

The **versus** **Decision**

Some Considerations

It's time to replace an old truck or a large piece of grain handling equipment. Or, the office needs a new copier or computer equipment. How will you handle this decision? Will you take out a loan and buy the asset or will you instead just lease it? The financing of assets is an important business decision. However, although the lease or buy dilemma has been around for a while, oftentimes this decision is still not well understood or carefully considered. This month we will discuss some of the important factors to consider when faced with the buy or lease decision.

The basics

Leasing and buying an asset are treated differently in accounting and will impact your financial statements differently. Obviously, when you purchase an asset, you own it and you have complete control over it. You can keep it as long as you want to or get rid of it whenever you want; you can use it as much

as you want. When you purchase a capital asset, you record the asset on the balance sheet, and if you borrow money to pay for the asset, a loan to buy it is recognized on the balance sheet as a liability. The depreciation on the asset is recognized as an expense for the use of the asset, and the interest on the loan is an expense, both impacting the income statement.

When you lease equipment, you do not own the asset. You have the equipment to use for the length of the lease but you cannot sell or destroy the asset. At the end of the lease, you (the lessee) must return the equipment to the lessor, who then can sell it or lease it again. The equipment will generally still have value at the end of the lease; the estimated value of the equipment at the end of the lease is referred to as the residual value. Oftentimes, the residual value is determined as a percentage of the purchase price. Most leases allow you to purchase the equipment for the residual

value at the end of the lease. When you lease an asset, the cost of the lease is an expense and each lease payment impacts the income statement by reducing profit. With a lease, the asset is not recorded as an asset on the balance sheet.

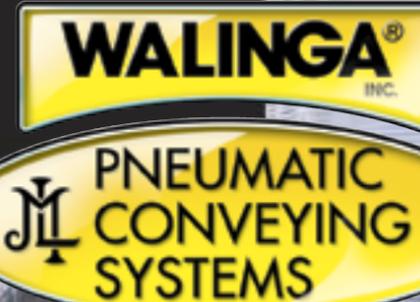
Some considerations

The buy or lease decision is one that must be made on an individual basis; no two situations are likely to be exactly the same. In each situation, the needs of the business and the purpose of the asset are two important considerations. Below are several other factors to consider. Buying and leasing both have their advantages and disadvantages.

One consideration is that of the useful life of the asset. Will the asset be useful for a very long time or will it be obsolete in just a couple years? Leasing may be more advantageous if the asset has a short expected useful life, while purchasing may be preferable if the productive life of the equipment is

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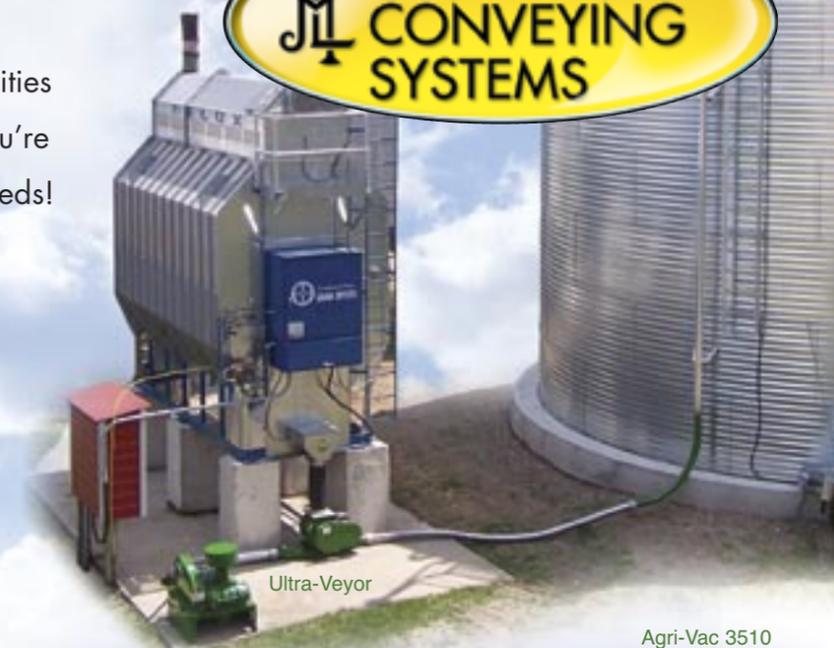
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longer. Also relative to the useful life of the asset is its residual value and the risk associated with that value. Leasing an asset places the risk of obsolescence and residual value risk on the lessor, and the lessee benefits from the use of the equipment — for example, computers are an asset where technology changes quickly, making them a bit outmoded relatively quickly — and thus equipment well suited for leasing. Another consideration is the service or repair requirements and how frequently service or repair will be required. Some service and repair may be included in the lease cost for some equipment.

Another factor is that of your business's cash and cash flow situations. Purchasing equipment will require you to either use your own cash now and/or finance the purchase over a time period during which you will make payments to a lender. Leasing does not generally require upfront down payments or deposits, which often makes a lease attractive for some businesses since this approach can help conserve capital. The periodic payment amounts for a loan and lease will also generally differ, making one approach possibly more attractive from a cash flow standpoint than the other. A related concept to consider here is "opportunity cost." This is the economic notion that any time you utilize a resource (time or money) there are always other possible uses for it. With the outlay of cash needed to purchase an asset (compared to the possible smaller amount needed to get into a lease), you need to consider what return you expect to receive on that money compared to the

return you would expect to receive if you invested the money in other investments.

Another factor that a business will likely consider is previous leasing experience. A good previous experience may not bias a business against entering into another leasing arrangement. However, if a lease ended poorly, then a business may not be interested in analyzing the leasing of equipment. One factor that can lead to an unhappy lease experience is unanticipated costs at the end of the lease due to lost; damaged or overused equipment; not providing the lessor with the lease termination notice on time; or not returning the equipment on time. Another factor is poorly negotiated lease terms and conditions.

An additional trade-off in the lease vs. buy consideration is the interest rate on borrowed funds. If interest rates are high, then the monthly payments associated with a lease may be attractive compared to loan repayment amounts.

Growth considerations go along with the opportunity concept mentioned above. The "stage" of your business should be a consideration in the lease vs. buy decision. If your company is relatively new and/or in a high growth mode, leasing might allow more flexibility and fewer constraints to growth — because it requires less upfront capital.

One type of asset that needs to be looked at a bit differently than a piece of equipment like a truck or a computer is a building or office space. The difference or trade-off here is that real estate like buildings and offices tend to appreciate in value. You will need to keep this in mind for these sorts

of assets and this will impact your lease/buy decision.

Which is the better choice?

The appropriate method for analyzing the question of whether to lease equipment or to purchase it using a loan is net present value analysis. Net present value (NPV) analysis uses discounted cash flows, accounts for the time value of money, tax implications, depreciation, and the timing of cash flows. The NPV for each alternative — buy or lease — will be the net present cost for the alternative; in other words, the future costs and returns brought back to the present. The alternative with the lowest net present cost or highest net present value is the most economical option.

Most leases will require the lessee to pay for insurance, taxes, fees and normal maintenance costs; these are the same costs that your feed and grain business would pay if you owned the equipment. Since these costs are the same in both situations, they can be ignored in the decision analysis.

An example

An example of a lease vs. purchase decision will help illustrate the analysis method. Assume your business has the option to borrow money to finance the purchase of a feed truck or alternatively to lease the feed truck. The feed truck can be purchased for \$70,000 with a 25% down payment (\$17,500). The remainder of the purchase cost is financed with a three-year loan at 10% interest. Depreciation is calculated using straight-line depreci-

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Table 1. Net Present Value Analysis of the Credit Purchase Option

	A	B	C	D	E	F	G	H
Year	Principal Payments	Interest Payments	Depreciation	Tax Shield (B+C)xTR*	Sale at Residual Market Value	Tax Adjusted Cash Flow (A+B+D)	Discount Factor	After-tax Discounted Cash Flow (FxG)
0	-17,500					-17,500	1.000	-17,500
1	-15,861	-5,250	-7,000	4,288		-16,824	0.939	-15,797
2	-17,447	-3,664	-7,000	3,732		-17,379	0.882	-15,322
3	-19,192	-1,919	-7,000	3,122		-17,989	0.828	-14,892
3					52,500	51,275**	0.828	42,448
Net Present Value of After-tax Discounted Cash Flow =								-21,063

* The marginal income tax rate (TR) is 35%.

The discount factor formula is $(1+r)^{-n}$ where r is the after-tax interest rate of 6.5%; the pretax interest rate is 10%.

**Sales price - [(TR) x (Sales price - Book value)]

tion with a seven-year depreciable life and a salvage value for depreciation of \$21,000. The business is assumed to be in the 35% marginal tax bracket. The business will receive tax deductions for interest and depreciation; these tax savings, or "tax shield," will reduce the cash outflows. The feed truck can alternatively be leased for three years with an initial payment at signing of \$12,425 followed by two more payments of \$12,425. The business receives an income tax reduction associated with the lease that will reduce the cash outflows. The residual market value of the truck at the end of the lease is assumed to be \$52,500. Assume that you sell the purchased truck for this market value at the end of year three; this provides a more equitable comparison between the purchase and lease alternatives.

Table 1 provides the data analysis for the credit purchase option. The table reflects the initial 25% down payment of \$17,500 at the time of purchase. It also reflects the principal and interest payments during the following three years as well as the depreciation expense. The interest and depreciation

expenses provide tax deductions and therefore reduce the cash outflows. The tax adjusted cash flows are discounted by an appropriate discount factor to provide a present value for each after-tax cash flow. Here the pretax interest rate is 10% which equates to a 6.5% after-tax interest rate using the 35% marginal tax rate.

At the end of the third year, we assume that you sell the feed truck for \$52,500, the residual market value indicated by the lease option. This helps maintain an appropriate comparison between the purchase and lease options. The sale of the

truck is subject to tax on any gain on the sale. The gain, \$3,500, is calculated as the difference between the sales price and the book value of the feed truck; and the gain is taxed at the 35% tax rate. After discounting to the present value, the feed truck sale provides cash inflow of \$42,448 in year three. All of the after-tax discounted cash flows are added together to arrive at the net present value of -\$21,063 (or a net present cost of \$21,063) for the credit purchase option.

Table 2 displays the analysis for the lease option. The table reflects the initial lease payment at the time

Table 2. Net Present Value Analysis of the Lease Option

	A	B	C	D	E
Year	Lease Payments	Tax Adjusted Tax Reduction	Tax Adjusted Cash Flow (A+B)	After-tax Discount Factor	After-tax Discounted Cash Flow (Cx D)
0	-12,425		-12,425	1.000	-12,425
1	-12,425	4,349	-8,076	0.939	-7,583
2	-12,425	4,349	-8,076	0.882	-7,121
3		4,349	4,349	0.828	3,600
Net Present Value of After-tax Discounted Cash Flow =					-23,529

The marginal income tax rate (TR) is 35%.

The discount factor formula is $(1+r)^{-n}$ where r is the after-tax interest rate of 6.5% (derived by multiplying the pretax interest rate of 10% by $(1-TR)$: $10(1-.35) = 6.5$).

of signing of \$12,425, followed by the remaining two payments at the end of years one and two. The tax deduction with each lease payment reduces taxable income in the year following the payment. The lease payment and the tax reduction are added to arrive at the after-tax cash flow. The after-tax cash flows are then discounted to determine the present value of after-tax cash flows. The after-tax discounted cash flows are added together to arrive at the net present value for the lease option of -\$23,529 (or a net present cost of \$23,529).

Based on the analysis in this example, the purchase option is more economical since the net present value is higher (i.e., the cost in this case is less). However, the results can easily change if any or many of the numbers change. For example, if the residual market value of the feed truck is lowered enough or the interest rate increases or the tax rate decreases, then the lease option can become more economical. The depreciation method used in the analysis, as well as the lease payment amounts, also impact the results.

Final thoughts

The lease vs. buy decision is a complicated decision. Many factors can impact the results of the analysis and ultimately the decision. Changing interest rates, tax rates, depreciation methods, payments, as well as many other data can change your final decision. Consider your business's cash flow and cash situations, the opportunity cost of your cash, the growth stage of your business, and the specific type of asset you are examin-

ing. For these reasons, the lease vs. buy decision is one that deserves careful consideration, consultation with your firm's accountant and one that must be made on an individual basis. ■



Dr. Foltz is Associate Dean, College of Agricultural and Life Sciences

and Professor, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow, ID. Dr. Willson is Assistant Professor, Department of Agricultural Economics, Purdue, University.

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