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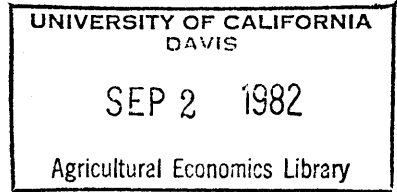
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THE ECONOMICS OF EXPENSING

by  
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THE ECONOMICS OF EXPENSING

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ABSTRACT

The 1981 Economic Recovery Tax Act introduced a new provision called expensing. Present value analysis of expensing indicates it will be of benefit to taxpayers who either are in high tax brackets, use high discount rates, anticipate lower taxes in the future or plan an early disposition of expensed assets.

## THE ECONOMICS OF EXPENSING

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### Introduction

The Economic Recovery Tax Act of 1981 made wholesale revisions in the Internal Revenue code. Perhaps the most altered sections are those dealing with the manner in which the cost of business assets is recovered. The old familiar depreciation rules have been replaced with new cost recovery procedures which apply to most business assets placed in service after 1980. Among the many changes was the elimination of the provision for a 20 percent additional first-year depreciation. This provision is being replaced with a new allowance called expensing.

It is the intention of this paper to analyze the relative merits of this new provision in our tax laws and to determine the circumstances under which it is advantageous to elect expensing.

### Depreciation--The Old Rules

Under the old rules of depreciation (which apply to items purchased prior to 1981) the cost of a business asset was recovered over the useful life of the item through depreciation. There were a number of depreciation methods from which the taxpayer could choose--straight line, declining balance, sum of years digits, etc. In addition, there was a provision which allowed extra depreciation in the year the asset was purchased. This provision was the 20 percent additional first-year depreciation (AFY).

AFY depreciation could only be elected on tangible personal property which had a useful life of six or more years. There was also an annual limit (\$4,000 on joint returns, \$2,000 on single) on the amount of AFY depreciation which could be claimed. AFY allowed the taxpayer to depreciate 20 percent of the basis of an item in the year of purchase.

Decisions regarding the use of AFY depreciation were relatively straight forward. If the taxpayer needed greater deductions in the year of purchase, AFY was elected. If the taxpayer was in a low tax bracket or wished to save deductions until later, AFY depreciation was foregone.

#### Cost Recovery

The new accelerated cost recovery system (ACRS) replaces depreciation. These new rules eliminate the old useful life concept and replace it with property classes. All assets are classified into one of four property classes (3, 5, 10 or 15 year property) and cost is recovered over the corresponding number of years.

Under ACRS there are only two methods of cost recovery--accelerated and straight line. The accelerated method gives greatest reductions in basis in early years. The straight line method results in a uniform recovery over the recovery period. The straight line method also allows the taxpayer the option of recovering the cost over a longer time period.

#### Expensing

The election to expense is a new provision in the tax law designed to replace AFY depreciation. It allows the taxpayer to deduct a portion of the cost of eligible property in the year purchased. The maximum amount which may be expensed in a year is \$5,000 for assets placed in service in 1982 or 1983; \$7,500 for 1984 or 1985; and \$10,000 for 1986 and later. Neither expensing nor AFY depreciation may be claimed on assets purchased in 1981. Unlike AFY, there is no percentage requirement attached to expensing. For eligible items costing \$5,000 or less, the entire cost may be expensed. It is the taxpayer's option as to how the amount elected is divided among qualifying purchases.

There are many similarities between AFY depreciation and expensing. Like AFY, expensing can only be taken the year the asset is placed in service. The amount taken reduces the basis available for regular depreciation. There is a maximum limit on the amount which can be elected.

There are also a number of differences between the two allowances. Only property with a useful life of six years or more was eligible for AFY depreciation. All property eligible for investment credit is eligible for expensing, regardless of expected useful life. The most important difference between the two concerns how expensing affects investment credit. Whatever amount is expensed is not eligible for investment credit. Only the remaining unexpensed portion of an item's basis is eligible for investment credit.

This restriction on investment credit greatly complicates the taxpayer's decision as to whether or not it is beneficial to use expensing. At first it might appear that the best strategy is to only elect expensing on items which are not eligible for investment tax credit. Unfortunately, the tax code restricts the use of expensing to only those items which qualify for investment credit.

#### When to Expense

To the taxpayer the question becomes, "Is the additional early depreciation that expensing offers worth the loss of investment tax credit which its use mandates?"

To answer this question we compared the present value of the tax savings which result from not using expensing with that which results from expensing.

The selection of this criteria for analysis implies several assumptions about the taxpayer. First, that he is in a tax bracket greater than zero and that his goal is to maximize tax savings. Second, largely for simplicity it is assumed that the taxpayer has no carryover of tax credits, and that he does not desire to use income averaging. Also, for simplicity, it is assumed that the tax bracket is independent of the amount expensed, i.e., electing to expense will not change the effective tax rate.

Someone wishing to maximize the present value of tax savings (given a discount rate greater than zero) should not select the straight line cost recovery method unless they anticipate being in higher tax brackets in later years. If they do expect to be taxed at a higher rate in the future, expensing would not be desirable, since not only would some investment credit be given up, but the shifting of depreciation to the current year from subsequent years would result in greater total taxes. Therefore, only the accelerated recovery method is used in this study.

The present value of the tax savings which result from the purchase of recovery property when expensing is not elected is given in Equation 1.

$$(1) \quad PV = \text{BASIS}_I * \text{ITC} + \sum_{i=1}^{\text{RP}} \text{BASIS}_R * \text{ACRS}_i * t_i * (1-d_i)^{i-1}$$

where

PV = Present Value of tax savings from the purchase of a business asset without expensing

$\text{BASIS}_I$  = Basis eligible for investment credit

ITC = Percent investment tax credit allowed on the asset

RP = Recovery Period in years

$i$  = Year

$\text{BASIS}_R$  = Basis eligible for cost recovery

$ACRS_i$  = Percent of basis recovered in year  $i$

$t_i$  = Tax Rate in year  $i$

$d_i$  = Discount rate in year  $i$

The present value of the tax savings which result from the purchase of a business asset when expensing is elected is given in Equation 2.

$$(2) \quad PV_E = \text{Exp} * t_1 + (\text{BASIS}_I - \text{Exp}) * \text{ITC} + \sum_{i=1}^{RP} (\text{BASIS}_R - \text{Exp}) * ACRS_i * t_i * (1-d_i)^{i-1}$$

where

$PV_e$  = Present value of tax savings with expensing

$\text{Exp}$  = Amount expensed

The remaining variables are as defined earlier.

To find the point at which expensing becomes advantageous, set Equation 1 equal to Equation 2 and solve. When this is done, several variables will drop out of the equation. If it is assumed that the amount expensed is not equal to zero then the result can be simplified to Equation 3.

$$(3) \quad t_1 = \text{ITC} + \sum_{i=1}^{RP} ACRS_i * t_i * (1-d_i)^{i-1}$$

From Equation 3 it can be seen that the decision to expense is a function of five factors: The tax rate, the investment tax credit rate, the recovery period, the annual percentage of cost recovery, and the discount rate. The cost of the item and the amount expensed are irrelevant to the decision. In essence, the taxpayer will either expense as much as possible or expense nothing.

To facilitate solving Equation 3, further assumptions were made. The property is owned at least as long as the recovery period. Both the



discount rate and the tax rate are assumed constant over the recovery period. The resulting solution becomes a function of only three variables-- $t$ ,  $d$ , and  $RP$ . Since most farm property eligible for expensing is in either the 3-year or the 5-year property class, only these two classes are examined in this paper.

Table 1 gives the breakeven tax brackets for expensing under various discount rates. Expensing is advantageous if the taxpayer is in a tax bracket greater than that given in the table. As can be seen from Table 1, only taxpayers who are in high tax brackets or use a high discount rate benefit by expensing. Given a discount rate of 15 percent, a taxpayer would need to be taxed at a marginal rate above 38 percent before it would be advantageous to expense a portion of the cost of 3-year property. For 5-year property the tax rate would need to be above 37 percent to make expensing beneficial.

A possible situation in which someone might particularly be interested in expensing is if they are in a high tax bracket for the first year and anticipate being taxed at lower rates in later years.

Table 2 shows the breakeven tax rates for a taxpayer who is in the 50 percent tax bracket the initial year. Although 50 percent is the maximum federal tax bracket (as of 1982) a taxpayer could find himself in a higher total tax bracket if he is subject to state or local income taxes.

A taxpayer who in subsequent years will be in tax brackets lower than that given in Table 2 would benefit by expensing.

Another situation in which the taxpayer may find it desirable to expense is when the asset will not be held long enough to avoid recapture of some of the investment credit. For example, suppose a farmer buys a

Table 1

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BREAKEVEN TAX RATES FOR ELECTING TO EXPENSE  
ASSUMING CONSTANT TAX RATE AND  
CONSTANT DISCOUNT RATE <sup>a</sup>

DISCOUNT RATE ( $d_1$ )	TAX RATE ( $t_1$ )	
	3 YEAR PROPERTY	5 YEAR PROPERTY
0%	--	--
5	109%	99%
8	69	64
10	55	52
13	43	41
15	38	37
20	29	29
25	23	24
30	20	21

<sup>a</sup>Expensing is advantageous if the taxpayer is in a tax bracket greater than that given in the table.

Table 2

BREAKEVEN TAX RATES FOR ELECTING TO EXPENSE ASSUMING A 50% TAX  
RATE FOR THE FIRST YEAR, A CONSTANT TAX RATE FOR  
LATER YEARS, AND A CONSTANT DISCOUNT RATE <sup>a</sup>

DISCOUNT RATE ( $d_1$ )	TAX RATE IN LATER YEARS	
	3 YEAR PROPERTY	5 YEAR PROPERTY
0%	42%	38%
5	45	43
10	49	49
13	52	53
15	53	56
20	58	64
25	64	74
30	70	86

<sup>a</sup>Expensing is advantageous if the taxpayer will be in a tax bracket lower than that given in the table.

pickup on August 23, 1982. The pickup will be eligible for expensing and 6 percent investment tax credit. If he sells, or trades, the pickup before August 23, 1983, he must recapture all of the investment credit claimed. In this case, electing to expense a portion of the cost of the pickup will not have any serious effect on investment credit. It will reduce the amount which can be claimed, but since all investment credit claimed will be recaptured, the loss is relatively minor.

Modifications must be made in both Equations 1 and 2 in order to analyze situations which involve early disposition of the asset. Two terms must be added to each equation. One term to calculate the recapture of investment credit, the other term to account for any gain or loss which must be recognized. Once this is done, and the two equations are again set equal, the breakeven conditions can be identified. The simplified form of the final equation is presented in Equation 4.

$$(4) \quad t_1 = \text{ITC} + \sum_{i=1}^N \text{ACRS}_i * t_i * (1-d_i)^{i-1} - (1-d_i)^N * [\text{ITC} * \text{RC} - (1 - \sum_{i=1}^N \text{ACRS}_i) * t_N]$$

where

N = Number of tax years for which cost recovery is claimed

RC = Percent recapture of investment credit

All other variables are as previously defined.

The breakeven tax brackets for situations involving early sale of 3-year and 5-year property are shown in Table 3 and Table 4, respectively. Both tables assume constant tax and discount rates. Expensing is desirable if the taxpayer is in a tax bracket which is greater than that given in the tables. In general, expensing is more desirable when the discount rate is high and the length of ownership is short.

Table 3

BREAKEVEN TAX RATES FOR ELECTING TO EXPENSE ASSUMING CONSTANT TAX RATE,  
CONSTANT DISCOUNT RATE AND EARLY SALE OF 3-YEAR PROPERTY<sup>a</sup>

DISCOUNT RATE ( $d_i$ )	TAX RATE ( $t_i$ )						
	No. Years Owned	1	1	2	2	3	3
	Percent Recapture	100	$66\frac{2}{3}$	$66\frac{2}{3}$	$33\frac{1}{3}$	$33\frac{1}{3}$	0
0%	-	-	-	-	-	-	-
5	8%	58.7%	43.4%	76.2%	77.8%	108.9%	
8	8	38.7	30.0	49.4	50.9	68.8	
10	8	32.0	25.5	40.4	41.9	55.4	
13	8	25.8	21.3	32.2	33.6	43.1	
15	8	23.1	19.5	28.5	29.9	37.6	
17	8	21.0	18.1	25.7	27.0	33.4	
20	8	18.7	16.4	22.6	23.8	28.7	
22	8	17.5	15.6	20.9	22.1	26.3	
25	8	16.0	14.6	19.0	20.1	23.4	
30	8	14.2	13.3	16.6	17.6	19.8	

<sup>a</sup>Expensing is advantageous if the taxpayer is in a tax bracket greater than that given in the table.

Table 4

BREAKEVEN TAX RATES FOR ELECTING TO EXPENSE ASSUMING CONSTANT TAX RATE,  
CONSTANT DISCOUNT RATE AND EARLY SALE OF 5-YEAR PROPERTY<sup>a</sup>

DISCOUNT RATE ( $d_i$ )	No. Years Owned Percent Recapture	TAX RATE ( $t_i$ )									
		1	1	2	2	3	3	4	4	5	5
		100	80	80	60	60	40	40	20	20	0
0%		-	-	-	-	-	-	-	-	-	-
5		13.3%	56.5%	38.4%	63.3%	53.1%	71.9%	67.2%	83.4%	84.2%	99.6%
8		13.3	38.8	28.2	43.0	37.3	48.2	45.8	55.0	55.7	64.1
10		13.3	32.9	24.8	36.3	32.0	40.3	38.6	45.5	46.2	52.3
13		13.3	27.5	21.7	30.0	27.1	33.0	32.0	36.7	37.3	41.5
15		13.3	25.1	20.3	27.3	24.9	29.8	29.0	32.8	33.4	36.7
17		13.3	23.3	19.2	25.1	23.2	27.3	26.7	29.9	31.9	33.0
20		13.3	21.1	18.0	22.7	21.3	24.5	24.2	26.5	27.0	28.9
25		13.3	18.8	16.6	20.0	19.2	21.3	21.2	22.7	23.1	24.3
30		13.3	17.3	15.7	18.2	17.7	19.2	19.2	20.2	20.5	21.2

<sup>a</sup>Expensing is advantageous if the taxpayer is in a tax bracket greater than that given in the table.

Summary

It does not appear that expensing will be a widely used provision. Although it allows the shifting of tax deductions from the future into the current year, for many taxpayers, this advantage will not be sufficient to overcome the loss of investment credit. There are three types of taxpayers for whom expensing appears beneficial. Those who are in high tax brackets or use high discount rates, those who are in a high tax bracket for the current year and will be taxed at lower rates in later years, and those who will not hold the property long enough to prevent recapture of large amounts of the investment credit.