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Fact Sheet

Fact Sheet 431

The Economics of Leasing Versus Buying Farm Equipment

All types of equipment, from copy machines to airplanes, are commonly leased in the business world. In agriculture, however, leasing traditionally has been used only to acquire use of additional land for pasture or crop production. But with today's financial problems, farn1ers and ranchers are also beginning to look at leasing farm equipment. Because leasing is a relatively new procedure, many farmers are not aware of the analytical steps necessary to make a lease-versus-buy decision.

A Rule of Thumb

The lease-versus-buy decision can be made quickly for some farmers. Generally, those with high income tax liability will fmd no economic advantage in leasing. Here's why. A leasing company is presumably profitable enough to take full advantage of the tax savings offered to purchasers of farm equipment. The leasing company buys the equipment not for farming, but for tax reasons Since the equipment still must be used in farming, the company leases the equipment it owns to farmers.

Many farmers have higher after-tax costs for buying equipment than those faced by the leasing company, allowing the leasing company to pass some of its savings to farmers and still make a profit. Whether the leasing company is transferring enough of its savings to make leasing economically attractive can be determined by a three-step method. (I) compare purchase price and lease payments, (2) compare income tax effects, and (3) compare present values.

The following example shows how to use these steps. A farmer has two choices. (1) buy a new tractor for $25,000, or (2) lease it for 5 years at $5,250 per year. The lease agreement states that the tractor can be purchased for $2,500 at the end of the lease, and there is no security deposit. Insurance and repairs cost the same with either option.

Step 1: Comparing Purchase Price and Lease Payments

The first step in a leasing-versus-buying analysis is listing the purchase price and lease payments.

	Buy	Lease
Today	$25,000	$5,250
1 year from today		$5,250
2 years from today		$5,250
3 years from today		$5,250
4 years from today		$5,250
5 years from today		$2,500

The *Today* row in the example shows that purchased equipment must be paid for upon delivery. This payment may be from the farmer's cash reserves or from money borrowed from a lending agency, but it must be paid to the equipment seller up front. The first lease payment, at least in this example, also is shown in the *Today* row.

The table entries for the lease include the cost of buying the equipment at the end of the lease. This consideration is important because the equipment will be owned at no extra cost 5 years from now if it is purchased rather than leased. The cost of exercising the lease purchase option therefore must be included to make the economic comparison a fair one. Some leases specify the final purchase option while others use "fair market value". If the price is not specified, one must be estimated and included in the comparison of costs.

Step 2: Comparing Income Tax Effect

One of the most important economic differences between leasing and buying equipment is the way each is treated for income tax purposes. Since the value of these tax benefits varies greatly among individuals and corporations, it is important to calculate potential tax benefits on an individual basis.

Buyers of farm equipment have for many years taken investment tax credits (ITC). The ITC, which could be as high as 10 percent of the purchase price, was deducted directly from taxes owed. This made it a particularly attractive idea for farmers with large income tax obligations. However, the Tax Reform Act of 1986 eliminated the ITC for farmers buying equipment. Because the act allows companies leasing equipment to farmers to take the ITC during a "transitional period", some of the losses farmers face with the elimination of the ITC may be compensated by lower lease rates.

In any case, all buyers of equipment still have tax deductions under the 1986 act. Atax deduction reduces the amount of income that will be taxed. In the case of farm equipment, depreciation is tax deductible in the year it is allowed Depreciation therefore will reduce the taxes owed for each year it is allowed, but not by its full amount Furthermore, depreciation not claimed in the year it is allowed cannot be used in other years to reduce tax liability.

How much will a tax deduction reduce taxes owed? That depends on the marginal tax rate. The marginal tax rate is how much of each additional dollar eamed must be paid as income taxes. Individuals or

corporations with high incomes may have marginal tax rates of 35 percent or more, while those losing money will have tax rates of 0 percent

The higher the marginal tax rate, the more a tax deduction is worth. The value of a tax deduction is determined by multiplying it by the tax rate. Using this rule, a $10,000 tax deduction is worth nothing if the tax rate is 0 percent, $1,500 at 15 percent and $2,800 at 28 percent

The situation is a bit simpler with leases. Each lease payment is a tax deduction for the individual leasing the equipment. Its value can be detennined by multiplying the marginal tax rate by the lease payment.

If the buy option is chosen, depreciation on a tractor must be taken over a 7-year period. Both straight line and accelerated methods are possible, and either can have its advantages depending on the farmer's tax situation. In this example, straight line depreciation of $3,571 for each of 7 years will be used. The example farmer has only a 15-percent tax rate, so the tax savings will be only 15 percent of the total depreciation amount, or $536 per year.

If the lease option is chosen, each $5,250 payment will have a tax savings of 15 percent of its value, or $788. The after-tax cost of each lease payment is $4,462 ($5,250 - $788 = $4,462) The final purchase of the leased equipment is also tax deductible; however, a more realistic example might show it being taken as depreciation rather than an all-at-once expense.

The table from Step I can now be rewritten to include taxes. The negative numbers in the buying column show savings rather than costs, and the *Today* column shows that the first year's tax savings are subtracted from the purchase price.

	After-tax costs of buying	After-tax costs of leasing
Today	$24,464	$4,462
1 year from today	-536	4,462
2 year from today	-536	4,462
3 year from today	-536	4,462
4 year from today	-526	4,462
5 year from today	-536	2,125
6 year from today	-536	0

Step 3: Comparing Present Values

The after-tax values of the leasing and buying costs have been considered, but the time these costs are incurred has not been taken into account. Ignoring their timing can lead to an incorrect decision because money has a time value. Time value is evident every time money is invested for a period of time to eam interest or borrowed for a period of time in exchange for interest payments.

The time value of money affects leasing or buying because the farther into the future a cost comes due, the fewer of today's dollars it will take to repay it. How many of today's dollars it will take to pay a cost due in the future depends on the level of interest rates. Interest rates are used to choose present value factors, which are, in turn, used to convert future costs into today's dollars. A future cost, expressed in terms of today's dollars, is called a present value. The interest rate chosen is either that at which money can be borrowed or that at which money can be invested. Since costs in this fact sheet are after-tax costs, the interest rate should be chosen to reflect the fact that interest costs are tax deductible.

The example farmer can borrow money at 11.8 percent and the after-tax rate is 15 percent less, or about 10 percent The present value factor table given in this fact sheet is used to find the. present value factors for *Today* through *6 Years from today*.

The farmer now multiplies the present value factors by the after-tax costs of buying.

	After-tax costs of buying		Factor		Present value
Today	$24,464	X	1.0000	=	$24,464
1 year from today	-536	X	0.9091	=	-487
2 years from today	-536	X	0.8264	=	-443
3 years from today	-536	X	0.7513	=	-403
4 years from today	-536	X	0.6830	=	-336
5 years from today	-536	X	0.6209	=	-333
6 years from today	-536	X	0.5645	=	-303
		Total present value cost			$22,129

The farmer then uses the same factors to find the present value of the after-tax costs of leasing.

	After-tax costs of leasing		Factor		Present value
Today	$4,462	X	1.0000	=	$4.462
1 year from today	$4,462	X	0.9091	=	$4,056
2 years from today	4,462	X	0.8264	=	3,687
3 years from today	4,462	X	0.7513	=	3,352
4 years from today	4,462	X	0.6830	=	3,048
5 years from today	2,125	X	0.6209	=	1,319
6 years from today	0	X	0.5645	=	0
		Total present value cost			$19,924

In terms of today's dollars, the lease option will cost $19,924 and buying will cost $22,129. Leasing is the better alternative in the example by $2,205.

Other Considerations

In addition to a cost comparison, other factors often enter into the lease-versus-buy decision.

Potential advantages of leasing include:

1. using often requires less up-front money than buying does.
2. use payments may be less than loan payments on a purchase.
3. using can be used in situations where a piece of equipment is only needed for a short period of time without concern for buying that equipment at the end of that time.

Potential advantages of buying include:

1. Equipment can be changed more easily with ownership than leasing. There may be a substantial penalty involved in getting out of a lease contract early, and leases may be non-cancellable.
2. Owned equipment can serve as collateral for other loans, but leased equipment cannot.
3. Many farmers take pride in owning equipment.
4. Some leases require a security deposit. While not considered in the example, security deposits can add to the cost of leasing. A security deposit is made at the beginning of the lease period and refunded at the end of the period. In economic terms, the deposit amounts to an interest-free loan to the leasing company. It is also not tax deductible.

Conclusion

The analysis of a lease-versus-buy decision depends on tax laws and leasing agreements that are subject to change. As of this writing, the implications of the Tax Reform Act of 1986 are still being interpreted. The three-step method will remain valid, but legal and accounting advice must be added to any economic analysis before making a decision on leasing or buying farm equipment.

Present value factors for selected interest rates

	6 percent	8 percent	10 percent	12 percent	14 percent
Today	1.0000	1.0000	1.0000	1.0000	1.0000
1 year from today	0.9434	0.9259	0.9091	0.8929	0.8772
2 years from today	0.8900	0.8573	0.8264	0.7972	0.7695
3 years from today	0.8396	0.7938	0.7513	0.7118	0.6750
4 years from today	0.7921	0.7350	0.6830	0.6355	0.5921
5 years from today	0.7473	0.6806	0.6209	0.5674	0.5194
6 years from today	0.7050	0.6302	0.5645	0.5066	0.4556
7 years from today	0.6651	0.5835	0.5132	0.4523	0.3996
8 years from today	0.6274	0.5403	0.4665	0.4039	0.3506
9 years from today	0.5919	0.5002	0.4241	0.3606	0.3075
10 years from today	0.5584	0.4632	0.3855	0.3220	0.2697

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