than the amount outstanding on the mortgage, he is not liable to make up the difference out of his other wealth. If he were, that would be recourse debt. The at-risk rules stipulate that if the investor finances the tax

shelter with nonrecourse debt, then the value of the tax preferences such as the ITC and ACRS are limited to the amount of the investment for which the investor has personal recourse. In the leasing example, it has therefore been implicitly assumed that if the lessees defaulted or the equipment became obsolete and could not be sold to cover the debt payments, the investor would have been required to personally pay off the debt. The at-risk rules will be relevant in section 7.3 when the rationale for the passive loss limitations is analyzed for abusive tax shelters.

The analysis of the equipment-leasing tax shelter yielded several interesting conclusions. The most important change due to TRA86 was the repeal of the ITC, the tax refund of 10 percent of the cost of obtaining the asset. Over a short time horizon, the passive loss limitations had a relatively small impact on the rate of return in the tax shelter once the ITC was repealed and the marginal tax rates were lowered. The reduction in top marginal tax rates could actually increase the rate of return on the tax shelter by reducing the tax liability on the residual value of the equipment by more than the value of the lower depreciation deductions. This finding will be important in the discussion of tax shelter clienteles in section 7.2. This tradeoff also demonstrated that as a consequence of recapture of depreciation, there is sometimes a discrepancy across policy regimes between the size of tax losses and the rate of return on the investment. Further, the lower marginal tax rate discourages the use of leverage in obtaining depreciable assets and encourages the use of assets with higher residual values in equipment-leasing shelters.

#### 7.1.4 Real Estate Tax Shelters

By far the most common type of tax-sheltered investment is real estate.<sup>19</sup> As a tax shelter before TRA86, real estate provided not only deferral of tax through depreciation allowances but conversion of income to capital gains upon the sale of the property. Additionally, the magnification of tax benefits through leverage discussed in the equipment-leasing shelter is easier to obtain on real estate shelters because real estate is less affected by the at-risk rules. Mortgages are by their nature nonrecourse loans, but the tax code permits the full value of the initial investment to be used as the basis for depreciation allowances.<sup>20</sup> Although the pre-TRA86 tax code was rife with special tax preferences to encourage new construction, rehabilitation of historic structures, and provision of low-income housing, a simple example of a real estate deal will suffice to show the operation of the tax advantages.<sup>21</sup>

19. Tabulations in Petska (1992) show that in every year between 1985 and 1989, over half the losses in partnerships that reported net losses were in real estate partnerships.

20. When implemented in 1976, real estate investments were exempt from the at-risk rules. TRA86 extended the at-risk rules to real estate loans under some circumstances. See Becker (1987) and Owen, Robinson, and Plache (1987) for a full discussion of the effects of TRA86 on real estate investments.

21. This tax shelter is also based on an example in Swanson and Swanson (1985).

**Table 7.4 Real Estate Tax Shelter before and after TRA86**

Cash Flow	Year					
	0	1	2	3	4	5
<i>A. Assumptions</i>						
Rental income		8,000	8,640	9,331	10,078	10,884
Mortgage payment		9,750	9,750	9,750	9,750	9,750
Interest		9,000	8,910	8,809	8,696	8,570
Principal		750	840	941	1,054	1,180
(Remaining balance)		75,000	74,250	73,410	72,469	71,416
Property taxes		2,000	2,160	2,333	2,519	2,721
Property value		108,000	116,640	125,971	136,049	146,933
<i>B. Pre-TRA86</i>						
Depreciation		5,556	5,556	5,556	5,556	5,556
Taxable income		-8,556	-7,986	-7,366	-6,694	-5,962
Tax (saving)		-4,278	-3,993	-3,683	-3,347	-2,981
Property basis		94,444	88,889	83,333	77,778	72,222
Capital gain						74,711
Capital gains tax						14,942
After-tax cash flows	-25,000	528	723	932	1,155	61,969
IRR at five years		<b>21.88</b>				
<i>C. Post-TRA86</i>						
Depreciation		3,175	3,175	3,175	3,175	3,175
Taxable income		-6,175	-5,605	-4,985	-4,313	-3,582
Tax (saving)		-1,729	-1,569	-1,396	-1,208	-1,003
Property basis		96,825	93,651	90,476	87,302	84,127
Capital gain						62,806
Capital gains tax						17,586
After-tax cash flows	-25,000	-2,021	-1,701	-1,356	-984	57,347
IRR at five years		<b>14.17</b>				
<i>D. Post-TRA86 with PLL</i>						
Depreciation		3,175	3,175	3,175	3,175	3,175
Taxable income		0	0	0	0	0
Tax (saving)		0	0	0	0	0
Property basis		96,825	93,651	90,476	87,302	84,127
Capital gain						38,147
Capital gains tax						10,681
IRR calculations	-25,000	-3,750	-3,270	-2,752	-2,192	63,249
IRR at five years		<b>13.15</b>				

Note: See text (sec. 7.1.4) for assumptions. IRR values are percentages.

Table 7.4 shows the cash flows associated with a real estate tax shelter that purchases a \$100,000 property with a \$25,000 down payment, depreciates the property for five years, and sells at the end of five years to realize a capital gain. The mortgage is assumed to be for 25 years at an interest rate of 12 percent. Such a mortgage can be paid off with a constant annual payment of approximately 13 percent. The property is assumed to appreciate in value at a



nominal rate of 8 percent. Rents are assumed to be 8 percent of the property value each year, and property taxes are assumed to be 2 percent per year.<sup>22</sup> These assumptions are shown in panel A.

Panel B shows the after-tax cash flows and IRR for the pre-TRA86 period. The property is depreciated using straight-line depreciation over an 18-year period. This yields a depreciation allowance of \$5,556 in each year. Note that the property's basis for tax purposes is reduced each year by the depreciation allowance. Taxable income is then computed as the rental income less the sum of the mortgage interest, property taxes, and depreciation. The tax liability is simply half of taxable income at a top marginal tax rate of 50 percent, and because taxable income is negative each year, the investor reduces his overall tax liability through the shelter. The after-tax cash flow is computed as rent less the sum of the full mortgage payment, property taxes, and the tax liability. In the fifth year, the property is sold for \$146,933, triggering a capital gain of \$74,711 once the basis is deducted. Because 60 percent of the capital gain is excluded from ordinary taxation, the capital gains tax is  $0.4 \times 0.50 \times 74,711$ , or \$14,942. The capital gain net of its tax liability is the largest part of the after-tax cash flow in the fifth year. The leverage and tax preferences on the real estate shelter make the IRR on this investment a handsome 21.88 percent (though maintenance and other fees which would reduce cash flows have been omitted, or inadequately included as property taxes, for simplicity).<sup>23</sup>

Panel C recomputes the after-tax cash flows to account for the changes in depreciation and tax rates enacted by TRA86 but does not impose the passive loss limitations. Depreciation schedules for real estate were lengthened from 15, 18, or 19 years before TRA86 to 27.5 years for residential rental property and 31.5 years for nonresidential real property.<sup>24</sup> Consequently, the annual depreciation allowance is reduced to  $100,000/31.5 = \$3,175$ . The lower depreciation allowances result in smaller taxable losses to shelter other income. Moreover, because the top marginal tax rate was reduced to 28 percent, the after-tax value of the depreciation deductions is lower. The repeal of the long-term capital gain exclusion has the effect of increasing the capital gains tax rate from 20 percent to 28 percent. This is different from the equipment-leasing shelter in which the sale of the equipment was taxed as ordinary income in both cases. In the real estate shelter, the marginal tax rates lower the after-tax cash flows on depreciation, interest payments, and capital gains. As a result of these three changes, the IRR after TRA86 falls to 14.17 percent. Another inconvenient

22. In fact, real estate investments often have much better expected appreciation and rents than in this example; the assumptions are conservative here to demonstrate how the tax advantages can generate high rates of return for even mediocre investments. The sensitivity of the main conclusions drawn from this example to the conservative assumptions will be discussed below.

23. The IRRs on real estate tax shelters were often inflated by holding the investment until death, at which time the tax basis would be "stepped up" for the heirs, or by borrowing the initial investment from the tax shelter promoter at favorable interest rates.

24. TRA86 also eliminated accelerated depreciation for real estate, requiring the use of straight-line depreciation. To keep the table as simple as possible, this change is not reflected in the calculations. Straight-line depreciation is used for the pre-TRA86 shelter as well.

feature of this shelter is that the lower tax losses have made the annual after-tax cash flows negative; this shelter actually requires inflows of cash during its years of operation.

Panel D incorporates the passive loss limitations into the post-TRA86 computations. As in the equipment-leasing shelter, the passive loss limitations disallow the negative taxable income in each year before the disposition of the asset.<sup>25</sup> The disallowed passive losses are deducted from the cash flow when the property is sold in the fifth year. The passive loss limitations further reduce the after-tax cash flows in the years before disposition and increase the income in the year of disposition. The IRR on the shelter is reduced by about 1 percentage point to 13.15 percent as a result of the passive loss rules. This reduction is small compared to that caused by the changes in the marginal tax rate, conversion, and the lengthening of the depreciation schedule.<sup>26</sup>

The examples in this section were chosen to illustrate the means through which features of the tax code generate the benefits of tax shelters and to ascertain the importance of the passive loss limitations, which are thought to have been the fatal blow to tax shelters, relative to other provisions in the tax code. For a pure deferral shelter such as cattle feeding, the reductions in marginal tax rates at high income levels from 1986 to 1988 substantially reduced the already modest tax benefits of income smoothing. Due to the 33 percent bubble, however, it was possible that deferral was in some cases a better deal after TRA86. The passive loss rules directly eliminated the benefits of pure deferral because they disallow all passive losses from offsetting one-time changes in nonpassive income.

As the equipment-leasing and real estate shelters demonstrate, deferral of a given size tax liability is only one aspect of a tax shelter. Far more important to the shelters' IRRs were the *determinants* of the size of the tax liability to be deferred—the magnitude of the ITC, the length of the depreciation period, and the after-tax cost of debt to use as leverage—and the differential between ordinary and capital gains tax rates, which determines the payoff to conversion.

25. If the property were held for more than five years before being sold, the taxable income from the shelter would eventually turn positive as the interest component of the mortgage payment continued to fall and the difference between the rental income and the depreciation deduction continued to widen due to nominal appreciation of the property. In that case, disallowed passive losses could be applied to income before the property's disposition. In the absence of the passive loss rules, most investors would refinance the mortgage to increase the fraction of the payment that is due to interest as soon as the investment ceased to have negative taxable income.

26. Redoing the calculations assuming disposition after 10 years does not change any of the qualitative comparisons across tax regimes. Increasing the rental rate lowers the tax losses during the years before disposition both before and after TRA86. The effects of the marginal tax rate and depreciation changes are somewhat reduced, and the effects of the passive loss rules are greatly reduced because fewer losses are disallowed. At a rental rate of 12 percent, the IRRs are 28.58, 23.65, and 23.62 percent for the pre-TRA86, post-TRA86, and post-TRA86 with passive loss limitations scenarios, respectively. Decreasing the appreciation rate on the property to 4 percent leaves the magnitudes of the IRR differences across regimes similar to those in table 7.4, as the lower appreciation creates both higher tax losses in the years before disposition but smaller gains to conversion upon disposition. The IRRs for the three regimes under this assumption are 12.26, 3.97, and 3.60 percent.

After these factors were taken into account, the effect of the passive loss rules on the IRRs of the equipment-leasing and real estate shelters was minor. The main consequence of the passive loss rules in these cases was cosmetic; the passive loss rules eliminated only the reporting of a tax loss from the investment before its disposition. But to claim that this cosmetic change is of any importance beyond the effect it had on the IRR is to require that all tax sheltering be done solely for short-term deferral reasons (as in the cattle shelter) or that tax shelter investors systematically ignore the recapture of depreciation upon disposition of their investment.

## 7.2 Tax Shelter Clienteles after TRA86

The illustrative tax shelters in the previous section assumed that tax shelter investors faced the marginal tax rates for the highest-income taxpayers both before and after TRA86. To the extent that some investors faced lower marginal tax rates, the IRRs on these examples will not be representative of those actually obtained. Additionally, the dispersion of marginal tax rates of investors has important implications for the pricing of tax shelters in a competitive equilibrium.<sup>27</sup> This section uses the University of Michigan panel of tax returns and the NBER TAXSIM program for calculating tax liabilities to determine the distribution of marginal tax rates on tax shelter investments across TRA86 and whether it is feasible for a market for tax shelters to exist after TRA86.

Tax shelters are not identified as such on an individual's tax return. After TRA86, the best indication of whether the taxpayer is engaged in tax sheltering is whether any passive income or losses are listed on schedule E, where all amounts of "supplemental income" are reported. Since the passive loss rules did not exist before TRA86, the distinction between passive and nonpassive income or losses is not made. It is therefore not possible to reliably distinguish between tax shelter investors and, say, a lawyer in an unprofitable legal partnership by examining only a cross section of pre-TRA86 tax returns. Instead, a panel of tax returns spanning years on both sides of TRA86 is required, so that the distinction between passive and nonpassive investments in the years after TRA86 can be used to classify the income and losses in the years before TRA86.

Table 7.5 presents tabulations of partnership losses from 1986 by whether the taxpayer also reported passive partnership income or losses during any of the years from 1987–90.<sup>28</sup> Of the 10,341 tax returns in the 1986 data set, 346,

27. The "price" of a tax shelter can be conceptualized as the magnitude of the fees a tax shelter promoter would require from investors. Although such fees were omitted from the initial outlays in the illustrative tax shelters, in a competitive market they are clearly endogenously determined. The size of the fees will determine how much of the tax benefits the investor will have to share with the promoter.

28. The panel of tax returns is a random subsample of the IRS *Statistics of Income* public-use files maintained by the Office of Tax Policy Research at the University of Michigan.

**Table 7.5** Change in Marginal Tax Rates (MTRs) by Partnership Status

Has Partnership Losses 1986 (1)	Has Passive Partnership Post-TRA86 (2)	Number of Returns (3)	Percentage of Category (4)	Percentage with Passive Partnership Losses Post-TRA86 (5)	Average First- Dollar MTR	
					1986 (6)	1988 (7)
No	No	9,799	98.04	0	16	16
	Yes	196	1.96	53	26	22
	Total	9,995	100.00	1	17	16
Yes	No	100	28.90	0	22	20
	Yes	246	71.10	91	33	26
	Total	346	100.00	65	30	24
Total		10,341	100.00	3	17	16

Source: Author's calculations from the University of Michigan panel of tax returns and the NBER TAXSIM program.

or 3.3 percent, reported partnership losses in 1986. The classification excludes those returns with partnership income but no losses because the objective is to identify tax shelterers, not just partners, prior to disposition in the pre-TRA86 period. Within this group, 246, or 71.1 percent, reported income or loss from a passive partnership in the post-TRA86 period. This group will be identified as the “tax shelterers” in 1986.<sup>29</sup> Column (5) shows that 91 percent of this group reported actual passive *losses* after TRA86.

Having identified a group of taxpayers as tax shelterers, it is possible to determine the average marginal tax rate on partnership losses that prevailed prior to TRA86. In doing so, it is important to do a “first dollar” calculation—that is, to set partnership net income to zero—because large partnership losses lower the taxpayer’s marginal tax rate. The first-dollar marginal tax rate is a better measure of the tax incentive to shelter income than is the more traditional “last dollar” calculation. Column (6) of table 7.5 shows that this rate is 33 percent on average for those who sheltered income in 1986. The NBER TAXSIM tax calculation program is used to construct this estimate.<sup>30</sup> One of the many useful capabilities of the TAXSIM program is that it can compute

29. Although data on S-corporations, estates, and trusts reported on schedule E are available and subject to the passive loss rules, those data are excluded from these tabulations because tax shelters are usually organized as partnerships. Unfortunately, the individual tax return data does not distinguish between limited and general partnerships.

30. TAXSIM is a detailed microsimulation model of the U.S. federal and state income tax systems, originally used to study the effects of tax deductibility on charitable giving by Feldstein and Taylor (1976) and substantially extended to study the integration of the personal and corporate income tax systems by Feldstein and Frisch (1977). Feenberg and Coutts (1993) provide an introduction to the TAXSIM model.

**Table 7.6** Distribution of Partnership Losses and Marginal Tax Rates (MTRs): Tax Shelter Investors in 1986

First-Dollar MTR 1986	Number of Returns (1)	Percentage of Returns (2)	Percentage of Partnership Losses 1986 (3)	Weighted Average MTR	
				1986 (4)	1988 (5)
0	21	8.54	6.72	0	5
0-5	0	0.00	0.00	-	-
5-10	1	0.41	0.02	8	15
10-15	8	3.25	2.81	14	4
15-20	22	8.94	2.65	16	16
20-25	12	4.88	2.64	21	24
25-30	21	8.54	1.37	27	28
30-35	28	11.38	2.19	32	29
35-40	38	15.45	8.24	37	32
40-45	29	11.79	8.45	42	33
45-50	32	13.01	14.39	48	31
50	34	13.82	50.52	50	28
Total	246	100.00	100.00	41	27

Source: Author's calculations from the University of Michigan panel of tax returns and the NBER TAXSIM program.

the marginal tax rates under alternative scenarios, including the tax rules prevailing in years other than that of the data. Column (7) shows that the average first-dollar marginal tax rate on partnership losses for the tax shelterers would have fallen to 26 percent under the 1988 tax rules.<sup>31</sup>

Table 7.6 shows the decline in marginal tax rates for the group of tax shelterers based on the level of their 1986 marginal tax rate. In this table, marginal tax rates are weighted by the taxpayer's level of partnership losses so that the marginal tax rates of taxpayers who are sheltering more income are weighted more heavily in the average.<sup>32</sup> As shown by columns (4) and (5) of the last row, dollar-weighting the marginal tax rates shows a decline from 41 percent in 1986 to 27 percent in 1988. Columns (2) and (3) show that although taxpayers with the top marginal tax rate constituted only 13.82 percent of the tax shelterers, they represented 50.52 percent of the partnership losses. Every taxpayer in this tax bracket would have faced a 28 percent marginal tax rate under the 1988 tax schedule with the same reported income. Thus, the tax rates assumed in the examples in the previous section do represent a majority of the tax shelter-

31. Repeating this analysis (and that in table 7.6) on the tax returns from 1984 and 1985, or requiring partnership activity in all three years, yielded only trivial differences from those reported here.

32. Dollar-weighted marginal tax rates measure the marginal tax rate on each dollar of partnership loss rather than the marginal tax rate on each taxpayer who reports partnership losses.

**Table 7.7 Tax Shelter Rates of Return under Alternative Marginal Tax Rates**

Shelter	Marginal Tax Rate			
	50	32	33	28
Equipment-leasing shelter (no leverage)				
Pre-TRA86	8.22	9.39		
Pre-TRA86 without ITC	5.64	6.97		
Pre-TRA86 with PLL	6.58	7.96		
Post-TRA86 without PLL			6.90	7.24
Post-TRA86 with PLL			6.38	6.78
Equipment-leasing shelter (50 percent leverage)				
Pre-TRA86	14.38	13.42		
Pre-TRA86 without ITC	6.81	7.21		
Pre-TRA86 with PLL	7.47	8.58		
Post-TRA86 without PLL			7.20	7.28
Post-TRA86 with PLL			5.46	5.81
Real estate shelter				
Pre-TRA86	21.88	20.04		
Post-TRA86 without PLL			13.54	14.17
Post-TRA86 with PLL			12.37	13.15

Note: IRRs correspond to the investments from tables 7.2–7.4

ing that occurred prior to TRA86, and approximately 83.79 percent of the tax shelterers faced lower marginal tax rates after TRA86 than before.

Table 7.6 also demonstrates that tax shelters are not uniformly held by investors in the top marginal tax bracket. If the demand for tax-sheltered investments by taxpayers facing the top marginal tax rate is less than the supply, then tax shelters will have to be priced to attract investors in lower marginal tax brackets. As has often been noted in discussions of tax-exempt securities, this generates a pure rent for investors in the top marginal tax brackets.<sup>33</sup> Table 7.6 shows that under the 1986 tax schedule, 35 percent of the partnership losses of tax shelterers were reported by individuals with marginal tax rates at least 5 percentage points below the top rate. Because TRA86 compressed the number of tax brackets, column (5) shows that, in contrast, over 85 percent of the partnership losses of tax shelterers would have been within 5 percentage points of the top rate (here, the 33 percent bubble). Thus, to the extent that the investor's marginal tax rate is an important determinant of the IRR on the tax shelter, TRA86 reduced the scope for such rents to be earned by top marginal tax rate investors (and even more so for very high income taxpayers, who did not face the top marginal tax rate).

Table 7.7 presents the IRRs from the tax shelters described in tables 7.2 through 7.4 under alternative marginal tax rate assumptions. Focusing first on the real estate tax shelter at the bottom of the table, the IRR falls from 21.88

33. This issue is discussed in connection with tax shelters by Cordes and Galper (1985).

to 20.04 percent when the marginal tax rate is changed from 50 to 32 percent (the average tax rate for the marginal tax rate group that saw a reduction in tax rates due to TRA86). The potential rents earned by the higher marginal tax bracket investors on this are equivalent to those obtained if the same two groups both invested in a municipal bond that offered a pretax equivalent rate of return of 10 percent to the investor with the 32 percent marginal rate.

When the same shelter is evaluated under the post-TRA86 tax rules, the investment actually has a higher IRR at a marginal tax rate of 28 percent (14.17 percent) than a 33 percent (13.54 percent). For this calculation, the passive loss rules have not been imposed; the reversal exists because TRA 86 lengthened the depreciation schedules and, most important, eliminated conversion to capital gains by repealing the long-term exclusion. Imposing the passive loss rules increases the discrepancy only slightly. The middle set of numbers shows that an analogous conclusion can be drawn from the equipment-leasing shelter that borrowed half of the initial outlay. Because the equipment lease did not involve conversion to capital gains, simply removing the ITC was enough to make the shelter less appealing at higher tax rates.<sup>34</sup>

Thus far in the analysis, all tax shelter investors have been individual taxpayers, but this does not have to be the case. Corporations can also purchase interests in limited partnerships, and after TRA86, may have been the more natural clientele for tax shelters than any cohort of individuals. One reason is that corporations are not subject to passive loss rules if they are widely owned.<sup>35</sup> Another is that the reductions in individual marginal tax rates in TRA86 were not quite matched for corporations. The top marginal tax rate for corporate income fell from 46 to 34 percent as a result of TRA86, making the corporate rate higher than the top individual rate for the first time. If depreciation allowances are available, the owner of the asset should have the highest marginal tax rate in order to maximize the value of the tax deferral.<sup>36</sup>

It is unlikely that this “inversion” of top marginal tax rates or the absence of the passive loss rules for corporations should have resulted in a migration of the ownership of depreciable assets to the corporate sector. The most important reason is that the higher marginal tax rate only matters if the shelter can gener-

34. The first set of IRRs shows that even in the pre-TRA86 period, the unleveraged equipment leasing investment afforded higher rates of return to the low marginal tax rate investor. If the residual value of the equipment at the end of the shelter were much less than the assumed 90 percent, the return to the high marginal tax rate investor could have been made higher than that of the low marginal tax rate investor. For example, with a residual value of 40 percent, the 50 percent marginal tax rate yields an after-tax rate of return of 2.92 percent, compared to 2.80 percent for the 32 percent marginal tax rate investor.

35. Brumbaugh and Ward (1987) provide a more detailed explanation of the rules determining whether an entity is subject to the passive loss rules.

36. I am indebted to Roger Gordon for first pointing out to me the relevance of the corporate tax rate changes to tax shelters after TRA86. As with the individual income tax schedule, the corporate schedule contained a 5 percentage point bubble to phase out the benefits of lower infra-marginal tax rates for sufficiently high income corporations.

ate losses that are not recaptured at that same rate in a short period of time. The repeal of the ITC and the lengthening of real estate depreciation schedules after TRA86 affected corporations as well as individuals. Furthermore, shifting ownership of depreciable assets to high tax rate entities makes sense only if the after-tax rate of return increases with the tax rate. Another reason is that the inversion proved to be a short-lived phenomenon, and this was not wholly unanticipated. The top marginal tax rate for individuals was increased to 39.6 percent by the Omnibus Budget Reconciliation Act of 1993, a rate that is higher than the similarly increased 35 percent top rate on corporations, and a preferential 28 percent maximum rate on long-term capital gains was reestablished.

The possible migration of depreciable assets into the corporate sector notwithstanding, the implications of the comparisons in table 7.7 for the existence of a tax shelter clientele are profound. Investments that before TRA86 could be used as tax shelters are no longer most profitably held by top marginal tax rate investors. In a competitive equilibrium, these investments should be made by individuals in the lowest marginal tax brackets rather than the highest ones. High-bracket investors would likely earn higher risk-adjusted returns by holding tax-exempt bonds, especially if they were priced to attract investors from lower marginal tax brackets.<sup>37</sup> If the correlation between the marginal tax rate and the after-tax IRR is not positive, then it is difficult to think of the investment as a tax shelter in the traditional sense. Again, the passive loss limitations are not necessary for this change in the tax shelter clientele, given the other reforms enacted by TRA86.

The sample tax shelters discussed in this and the previous section also clearly show the potential economic dislocations caused by the passive loss rules. Because they target losses, and tax losses are magnified by leverage, the passive loss rules discourage the use of debt to purchase depreciable assets. Investors who would otherwise require debt to finance their investments are thereby hindered. Since losses and gains are treated asymmetrically, the passive loss rules also discriminate against riskier investments that yield larger and more frequent losses for a given expected rate of return. Because they discriminate between investors who happen to have passive income from other investments and those who do not, the passive loss rules create a more heterogeneous pool of potential investors, thereby impeding the full capitalization of the tax benefits (assuming any can still be found) that would occur if a given clientele of investors could absorb the entire supply of tax shelters. But, most important, the passive losses do not distinguish between genuine economic

37. This conclusion will not necessarily hold if taxpayers with higher marginal tax rates are less risk averse than those with lower marginal tax rates. In that case, the clientele for former tax shelters will be composed of the least risk-averse high-bracket investors in addition to somewhat more risk averse low-bracket investors.



losses and those that might be due solely to the tax-related incentives that have been written into the law. Noncorporate enterprises are consequently hampered relative to corporations in undertaking risky investments.<sup>38</sup>

### 7.3 Targeting Abusive Tax Shelters

An important assumption in the foregoing analysis of tax shelters has been that all assets are traded at a fair market value. In transactions without important tax consequences, a fair market value prevails because buyers have no interest in paying too much for an asset and sellers have no interest in receiving too little. Abuse of tax shelters creeps into the system when the transaction price of the asset is artificially inflated to allow the investor to claim depreciation allowances that are not only accelerated but far in excess of the fair market value of the asset. What should be apparent to the dispassionate observer is that under normal circumstances, the tax shelter promoter who sells the asset should be unwilling to agree to overstate the transaction price if he incurs an added tax liability but receives no real compensation for it. The important insight due to Sims (1994) is that the key to abusive tax shelters is therefore the mechanism that allows the seller to escape taxation on the artificially inflated price. This section shows that the mechanism identified by Sims—the combination of purchase-money debt and installment sale reporting of the gain—is in substance a pure deferral shelter.<sup>39</sup> Consequently, the passive loss rules were sufficient to eliminate abusive tax shelters. As in the case of legitimate tax shelters, however, they were hardly necessary.

The government has generally been aware that tax shelter abuse must be related to the amount of debt used to purchase the depreciable asset. An early attempt to curtail the use of debt in abusive tax shelters was the passage of the at-risk rules in 1976 as section 465 of the Internal Revenue Code. As discussed in the real estate shelter example, the at-risk rules restrict the amount of deductible loss from the ownership of depreciable property to the total amount of the taxpayer's economic investment, that is, the amount the investor has at risk in the transaction. The at-risk rules specify that borrowed funds are at risk only to the extent that they are secured by the investor's other personal assets or that the taxpayer is personally liable to repay them. So-called nonrecourse loans, in which the investor's obligation to the lender is limited to the asset that secures the loan, are not deemed to be at risk and cannot be counted in the investment's depreciable basis.

38. Limited partnerships such as venture capital funds whose objectives are to undertake risky but *ex ante* profitable investments exclusive of tax preferences would be less likely to be disposed of within a few years; hence, the elimination of deferral that results from the passive loss rules would have a larger effect on genuine economic losses than losses motivated by tax considerations.

39. This section draws heavily on the insights of Sims (1994), as well as helpful conversations with its author.

On the surface, the at-risk rules appear to be able to eliminate tax shelter abuse by preventing investors from using debt that they will not have to repay in full to inflate the asset's basis for depreciation. Sims (1994) shows, in contrast, that the at-risk rules were inadequate because the practical distinction between nonrecourse and recourse debt in tax shelters is small. One reason is that default on even a nonrecourse loan will harm the investor's future access to credit. Another is that even loans with personal recourse can be defaulted. But the most important reason is that any amount of nonrecourse debt that is not repaid must be included as "cancellation of indebtedness" (COD) income in the investor's gross income for tax purposes when default occurs.<sup>40</sup> Thus, the "giveaway" is more apparent than real; an investor cannot effectively evade taxation by defaulting on a nonrecourse loan.

The failing of the at-risk rules is that a nonrecourse loan is not substantively different from a recourse loan; there are consequences of default that make it an undesirable outcome.<sup>41</sup> As a result, it is unlikely to generate significant abuse of the tax advantages in a shelter. In order to facilitate abuse, the loan must be such that default is a planned event and is mutually satisfactory to the lender and the borrower. The only lender that could possibly be indifferent to default on the loan to finance a tax shelter investment is the tax shelter promoter who sells the assets. It is therefore "purchase money" financing from the seller that is the key ingredient of tax shelter abuse. But purchase money alone does not guarantee that the promoter will agree to overstate the sale price of the asset if he or she incurs an immediate tax liability on the transaction. Some mechanism must be found for the promoter to avoid this tax liability. In the most flagrant cases, that has been the installment sales treatment in section 453 of the Internal Revenue Code.<sup>42</sup> Installment sale reporting allows the seller to pay taxes on gain from the sale of the asset in proportion to the amount of the total contract price that is actually paid at any given time, that is, the fraction of the total price that is not purchase money.

In Sims's example, the promoter produces a teakettle for \$750 and agrees to sell it for \$1,000 in cash plus a \$2,000 note from the buyer (payable in full at the end of the shelter) for a total contract price of \$3,000. The promoter's gain for tax purposes is the \$2,250 between his sale price and his production costs. However, the installment sale rules allow him to pay taxes on only the fraction of that price that he has received at the time of sale:  $(1,000/3,000) \times 2,250$ , or \$750 dollars. As long as his tax rate is lower than 33 percent in this case, his tax liability will be less than his \$250 in actual gain on the sale, that is, the

40. See Chirelstein (1994) for a more detailed discussion of COD income.

41. Coven (1986) critiques the at-risk rules along these lines.

42. Sims (1994) draws this conclusion based on an examination of the tax shelter case law since the passage of the at-risk rules and discusses other more-limited means by which the basis of the depreciable asset could be manipulated through purchase-money financing.

\$1,000 in cash less the \$750 in production costs.<sup>43</sup> The promoter then agrees to allow the buyer to default on the \$2,000 note. In the meantime, the tax shelter investor has taken the accelerated depreciation on the inflated contract price and has only to pay tax on the \$2,000 (as COD income) when he defaults on the note at the end of the shelter. As long as this can pass the at-risk rules by being recourse debt (or be done on real estate transactions, which are less encumbered by the at-risk rules), the sham transaction works. Since the promoter earns his livelihood by facilitating this type of abuse, reputational considerations will virtually guarantee that he chooses not to enforce the debt even though he is legally entitled to do so. His long-term incentive is not to expropriate his customers.

In this example, the investor was able to take \$2,000 of extra accelerated depreciation and then pay tax on the \$2,000 in a later year. It is a pure deferral shelter, as in the case of the cattle-feeding shelter discussed in section 7.1, with the added bonus that unlike the cattle-feeding shelter, in which the magnitude of the gain was constrained by the progressivity of the tax code, the deferral in the teakettle shelter is unlimited. As long as the promoter obtains the \$1,000 in cash for the teakettle, he will always be able to cover his tax liability by using the installment sale reporting regardless of the amount of purchase money he offers the investor. The depreciable asset itself is almost irrelevant; it simply provides access to the favorable depreciation on a paper transaction. The clever point made by Sims is that it might just as well be a teakettle.

Table 7.8 revisits the equipment-leasing tax shelter without leverage from table 7.2 to demonstrate the effects of the purchase-money debt on the IRR of the shelter and the role of passive loss limitations in eliminating this type of abuse. In this case, the investor pays the same \$10,000 initially, receives the same cash flows as rent and management fees from leasing the equipment, and sells the asset for the same residual value. The only change that has been made is the addition of \$30,000 in seller financing, which appears only in year six when the investor defaults on the note and pays ordinary income tax on it. In the pre-TRA86 period, this inflates both the ITC and the depreciation allowances by a factor of four and increases the IRR from 8.22 to 43.08 percent. When the ITC is removed, the IRR increase is more modest, from 5.64 to 19.12 percent. If the ITC is retained but the passive loss rules are applied to the pre-TRA86 period, the IRR increases from 6.58 to 10.76 percent. It is the presence of the ITC which makes this more than just a pure deferral shelter, since the ITC is never recaptured.<sup>44</sup> Under the post-TRA86 period marginal tax rates, the IRR increases from 7.24 to 12.06 percent. The more modest increase is a

43. More generally, Sims shows that the promoter need only require a cash payment of at least  $c/(1 - t)$  to break even, where  $c$  is the cost of the asset and  $t$  is his marginal tax rate, *regardless* of the amount of purchase money in the deal.

44. Alternatively, the ITC is equivalent to an extra depreciation allowance that is recaptured at a 0 percent tax rate and therefore always "converted."

**Table 7.8** "Abusive" Equipment-Leasing Tax Shelter before and after TRA86

Cash Flow	Year						
	0	1	2	3	4	5	6
<i>A. Assumptions</i>							
Initial outlay	-40,000						
Purchase money	30,000	0	0	0	0	0	-30,000
ITC		-4,000					
Rental income		1,200	1,200	1,200	1,200	1,200	1,200
Management fees		-180	-180	-180	-180	-180	-180
Depreciation (ACRS)		-6,000	-8,800	-8,400	-8,400	-8,400	0
Residual value							9,000
<i>B. Pre-TRA86 with ITC</i>							
Taxable income		-4,980	-7,780	-7,380	-7,380	-7,380	40,020
Taxes paid		-6,490	-3,890	-3,690	-3,690	-3,690	20,010
After-tax cash flow	-10,000	7,510	4,910	4,710	4,710	4,710	-9,990
IRR		<b>43.08</b>					
<i>C. Pre-TRA86 without ITC</i>							
Taxable income		-4,980	-7,780	-7,380	-7,380	-7,380	40,020
Taxes paid		-2,490	-3,890	-3,690	-3,690	-3,690	20,010
After-tax cash flow	-10,000	3,510	4,910	4,710	4,710	4,710	-9,990
IRR		<b>19.12</b>					
<i>D. Pre-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	40,020
Taxes paid		0	0	0	0	0	-1,440
After-tax cash flow	-10,000	1,020	1,020	1,020	1,020	1,020	11,460
IRR		<b>10.76</b>					
<i>E. Post-TRA86 without PLL</i>							
Taxable income		-4,980	-7,780	-7,380	-7,380	-7,380	40,020
Taxes paid		-1,394	-2,178	-2,066	-2,066	-2,066	11,206
After-tax cash flow	-10,000	2,414	3,198	3,086	3,086	3,086	-1,186
IRR		<b>12.06</b>					
<i>F. Post-TRA86 with PLL</i>							
Taxable income		0	0	0	0	0	5,120
Taxes paid		0	0	0	0	0	1,434
After-tax cash flow	-10,000	1,020	1,020	1,020	1,020	1,020	8,586
IRR		<b>6.78</b>					

Note: See text (sec. 7.3) for assumptions. IRR values are percentages.

result of the lower value of the overstated depreciation deductions at a top marginal tax rate of 28 percent. Finally, once the ITC has been removed, the shelter becomes a pure deferral shelter and the passive loss limitations eliminate all gains from the purchase-money financing. The IRR is unchanged from table 7.2 at 6.78 percent.

In this case, the passive loss rules are effective at eliminating a tax shelter

that has no function but to reduce payments to the Treasury. As long as the shelter is subject to recapture of all tax benefits at the same tax rate as they are deducted (i.e., no conversion), the passive loss rules are sufficient to remove the mechanism through which shelters become abusive. It is also clear that the passive loss rules are far more than what is necessary to accomplish this objective. The appearance of a loss is not the problem, nor is the use of debt which magnifies that loss. The two problems are the escape hatch provided by the installment sale treatment of the seller's gain and the unlimited deferral through purchase-money debt. The former was effectively repealed by the Revenue Act of 1987, which required that installment sellers pay interest on the tax liability deferred due to nonrecognition of a gain under section 453. Sims argues that in most cases (including his teakettle shelter), such interest penalties would be prohibitive and proposes an even simpler solution that focuses on the latter: disallow any basis attributable to the use of purchase money in tax shelters. Such a provision would be similar in spirit to the at-risk rules but would recognize that it is seller financing, rather than nonrecourse debt, that is the catalyst of tax shelter abuse. It would also not invalidate genuine economic losses as do the passive loss limitations. Instead, it would merely require that an outside lender provide the financing for legitimate tax shelters. As long as the outside lender has the same information about the borrower as does the seller, this requirement imposes no efficiency loss.

#### 7.4 Distribution of Passive Losses

As suggested by table 7.6, tax shelters in the pre-TRA86 period were heavily concentrated in the high end of the income distribution. Any hypothesized effect of the passive loss rules on investments in tax shelters would therefore be borne disproportionately by high-income taxpayers. Since income redistribution is often a goal of tax policy and a requirement of major tax reforms such as TRA86, this section considers the effect of the passive loss rules on the distribution of the federal tax burden across the population of taxpayers.

Table 7.9 begins by examining the fraction of tax returns that were directly affected by the passive loss limitations during the phase-in period. Because of the concentration of passive losses at high income levels, the data are taken from the public-use files of the IRS *Statistics of Income* for the four years after TRA86. Unlike the panel data set used for table 7.6, these cross-sectional files are stratified by income level with high-income returns oversampled. The oversampling of the part of the income distribution where the losses are concentrated increases the precision of the estimates. The first line of the table shows that the fraction of returns filing schedule E declined in each year, from 13.06 percent in 1987 to 12.60 percent in 1990. As mentioned above, schedule E must be filed by taxpayers with income or losses from rental real estate, partnerships, S-corporations, trusts, or estates. Aggregate losses on schedule E declined by a much greater magnitude, from \$85.3 to \$69.1 billion, over the

**Table 7.9** Aggregate Passive Loss Limitations, 1987-90

	Year			
	1987	1988	1989	1990
Returns filing schedule E (%)	13.06	12.91	12.68	12.60
Reporting passive losses	29.86	26.99	28.76	23.50
With passive loss limitation	42.84	38.97	38.69	42.00
Aggregate schedule E losses (billion 1990 \$)	85.3	74.2	71.0	69.1
Aggregate passive losses	76.9	61.6	63.8	55.2
Aggregate disallowed passive losses	15.3	15.8	20.9	18.9
Passive losses disallowed (%)	19.88	25.66	32.73	42.24
Phase-in of passive loss limitations	35.00	60.00	80.00	90.00

Source: Author's calculations from the annual IRS *Statistics of Income* public-use cross sections.

same period.<sup>45</sup> The discrepancy is a consequence of the incentives TRA86 provided for profit-making enterprises to organize as S-corporations and partnerships rather than C-corporations by lowering the top personal tax rate below the corporate tax rate on income.<sup>46</sup> The fraction of returns that reported passive losses from any of these sources conditional on filing schedule E also fell dramatically over this period, from 29.86 percent in 1987 to 23.50 percent in 1990.<sup>47</sup> The decline in the aggregate value of passive losses was \$21.7 billion, or 28.2 percent of the total in 1987.

Taxpayers who report passive losses are required to file form 8582 in order to determine whether the passive loss limitations apply to them. If the limitations bind, the disallowed amount is carried forward to the next year. In each year, the fraction of taxpayers with passive losses who reported more losses than they were allowed was approximately 40 percent, and the aggregate value of these disallowed losses was between \$15.3 and \$20.9 billion over this period. The fraction of passive losses that were disallowed increased steadily from 19.88 to 42.24 percent over the four-year period. In each year, this fraction was approximately half of the statutory rate of disallowance for passive losses in excess of passive gains. That roughly half of the passive losses were not disallowed suggests that investors were able to successfully match at least some passive losses to passive income.<sup>48</sup>

45. All dollar amounts in this section are in constant 1990 dollars.

46. See Gordon and MacKie-Mason (1990, 1994) for a theoretical discussion and an estimate of the tax distortions in the choice of organizational form before TRA86. Plesko (1994) estimates the effect of tax factors on conversions to S-corporations after TRA86. Guenther (1992) and Gentry (1994) examine the importance of tax considerations in the behavior of master limited partnerships relative to corporations.

47. These passive losses do not include passive losses carried forward from previous years.

48. After TRA86, there was a premium on passive-income generators, affectionately referred to as PIGs. As discussed by Gentry (1994), the use of PIGs was curtailed for publicly traded partnerships in 1987 by requiring that losses from a publicly traded partnership (PTP) could only be carried forward to offset income from that PTP.

**Table 7.10 Incidence of Passive Loss Limitations by Positive Income Level, 1987–90**

Positive Income Level <sup>a,b</sup>	Average Positive Income <sup>b</sup>	Share of Total Tax Returns	Share of Aggregate Passive Losses	Share of Aggregate Disallowed Losses	Share of Aggregate Taxes
1987					
Under 10	4.69	27.87	1.03	0.74	2.03
10–25	16.85	29.82	2.85	1.60	8.91
25–50	35.95	26.23	7.05	4.48	21.97
50–100	65.51	13.02	18.30	13.14	26.78
100–250	142.10	2.46	22.86	25.46	16.19
Over 250	645.75	0.60	47.91	54.59	24.12
1988					
Under 10	4.62	28.28	1.82	2.04	1.07
10–25	16.93	29.95	2.93	2.14	8.34
25–50	35.96	25.92	8.06	4.61	21.78
50–100	65.66	12.80	17.70	12.84	26.04
100–250	142.41	2.39	21.66	26.30	15.02
Over 250	733.54	0.65	47.84	52.08	24.74
1989					
Under 10	4.60	28.42	1.46	0.81	1.09
10–25	16.85	30.24	3.50	2.56	8.86
25–50	35.83	25.43	7.37	4.17	22.28
50–100	65.88	12.77	17.02	10.76	27.11
100–250	140.94	2.51	20.40	24.14	15.79
Over 250	690.05	0.63	50.24	57.55	24.87
1990					
Under 10	4.64	28.80	2.02	1.71	1.14
10–25	16.84	30.22	3.78	4.16	9.13
25–50	35.78	25.50	7.12	4.11	23.23
50–100	65.96	12.53	16.69	13.63	27.45
100–250	141.59	2.35	19.83	25.59	15.06
Over 250	682.58	0.61	50.56	50.80	23.99

Source: Author's calculations from the annual IRS *Statistics of Income* public-use cross sections.

<sup>a</sup>Positive income is the sum of all positive components of total income.

<sup>b</sup>Dollar amounts in thousands of constant 1990 dollars.

Table 7.10 presents the distribution of each aggregate by “positive income” for each year. This measure of income is simply the sum of all positive components of income, before the netting out of losses.<sup>49</sup> In each year, the group of taxpayers with over \$250,000 in positive income—the top 0.60 percent of the distribution—reported half of the passive losses and slightly more than half of

49. Specifically, positive income is the sum of wages, taxable interest, nontaxable interest, dividends, social security benefits, unemployment insurance included in adjusted gross income, capital gains, partnership income, S-corporation income, estate income, farm rents, rental income, royalty income, and self-employment income. The last four are included only to the extent that the reported net figure is positive. This measure is similar to, but not necessarily equivalent to, that of Petska (1992).

the disallowed passive losses. This is more than double their share of the total income taxes paid, which was just under one-fourth in each year. If the group of taxpayers is expanded to those with over \$100,000 of positive income (the top 3 percent), the shares of passive losses, disallowed losses, and the current tax liability rise to 70, 80, and 40 percent, respectively.

The implication of table 7.10 is that, whatever the ultimate revenue effect of the disallowance of passive losses, it will be borne almost entirely by the very highest income taxpayers.<sup>50</sup> Since the analysis in section 7.3 showed that the passive loss rules were not necessary to eliminate abusive tax shelters, there are only three sources of increased revenue that are appropriately attributed to them. The first is from the tax losses that are no longer reported by legitimate tax shelters that would have been reported given all changes in TRA other than the passive loss rules but will not be reported because of these rules (e.g., some cattle-feeding shelters). Since the examples in section 7.1 showed that the marginal effect of the passive loss rules on the after-tax IRR was approximately 1 percentage point, this is likely to be a very small amount of revenue. The second is from the inclusion of allowed passive losses as a tax preference for the alternative minimum tax calculation during the phase-in period. This tax preference is unfortunately not separately or easily identifiable in the public-use files of tax returns. In any event, it is explicitly a short-term revenue source. The third is the various instances in which the passive loss rules will bind in a given year and defer the investor's tax loss until a year in which the investor reports positive passive income. In those cases, government revenues will be increased by the interest on the potential tax loss during the years of deferral. Assuming an average 20 percent last-dollar marginal tax rate on passive losses (calculated from TAXSIM) and a 10 percent discount rate, this increase amounts to 2 percent of disallowed losses per year of deferral. Assuming one year of deferral and \$20 billion of disallowed losses per year, this represents a \$0.4 billion increase in annual revenues. This amount is trivial compared to aggregate tax revenues or the taxes paid by the top 0.60 percent of the income distribution.

## 7.5 Conclusion

The tax shelter examples demonstrated that the impact of the passive loss limitations on legitimate tax shelter investments was largely redundant. The passive loss rules eliminated the tax advantages of pure deferral shelters. In

50. It is important to note that tables 7.9 and 7.10 reflect the aging of tax shelters that were purchased under the pre-TRA86 regime. Because limited partnerships are highly illiquid in most cases, investors could not easily avoid the passive loss rules on their existing tax shelters. Although some tax shelter investors undoubtedly sold their investments in 1986 in anticipation of, or in response to, the passage of TRA86 (and are therefore not included in the tables), Damato (1995a) reports that many of these investors—and their heirs—are still burdened by these partnerships nearly 10 years later.



practice, the conversion of ordinary income to a lightly taxed (capital gain) or untaxed (ITC) form was a more important determinant of the IRR on the tax-sheltered investment, and passive loss rules do not affect conversion. TRA86's repeal of the provisions that allowed for conversion were the decisive blow to legitimate tax shelters; once these changes were incorporated, applying the passive loss rules had only a minor effect on the after-tax IRR on investment. Once conversion was eliminated, the correlation between the after-tax rate of return on investment and the investor's marginal tax rate was no longer positive; consequently, high-income taxpayers were not the natural clientele for legitimate tax-sheltered investments after TRA86.

The analysis of abusive tax shelters showed that passive losses were sufficient to eliminate the abuse because it took the form of pure deferral. As in the case of legitimate shelters, however, they were unnecessary. The changes to the installment sale treatment of gains that occurred a year later were a more direct attack with fewer unrelated consequences. The passive loss rules punish all losses, including genuine economic losses and interest deductions, rather than just those that cause the abuse. Similarly, the disallowance of basis due to purchase money for depreciation purposes would have eliminated the ability to shelter absent of economic risk without the potential for discouraging legitimate economic enterprises. Estimating the impact of the passive loss rules on risky investment in the noncorporate sector is therefore an important direction for further research.

The passive loss rules therefore represent a policy without a substantive economic purpose but with a large potential to discourage legitimate investment. Their chief effect is cosmetic; high-income taxpayers can no longer use the losses from the tax shelter to reduce the taxes paid on other income earned that year. The suggestion that this cosmetic change, in the absence of a large impact on the after-tax IRR of the investment, would help eliminate tax shelters requires that tax shelter investors systematically ignore recapture in their investment decisions. Instead, recent studies of high-income taxpayers such as Auten and Carroll (1994), Feldstein (1993), Feenberg and Poterba (1993), and Slemrod (chap. 6 in this volume) suggest a high sensitivity to tax incentives in economic activities with less of a tax component than tax-sheltered investments. Appearances aside, the important indicator of future increases in legitimate tax-sheltered investment is the introduction of opportunities for conversion, including investment tax credits and preferential tax treatment of capital gains. The recent rebound in the secondary market for real estate limited partnerships reported in Damato (1995b) suggests that the tax changes in 1993 may be having that effect.

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## Comment Roger H. Gordon

### Summary of Paper

The key question addressed in this paper by Samwick is the role of passive loss restrictions, introduced as part of the Tax Reform Act of 1986 (hereafter

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TRA86), in ending the use of tax shelters. In the years immediately prior to this legislation, high-income taxpayers made intensive use of tax shelters that enabled them to reduce their net tax liabilities. Tax shelter activity became so important that the entire partnership sector generated net tax losses. These losses were heavily concentrated in a few sectors, particularly real estate and oil and gas.

The misinvestments that resulted in these sectors became sufficiently dramatic that TRA86 included a number of provisions that aimed and in fact succeeded at eliminating most tax shelter activity. As emphasized by Samwick, the act lowered personal tax rates substantially, making tax considerations less important. In addition, it lengthened the tax lives for new investments and eliminated the tax credit for equipment. Furthermore, it eliminated the 60 percent exclusion of capital gains income. Finally, the legislation imposed new restrictions preventing individuals from using losses generated on "passive" investments to offset positive taxable income from other sources.

Have these passive loss restrictions in fact played an important role in preventing the reemergence of tax shelters, or are the other changes sufficient in themselves? In several numerical examples that Samwick examines, the passive loss rules seem to have little effect on the net tax liabilities generated from the investments described in the examples.<sup>1</sup> Given that these passive loss rules likely discourage risky activities in general and have little effect on tax shelter activity, Samwick concludes that they merit reconsideration.

### Nature of Tax Shelters prior to TRA86

Samwick defines tax shelters as any activity "in which the investment cost can be deducted from taxable income at a rate that exceeds its economic depreciation." Yet the sharply accelerated depreciation rates available during the early 1980s, and the fairly low inflation rates, mean that virtually all investments would be tax shelters by this definition. For purposes of discussion, I will view tax shelters more narrowly to be investments that in present value reduce the tax liabilities of the owner and that in equilibrium will be owned primarily by those in the highest tax brackets, who according to Samwick's data were in fact the principal owners of these assets.

What aspects of the tax law prior to TRA86 allowed some investments to become tax shelters? Accelerated depreciation in itself is certainly not sufficient—even with immediate expensing, the net tax payments on an investment have a present value of zero. With the tax credit, it is more plausible that some investments will on net generate tax losses in present value. All that is required is that the fraction of the initial costs paid for through reduced tax liabilities exceed the fraction of the return paid in taxes. This occurs if  $k + \tau Z > \tau$ , where  $k$  is the tax credit rate,  $\tau$  is the personal tax rate, and  $Z$  is the present value of

1. In one example of a shelter with an overstated basis, passive loss rules do in fact have an important effect. But Samwick notes that other rules could eliminate these abuses more directly.

depreciation deductions. These assets would be owned primarily by those in the highest tax brackets, however, only if their attractiveness increases, relative to municipal bonds, as the investor's tax rate increases. This occurs only if  $k + Z > 1$ .<sup>2</sup> But for any plausible discount rate, this condition is not close to being satisfied during the period. In fact, in none of Samwick's examples without debt finance are either of these conditions satisfied, implying that these examples do not constitute tax shelters.

To be a tax shelter, more is needed. One important characteristic of many tax shelters is that they provide good collateral for loans, allowing the owner to finance an unusually high fraction of their cost with debt.<sup>3</sup> Extra debt is attractive if the net-of-tax cost of the debt is cheaper than the net-of-tax return the individual can earn on invested funds. If we characterize the available rate of return for these investors by the municipal bond rate, then extra debt is more attractive as long as  $i_m > i(1 - \tau)$ , where  $i_m$  is the municipal bond rate and  $i$  is the taxable interest rate.<sup>4</sup> In 1984, for example, the high-grade municipal bond rate was 10.15 percent while the taxable BAA corporate bond rate was 14.19 percent. At the top personal tax rate of 50 percent, the gain from borrowing an extra dollar was therefore  $10.15 - 0.5(14.19) = 3.06$  cents per year; for those in a 30 percent tax bracket, the gain from borrowing a dollar is only 0.22 cents per year.<sup>5</sup> Therefore, financing even half of the investment with debt raises the after-tax rate of return by 1.5 percentage points for those in the top bracket,<sup>6</sup> while leaving the net return virtually unchanged for those in a 30 percent tax bracket.

Another important characteristic of many tax shelters was the possibility of saving taxes by periodic sales of the asset. When an asset is sold, capital gains tax liability is generated, in itself imposing a tax penalty on such sales. The resulting tax liabilities would be  $g(P - B)$ , where  $g$  is the capital gains tax rate,  $P$  is the sale price, and  $B$  is the remaining tax basis of the asset. In addition, however, the new owner can depreciate the asset based on the new purchase price rather than the presale tax basis, generating extra tax savings that in present value can be approximated by  $\tau Z(P - B)$ .<sup>7</sup> On net, the tax savings are  $(\tau Z - g)(P - B)$  if the asset is sold. Prior to 1986, the tax savings from the

2. Following Hall and Jorgenson (1967), the required rate of return on an investment is  $(\rho + d)(1 - k - \tau Z)/(1 - \tau)$ , where  $\rho$  is the net-of-tax rate of return available elsewhere (e.g., on municipal bonds) and  $d$  is the economic depreciation rate. The derivative of this with respect to  $\tau$  is negative, indicating that the asset is more attractive as  $\tau$  increases, only if  $k + Z > 1$ .

3. As emphasized by Gordon and Slemrod (1988), partnerships had substantial debt during this period.

4. I assume here that extra borrowing allows the individual to reduce the amount of municipal bonds he needs to sell off in order to finance the investment project.

5. As seen in Poterba (1989), the value of  $\tau$  where investors break even on extra debt has consistently been much below the highest personal tax rate.

6. An implicit assumption here is that the individual could not have borrowed this extra amount without undertaking the investment and thereby having an additional asset to provide as collateral.

7. When the depreciation formula is exponential, the present value of future depreciation deductions is exactly proportional to the remaining tax basis.

write-up in the basis normally more than offset the capital gains tax liabilities generated by the sale,<sup>8</sup> resulting in often substantial net tax savings for the buyer and seller together from the sale. In fact, assets could profitably be traded and redepreciated several times during their lives. These tax savings from “churning” were larger the greater the difference between the tax rates on ordinary versus capital gains income so were largest for those in the highest tax brackets.<sup>9</sup> In all of Samwick’s examples, while tax liabilities on the sale of the assets are taken into account, the value of the resulting write-up in basis and redepreciation of the asset is ignored.<sup>10</sup> Yet during this period the value of this write-up would often outweigh the capital gains liabilities incurred as a result of the sale.

As noted by Samwick, there were a variety of more questionable strategies that could also be pursued in putting together tax shelters. One, for example, would be to hold the asset while it is generating substantial tax deductions but then to give it to one’s child before the asset is sold, so that the resulting capital gains are taxable at the child’s rather than the parents’ tax rate. This device is also of benefit primarily to those in the highest tax brackets, for whom the difference between the parents’ and the child’s tax rate is greatest.

As a result of these extra devices, assets that could easily be traded on the secondary market earned as a result a much higher net-of-tax return, not only because the purchase of the asset could be financed heavily with debt but also because the asset could easily be churned and so depreciated several times. Examples of assets that can easily be traded include not only real estate and oil and gas fields, but also airplanes, computers, automobiles, and a variety of other types of capital equipment.<sup>11</sup> Both leverage and churning were beneficial primarily for those in the highest tax brackets, explaining the concentration of ownership of these assets in the highest tax brackets.

The resulting tax subsidy to investment in such assets does not arise from specific provisions in the tax law intentionally aimed at encouraging investment in these assets, but simply because of the existence of a dense secondary market for these types of capital. In fact, many of the academic studies of the tax reforms on 1981–83 concluded that structures faced much higher effective tax rates that equipment, contrary to the observed tax losses in the real estate industry since the reforms (see, e.g., Fullerton and Henderson 1989). Given that the academic studies did not forecast the shift of resources into tax shelters, it seems most unlikely that Congress intended such a shift when designing

8. See Gordon, Hines, and Summers (1987) for further discussion.

9. Since the top personal tax rates were higher than the top corporate tax rate during this period, the tax savings would be larger when the asset is owned by high tax bracket individuals rather than a corporation. See Gordon and MacKie-Mason (1994) for further discussion.

10. One further complication was the recapture rules for depreciation at rates faster than straight line. Given the short lifetimes, taking this into account would not change the calculations much.

11. The essential characteristics are that the asset not be specific to a given firm and that its condition be readily observable by potential purchasers.

these tax reforms. As a result, the pattern of subsidies to tax shelters would appear in large part to be arbitrary and capricious, resulting in a misallocation of capital across uses.

Further efficiency losses would result from the separation of ownership from control. In particular, during this period corporations faced a tax incentive to sell off nominal ownership of their buildings and equipment to noncorporate owners, even though the capital continued to be used within the corporation, since the noncorporate owners could take better advantage of the above strategies to reduce tax liabilities. This separation of ownership from control likely generated efficiency losses due to monitoring and agency costs. The sharp differences that existing during these years in the effective tax rates on different types of assets also generated substantial distortions to individual portfolio holdings and therefore to the allocation of risk across investors, generating yet another type of efficiency loss.

Normally, efficiency losses are an unavoidable cost of raising tax revenue in an equitable way. However, this tax shelter activity not only generated clear efficiency losses but also lost revenue, and reduced the perceived equity of the tax system since the gains went largely to those in the highest tax brackets.<sup>12</sup>

### **Effects of TRA86 on Tax Shelters**

Given that the existing tax shelters were inefficient and inequitable and created a serious erosion of tax revenue, it is not surprising that TRA86 included many provisions that reduced the attractiveness of tax shelters. As emphasized by Samwick, personal tax rates fell, depreciation rates were decelerated, the investment tax credit was eliminated, and the 60 percent exclusion for capital gains tax rate was eliminated. Each of these changes does serve to reduce the attractiveness of tax shelters, as he shows.

The increase in the capital gains tax rate has the additional effect of making churning unattractive. After TRA86, there is a net tax loss for the buyer and seller together when they exchange an asset.

A further important provision in TRA86, not mentioned by Samwick, was the introduction of restrictions on the deductibility of interest payments. Under the legislation, mortgage payments could continue to be deducted on schedule A, but other interest payments could no longer be taken as an itemized deduction. This provision made it much more difficult to borrow to invest in lightly taxed assets, in principle putting a cap on a major form of tax arbitrage.

This cap can be effective, however, only if the individual cannot simply shift nonmortgage interest deductions from schedule A to a different part of the tax return. For example, nonmortgage debt can simply be reclassified as mortgage debt. This possibility does not completely undermine the restriction, however,

12. In a full incidence study of tax shelter activity, one would need to take into account as well the distributional effects of the reduced prices paid by consumers for the goods produced in these favored industries.

since many high-income investors will need to provide more collateral than their house in order to maintain the level of debt they had prior to TRA86. Another approach would be to shift the borrowing into a noncorporate business the individual participates in. As long as such a business can use any resulting tax deductions to offset other income, the restriction on interest deductions would be moot. A key function of the passive loss rules, therefore, may be to prevent such an end run around the restriction on interest deductions.

What are the efficiency consequences of this restriction on interest deductions? Restricting the degree to which individuals can take advantage of existing tax subsidies to debt finance, in itself, is likely to be an efficiency gain since it restricts the behavioral response to this portfolio distortion. Certainly some reduction in use of debt would be an efficiency gain. Jensen and Meckling (1976) explore a variety of nontax considerations that affect a firm's debt/equity choice. Whether the efficient use of debt, ignoring taxes, leads to systematic tax losses for a firm is an open question. If not, as seems very likely, then restrictions on interest deductions would shift the use of debt finance toward the efficient level.

Were it not for tax distortions, would passive loss restrictions be binding? If not, would these restrictions then tend to push individuals toward efficient allocations? To the extent that passive losses result from large interest deductions, then the same considerations as above arise, and most likely the reduction in debt finance caused by the restrictions would be an efficiency gain. But passive losses can result for reasons other than large interest deductions. Samwick argues, for example, that losses are more likely in riskier activities, so that restrictions on passive losses could inhibit risk taking by limited partnerships.<sup>13</sup> But individuals with tax losses from one set of partnerships need simply buy shares in other partnerships that have taxable income in order to make use of the tax losses. Any unused losses in a given year can be carried forward and used to offset positive passive income in later years.<sup>14</sup> As a result, the passive loss restrictions would tend to induce investors in high tax brackets to shift their portfolios into activities generating tax profits, which would push them toward the portfolios they would choose without tax distortions. Again, the response should be an efficiency gain.

The current passive loss rules are less binding than those faced by corporations, since corporate shareholders cannot use losses from one corporation to offset profits from another corporation. The passive loss restrictions therefore reduce substantially an artificial advantage to the noncorporate form.

It would be valuable to develop evidence on the extent to which passive loss restrictions have altered debt finance decisions and individual portfolios, as

13. Passive loss restrictions do not affect individual entrepreneurs since their activity would not be passive.

14. While these carryforwards are not as valuable as immediate offsets against other income, as emphasized by Altshuler and Auerbach (1990), the loss from the postponement would normally be reasonably small.



well as real investment behavior. Samwick's data suggest that individuals on average lose few deductions as a result of these restrictions. Does this suggest that the passive loss restrictions have not played an important role? It is premature to draw such a conclusion. In theory, given optimal portfolio choice in the face of these restrictions, individuals should not be observed with portfolios that generate expected passive losses. While random events may leave them with passive losses *ex post*, they should simply rearrange their portfolio the following year so as to generate enough positive passive income to offset the loss carryforward. Transactions costs generated from frequent readjustments in portfolios may outweigh the resulting tax savings, so some unused passive losses will remain. But evidence on the amount of these unused losses reveals information only about the size of the transactions costs faced when trying to readjust portfolios *ex post* and says nothing about what portfolios would look like if the passive loss restriction were eliminated. Nor does it say anything about the distributional effects of the restriction. One approach to answering these questions would be to conduct a general equilibrium simulation of portfolio holdings and real allocations with and without the passive loss restrictions. Another approach would be to look closely at the changes in behavior that followed TRA86. However, so many provisions changed in 1986 that it would be extremely difficult to isolate the effects of the passive loss restrictions in particular on all these aspects of behavior.

### **Conclusion**

Samwick hypothesizes, and I agree, that "it is the use of leverage to finance tax-sheltered investments that . . . motivated congressional reforms such as the passive loss rules." This congressional concern with the use of leverage very much seemed justified. Allowing nominal interest to be tax deductible while taxing an approximation of the real return on other assets opens up a variety of arbitrage opportunities among investors in different tax brackets. Gordon and Slemrod (1988) found that in 1983 the resulting arbitrage was sufficient to more than offset all the tax revenue collected on the return from real investments. While other tax changes in 1986 helped to reduce the opportunity for tax shelter activity, the passive loss rules remained the key device available to limit the scope for tax arbitrage through borrowing to finance investments in more lightly taxed activities.

Clearly, passive loss restrictions are a very inelegant means of limiting the scope for tax arbitrage. They do not eliminate opportunities for such arbitrage but only limit the amount that can be done. Better would be to eliminate the opportunities entirely. Most proposals for a consumption tax or value added tax, for example, would eliminate these arbitrage opportunities. Even under the income tax, shifting to the taxation and deductibility of real rather than nominal interest would eliminate most of the problems. But as long as the tax code continues to allow the tax deductibility of nominal interest payments, it

is hard to dismiss the value of the passive loss restrictions without much more concrete evidence.

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