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Lease vs. Purchase of Machinery*[1]

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Introduction

Leasing or purchasing of machinery and equipment represent alternative ways for farm operators to acquire assets for agricultural production. Leasing has increased in popularity with agricultural producers. Manufacturers and financial institutions view leasing and selling equipment as alternative means to generate business. By comparing the net present value of the **after-tax costs**, farmers can determine the least expensive way to acquire machinery or other assets in the farmer's specific situation. Key factors in the lease vs. purchase decision are the interest rate on loans, lease payments, the taxpayer's marginal tax rate, and the taxpayer's after-tax discount rate that reflects the time value of money. An important factor in this decision process is the acquisition of new technology and how rapidly that technology may become obsolete or of it is needed for a specific length of time.

Lease or Purchase? Look at the Contract Details

> **Note**. This discussion is covered more thoroughly in "Rent and Leasing," IRS Publication 225, *Farmers Tax Guide,* Chapter 4, Farm Business Expenses.

Some so called lease contracts must be treated as conditional sales contracts for tax reporting purposes. If the agreement is treated as a conditional sales contract the payments cannot be deducted as rent. Instead, the payments must be capitalized to determine the cost of the property

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[1] This example is a modified version of one originally presented in Land Grant University Tax Education Foundation, Inc. *2006 National Income Tax Workbook.* pp.372 – 75.

and this cost is recovered through depreciation. You can also deduct interest, repairs, insurance and other expenses associated with the equipment.

Whether an agreement is a conditional sales contract depends on the **intent** of the parties. No single test applies, but in general, the agreement may be considered a conditional sales contract if any of the following is true.

- The agreement applies part of each payment to an equity interest in the property.
- You get title to the property after making a stated amount of required payments.
- The amount you pay over a short time period is a large part of the amount you would pay to get title to the property.
- You pay much more than the current fair rental value of the property.
- You have the option to buy the property at a nominal price compared to the market value of the property, or compared to the total amount you have to pay under the agreement.
- The agreement designates part of the payments as interest, or part of the payments can be easily recognized as interest.

Example 1: Mary Farmer is considering acquiring a tractor for $100,000. She can purchase the tractor for a $30,000 down payment and a $70,000 loan amortized over 5 years at a 7% rate of interest, taking a tax deduction for the interest paid on the loan and for depreciation.

Alternatively, Mary can lease the tractor for 5 years by paying $19,353 at the time of signing and making four additional lease payments, taking a tax deduction for each lease payment. If Mary wishes, she can acquire the tractor at the end of the 5-year lease for $20,000 (which is the projected fair market value at the end of the lease) and depreciate that $20,000 cost using MACRS depreciation over a 7-year recovery period. Based on an analysis of the provisions of the contract and the facts and circumstances, Mary's tax advisor has determined that this lease agreement does not have to be treated as a conditional sales contract.

Should Mary purchase or lease? In both situations, Mary's marginal tax rate for 2012 is 31.07% [3% state income tax, 15% federal income tax, and net 13.07% self-employment tax (considering the income tax savings from deducting half of the self employment tax)]. The tax rate (rounded to 31 percent) is assumed to be constant over the 10-year period of analysis. In both cases, it is also assumed that the tractor is sold at the end of the 10-year period for $15,000. Mary's discount rate for both the lease and purchase is 8%.

Purchase of Tractor

Table 1 (below) illustrates the purchase of the $100,000 tractor. The second column shows the $30,000 down payment when the tractor is purchased (year 0) and the $17,072 loan payments made in years 1 through 5. The interest portion of the loan payments listed in column 3 and allowable depreciation listed in column 4 are tax deductible. The adjustments for taxes (tax savings) presented in column 5 are computed using Mary's 31% tax rate.

Example 1 continued:

The sale of the fully depreciated tractor in year 10 for $15,000 results in depreciation recapture that is taxed as ordinary income not subject to self-employment tax, and yields $12,300 of after-tax income. Finally, the net after-tax inflows (positive numbers) and outflows (negative numbers) from column 6 are discounted in column 8 using Mary's after-tax discount rate of 8% (column 7) and summed over the 10-year planning period. **The after-tax net present value of the cost of acquiring the $100,000 tractor by purchase is $65,616.**

Table 1. Purchase of a $100,000 Tractor with a 5-Year Fully Amortized Loan with 30% Down, 7% Interest Rate: Sale in Year 10 for $15,000.

Year (1)	Payments (2)	Interest Expense (3)	150% DB Depreciation (4)	Adjustment for Taxes (5)	Net After-Tax Cash Flow (6)	8% Discount Factor (7)	P. V. of Net Cash Flow (8)
0	30000				(30000)	1.0000	(30000)
1	17072	4900	10710	4839	(12233)	0.9259	(11327)
2	17072	4048	19130	7185	(9887)	0.8573	(8476)
3	17072	3136	15030	5631	(11441)	0.7938	(9082)
4	17072	2161	12250	4467	(12605)	0.7350	(9265)
5	17072	1117	12250	4144	(12928)	0.6806	(8799)
6			12250	3798	3798	0.6302	2393
7			12250	3798	3798	0.5835	2216
8			6130	1900	1900	0.5403	1027
9						0.5002	
10					12300*	0.4632	5697
Totals	115360	15362	100000	35762	67298		(65616)

*After tax proceeds from sale of tractor = $15,000 - (15,000 x 0.18) = $12,300

Lease of Tractor

Table 2 (below) presents similar information for the lease of the $100,000 tractor. The initial lease payment of $19,353 is made at the time of signing (year 0), and four other tax-deductible payments are made at the end of years 1 through 4. The tractor is purchased at the end of year 5, with depreciation taken on the $20,000 purchase price using 7-year MACRS. As in the outright purchase alternative, the tractor is sold for $15,000 in year 10. This results in a net after-tax gain of $11,324 that is reported as ordinary income because of the I.R.C. §1245 recapture rule. **The after-tax net present value of the cost of acquiring the tractor by lease is $62,426.**

Example 1 continued:

Table 2. Lease of a $100,000 Tractor, Purchase in Year 5 for $20,000, Sell for $15,000 in Year 10.

Year (1)	Lease Payment (2)	Purchase/ Sale (3)	150% DB Depreciation (4)	Adjustment for Taxes (5)	Net After-Tax Cash Flow (6)	8% Discount Factor (7)	PV of Net Cash Flow (8)
0	19353			5999	(13354)	1.0000	(13354)
1	19353			5999	(13354)	0.9259	(12364)
2	19353			5999	(13354)	0.8573	(11448)
3	19353			5999	(13354)	0.7938	(10600)
4	19353			5999	(13354)	0.7350	(9815)
5		(20000)	2142	664	(19336)	0.6806	(13160)
6			3826	1186	1189	0.6302	749
7			3006	932	932	0.5835	544
8			2450	760	760	0.5403	411
9			2450	760	760	0.5002	380
10		12692*	2450	760	13452	0.4632	6231
Totals,	96765	(7308)	16324	35057	(69013)		(62426)

*After-tax value of sale for $15,000 in year 10:

$20,000 purchase price - $16,324 depreciation = $3,676 adjusted basis.

$15,000 sale price - $3,676 = $11,324 depreciation recapture.

$11,324 x 0.18 = $2,038 tax on deprecation recapture.

Net, after-tax sale proceeds = $15,000 – $2,038 = $12692.

In this example, Mary would save $3,190 by leasing rather than making an outright purchase of the tractor.

Interpretation

It should not be concluded from this example that leasing is always preferred to purchasing. For example, the foregoing analysis of the purchase option did not include the possibility of using the Section 179 expense deduction. Suppose that Mary purchased the tractor and claimed half of the purchase price ($50,000) under the Section 179 election. As shown in Table 3 (below), the present value of the purchase alternative with $50,000 Section 179 is $61,549, or $877 **less** than the leasing alternative. With a constant tax rate, the Section 179 expense deduction taken now has a higher present value than equivalent depreciation deductions taken later. The tax savings from the Section 179 election also significantly reduce the initial cash outlay from $30,000 to $14,500.

Table 3. Purchase of a $100,000 Tractor with a 5-Year Fully Amortized Loan with 30% Down, 7% Interest Rate: Sale in Year 10 for $15,000, $50,000 Section 179 Election

Year (1)	Payments (2)	Interest Expense (3)	Depreciation/ Section 179 (4)	Adjustment for Taxes (5)	Net After-Tax Cash Flow (6)	8% Discount Factor (7)	P. V. of Net Cash Flow (8)
0	30000		50000	15500	(14500)	1.0000	(14500)
1	17072	4900	5355	3179	(13893)	0.9259	(12864)
2	17072	4048	9565	4220	(12852)	0.8573	(11018)
3	17072	3136	7515	3302	(13770)	0.7938	(10931)
4	17072	2161	6125	2569	(14503)	0.7350	(10660)
5	17072	1117	6125	2245	(14827)	0.6806	(10091)
6			6125	1899	1899	0.6302	1197
7			6125	1899	1899	0.5835	1108
8			3065	950	950	0.5403	513
9						0.5002	
10					12300*	0.4632	5697
Totals	115360	15362	100000	35763	(67297)		(61549)

*After tax proceeds from sale of tractor = $15,000 - (15,000 x 0.18) = $12,300

Trade-in value becomes another issue in the lease vs. buy decision. If the replacement property is purchased, the transaction is treated as a like-kind exchange in which any gain or loss on the trade-in will not be recognized until you sell or otherwise dispose on the new asset. The trade-in of an asset for a lease of a like-kind asset does not qualify as a like-kind exchange. Gain or loss must be recognized on the disposition of the old asset. Like-kind treatment favors the purchase alternative. Conversely, rapid changes in technology may favor the lease arrangement due to decreased service life of some technologies.

Ultimately, the lease vs. buy decision is influenced by a number of factors which cannot be analyzed with manual calculations. The University of Illinois *farmdoc* website contains excellent software for analyzing lease vs. purchase and other business decisions. See www.farmdoc.illinois.edu and look under FAST tools to find downloadable programs.

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Additional Topics

This fact sheet was written as part of Rural Tax Education a national effort including Cooperative Extension programs at participating land-grant universities to provide income tax education materials to farmers, ranchers, and other agricultural producers. For a list of universities involved, other fact sheets and additional information related to agricultural income tax please see RuralTax.org.