A Comparison of Strategies for Expensing Business Property

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The United States Tax Code provides taxpayers with many options or tradeoffs of which people in business should be aware. Whenever a tradeoff is granted, the taxpayer needs to be able to determine which of the options is optimal given his/her current economic status.

The Economic Recovery Tax Act of 1981 (ERTA) includes a provision that provided taxpayers with a choice. Under ERTA, a taxpayer may write off property, up to certain limits, as an immediate tax deduction or may elect to receive an investment tax credit and depreciation deduction. Under the first alternative 100% of the cost may be expensed during the tax year of acquisition. Under the second alternative, the total tax writeoff is greater than 100%, but it occurs over a longer period of time. This problem is a classic case in which the taxpayer must choose between a larger amount or, a faster writeoff.

This paper presents a concise, clearly stated solution to this problem. By understanding the results in Table I, a taxpayer with business property will be able to make the correct tax decision.

I. The Economic Recovery Tax Act

The Economic Recovery Tax Act of 1981 (ERTA) includes a provision that was designed to be of particular benefit to small businesses or individuals with business property. This provision gives the taxpayer the choice of treating certain investment property as an expense in lieu of capitalizing and depreciating such property. Section 179 outlines the election to expense certain depreciable business assets. Section 179 property is defined as property that would ordinarily be covered under the ACRS depreciation codes and which is acquired by purchase for use in a business or trade. Such property is allowed as a deduction on the taxpayer's return for the year in which the property is placed in service. The aggregate amount which may be deducted for any taxable year may not exceed the following amounts:

1982	$ 5,000
1983	5,000
1984	7,500
1985	7,500
1986 and thereafter	$10,000

In the case of a husband and wife filing separate returns, the applicable amount on each return shall be 50% of the above amounts. If a taxpayer elects to expense business property, then those amounts may not be depreciated under the ACRS statutes. If such property is not used in the trade of business at any time before the close of the second taxable year in which the property is placed in service, then regulations provide for recapturing the deduction.

Whether to take the first-year writeoff or to take an investment tax credit (ITC) and depreciate the property involves some planning on the part of the taxpayer. Strategies depend on the value of the first year tax deduction versus the aggregate value of the investment tax credit and depreciation of the asset. The value of each of the alternatives will be examined in the next section.

II. The Value of the Strategies

Taxpayers have the option to expense an asset with a price of $7500 or less in 1985, or to take an investment tax credit (ITC) and depreciate the asset. Since there is a choice involved, it will be shown that the optimal solution depends upon the taxpayer's tax bracket and opportunity cost of funds. Any taxpayer will be able to use the valuation models which follow to determine the optimal strategy. Our analysis will proceed by first examining five year ACRS property, and then three year property will be discussed separately.

When a depreciable asset is purchased, a taxpayer may, pursuant to ERTA, expense that asset up to a maximum limit specified earlier. In other words, the asset may be used as an immediate tax writeoff. With proper tax planning the taxpayer may reduce his withholdings immediately. Therefore, the value of this strategy is:

$$V_1^5 = \text{(cost of the asset) (tax bracket)}$$
$$V_1^5 = xt \tag{1}$$

V represents the value of the strategy. The superscript denotes five year property, and the subscript shows that this is the first of the two alternatives. The value of the strategy depends upon the cost of the asset, x, and the taxpayers tax bracket, t. Notice that a taxpayer in a larger tax bracket gets greater value from expensing the property. In other words, deductions are more valuable to taxpayers in higher tax brackets.

The second of the two alternatives would involve taking a 10% investment tax credit and depreciating the asset over its five year life. Since the passage of the Tax Equity and Fiscal Responsibility Act of 1982, the depreciable base of the asset must be reduced by one half of the ITC or in the case of five year property by 5%. We can see that, the value of this strategy is:

$$V_2^5 = .10X + .15(X - .05X)t + \frac{.22(X-.05X)t}{1+k} + \sum_{i=2}^{4} \frac{.21(X-.05X)t}{(1+k)^i} \qquad (2)$$

where: x is the cost of the asset
       t is the taxpayers tax bracket.

The first term on the right is the 10% ITC. The second term is the first year's depreciation tax deduction. A five year ACRS asset may be depreciated at a rate of 15% its first year, 22% its second year, and 21% in years 3-5. The depreciable base of the property is $(X - .05X)$. It includes the original cost of the asset X, less one-half of the ITC, .05X. Since the taxpayer, through proper tax planning, can reduce the tax liability immediately (by reducing the withholdings for individuals or reducing the quarterly tax payment for companies), this second term does not have to be discounted. The third term is the present value of the second year's depreciation deduction discounted at the taxpayers opportunity cost of funds, k. The fourth term is the sum of the present value of the third, fourth, and fifth year's depreciation tax deductions. Notice that this analysis presumes that the first year's depreciation deduction will benefit the taxpayer immediately. Through proper tax planning, the taxpayer can reduce the quarterly tax payments made to the IRS. So the first year's deduction benefits the company immediately.

We now have the value of the two strategies, but the important point is to determine under what conditions V_1^5 dominates V_2^5. To learn this, the indifference point, $V_1^5 = V_2^5$ will be found by subtracting V_2^5 from V_1^5. This is done in (3) below.

$$V_1^5 - V_2^5 = Xt - .10X - .15(X-.05X)t - \frac{.22(X-.05X)t}{1+k} - \sum_{i=2}^{4} \frac{.21(X-.05X)t}{(1+k)^i} \qquad (3)$$

Notice in (3) that the cost of the asset, X, is multiplicative throughout the expression. In other words, X can be factored out. The optimal choice between the strategies is therefore independent of the cost of the asset as long as the cost is less than the limits specified in the tax code.

II. Optimal Strategy

A taxpayer would be indifferent between the stragegies for five year property when $V_1^5 - V_2^5 = 0$. Setting equation (3) equal to zero and dividing through by X yields (3-a):

$$0 = t - .10 - .15(.95)t - \frac{.22(.95)t}{1+k} - \sum_{i=2}^{4} \frac{.21(.95)t}{(1+k)^i} \qquad \text{(3-a)}$$

In (3-a), notice that the only two vairable which affect the value of the expression are the tax rate, t, and the taxpayers opportunity cost of funds, k. By substituting different tax rates into the expression, the indifference discount rate can be found. In Table 1 these discount rates are shown for several tax brackets. If we look in the 50% tax rate column for five year property, the indifference discount rate is 8.82%. This implies that a taxpayer in a 50% tax bracket would be indifferent between expensing and depreciating the asset when that taxpayer has an opportunity cost of funds of 8.82%. The other cells may be interpreted in the same way.

At discount rates above 8.82%, the optimal solution would be to take the immediate tax writeoff. A larger discount rate would reduce the value of the future depreciation deduction below the immediate writeoff. At discount rates below 8.82% the future depreciation deductions are larger than the value of the immediate writeoff, so the taxpayer should select the tax credit.

The 10% tax bracket cell deserves some attention. The value of the immediate writeoff would be equal to the 10% ITC. But the depreciation deductions that are taken ina ddition to the ITC would mean that the immediate writeoff would never be optimal.

For three year property, the analysis is similar. The value of the two strategies can be estalbished. The taxpayer may write off the property immediately or take a 6% ITC and depreciate 97% of the assets cost over three years. The depreciation rates to be applied to the property for its three year tax life are 25%, 38, and 37%, respectively. It can easily be demonstrated that the choice in this case depends on the same variables as in the five year case, the tax rate and opportunity cost of funds.

The results for the three year property appear in the second line of Table 1. The interpretation is the same. For a taxpayer in a 50% tax bracket, a discount rate above 9.33% would favor the immediate writeoff while a ldower discount rate encourages the depreciation strategy.

At low discount rates the depreciation/ITC strategy is optimal. At higher discount rates the immediate writeoff is optimal. Notice in Table 1 that as the tax rate drops, the indifference discount rate rises. Since the ITC is a credit which reduces the tax liability on a dollar for dollar basis, and is therefore independent of t, it takes increasingly larger discount rates to make the immediate writeoff strategy dominate the depreciation strategy at lower tax rates.

Conclusion
This paper showed that the ERTA gave taxpayers a choice with regards to depreciation of assets. The financial planner must be aware of this choice

and must know how to select the optimal strategy. It was shown:
1. that taxpayers may choose to expense assets costing $7,500 or less rather than depreciating them:
2. that the optimal strategy is independent of the asset's original cost as long as the cost is below the $7,500 prescribed in the Tax code;
3. that the optimal strategy depends upon the taxpayer's bracket and opportunity cost of funds; and
4. that at a given tax bracket, a larger opportunity cost of funds favors the immediate writeoff strategy.

Table 1
The Indifference Cost of Capital* For
Various Tax Rates

Tax Rates	50%	46%	40%	30%	20%	10%
5 Year Property	8.82	10.05	12.54	20.02	43.42	**
3 Year Property	9.33	10.56	12.98	19.85	37.60	208.06

*At discount rates greater than those shown in the table, the taxpayer should immediately expense the property. When the taxpayer's opportunity cost of funds is less than those shown, the optimal strategy is to take the ITC and depreciate the property.

**At a tax rate as low as 10%, it would never be optimal to expense the asset, because a 10% ITC taken immediately would be larger than the value of the future deduction.