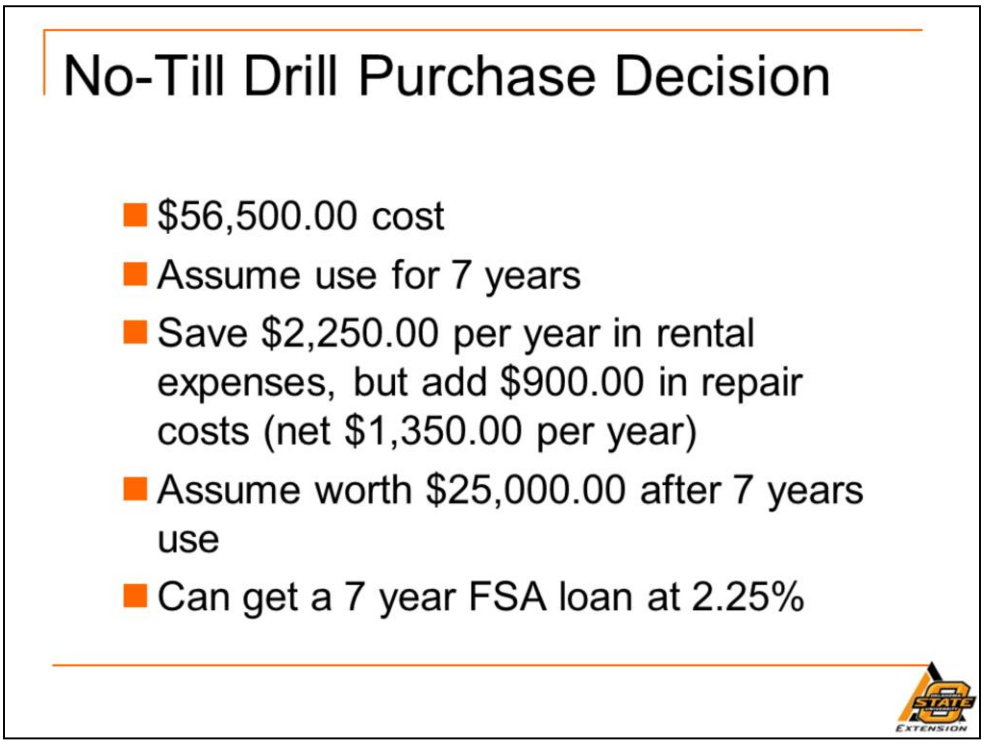
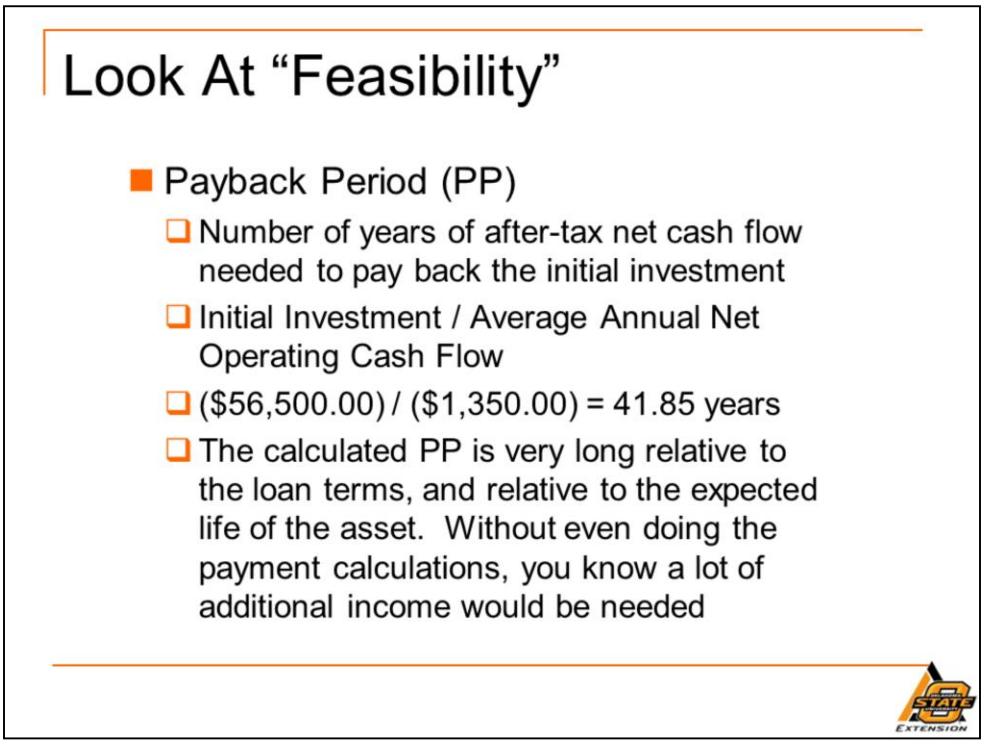
Capital Investment Evaluation of the Drill Purchase

Rodney Jones
Rodney.jones@okstate.edu
405 744 6173

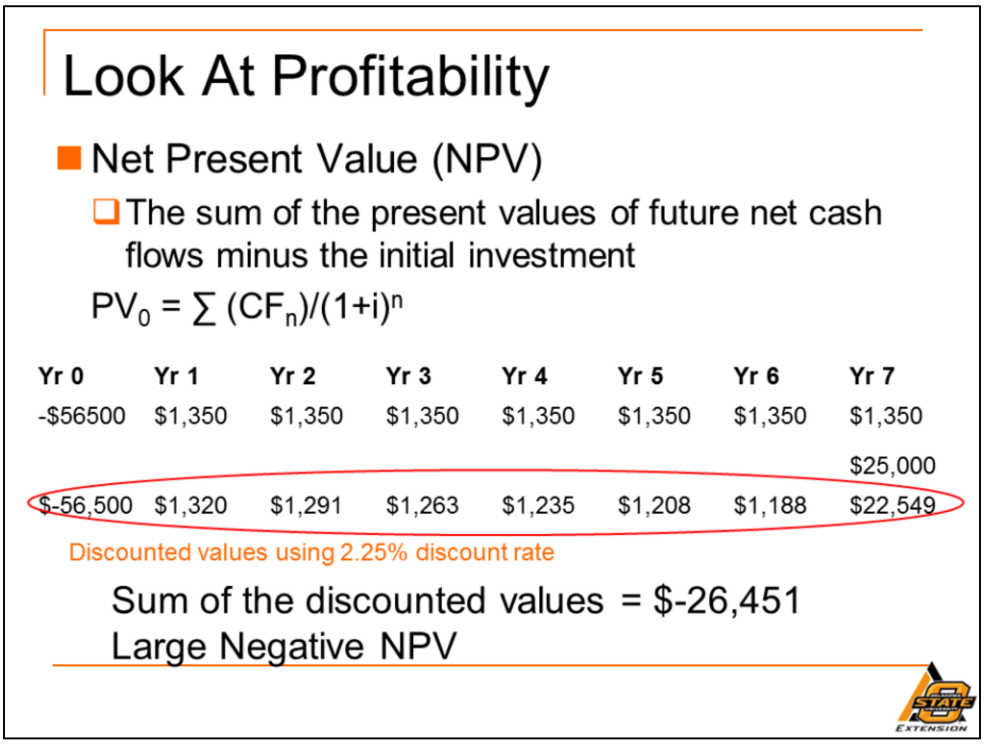
In this video I want to lead you through the capital investment evaluation process using an example from the Case Study example we are using to illustrate various concepts throughout this course. Recall that the case study farm family currently owns relatively little equipment, relying on custom operators and leasing to acquire many of their machinery services. They are considering the merits of purchasing a no-till grain drill so that they do not have to rent a drill to get their crops planted. Lets work through the evaluation so see if this makes any sense for them to consider.



No-till drills (at least the one they are initially considering purchasing) are pretty expensive. The one they are looking into would cost $56,500.00. They assume that they would be able to use the drill for 7 years, and could sell it for $25,000.00 at the end of that time period (we call that "salvage value"). Remember, once we have come up with one or more capital investments that we want to consider, the next step is to assemble some cost and return information, along with other needed information to evaluate the decision. They are currently spending about $2,250.00 per year to rent a no-till drill, so they would certainly save that amount if they owned one, however, on the other hand if they own the machine they would be responsible for all the repairs, which they estimate would be about $900.00 per year. The net result is that purchasing the drill rather than renting one would have a net positive operating cash flow impact of about $1,350.00 per year. They have also inquired, and they think they can get a 7 year FSA loan to purchase the drill at 2.25% annual interest. Now the question is, would the drill purchase (at least this particular alternative) be a good idea from both a "feasibility" and a "profitability" standpoint.



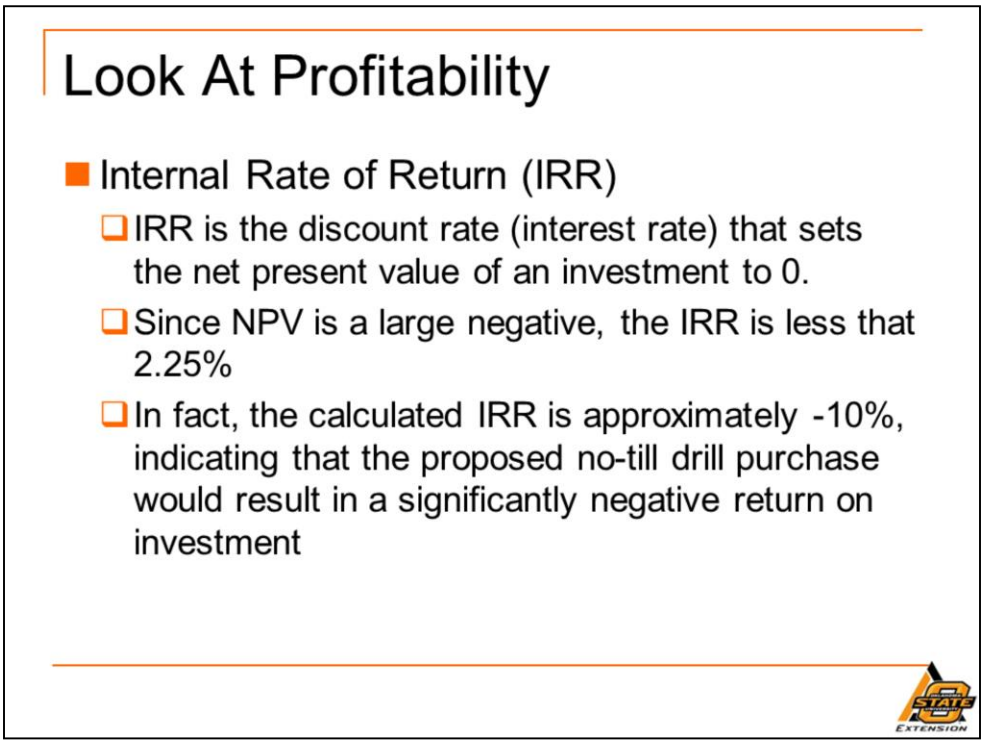
First, let's look at a "feasibility" indicator. Remember, the payback period calculation reveals the number of years of net cash flows needed to pay back the initial investment. For simplicity we will assume that there are no tax issues that need to be adjusted for (which basically means that the case farm family is, or expects to be, in a very low marginal tax bracket for the relevant evaluation period). Therefore, for simplicity we will just use the nominal cash flow projections to do the calculations. Remember, PP is simply the initial investment divided by the average annual net operating cash flow. In this instance the calculation is fairly straight forward, so dividing the $56500 by $1350 (the projected annual operating net cash flow implication of the drill purchase) results in a calculated payback period of 41.85 years. This is an extremely long time relative to the expected life of the asset, let alone relative to the length of time that you could get a loan for to purchase this particular capital asset. So, without even doing the payment calculations you know that a lot of "additional" income from other sources would be needed to make this investment. It isnt going to pay for itself based on the net cash flow stream that it generates.



Now let's look at some "profitability" considerations for the proposed drill purchase. Remember, one of the most versatile and commonly used capital budgeting profitability tools is the Net Present Value calculation. This is where all of the future net cash flows (net operating cash flows for most years, but including the salvage value as a cash inflow in the final year as well), are discounted back to "today's" dollar value. From that sum (the present value of all future net cash flows), we subtract off the initial investment (the purchase price of whatever capital asset we are considering purchasing). The result is the Net Present Value. In the drill purchase example we are using a 2.25% discount rate to calculate the present value of each future year's net cash flow, because that is the rate at which they think they can borrow the money to fund the purchase. As a side note, that is a lower rate than would typically be used most NPV analysis. Here you can see that the $1350 net cash flow from year 1 is discounted to a present value of $1320, for example. The longer the time into the future that the cash flow occurs, the more it is discounted, which makes perfect sense. For example, the $1350 net cash flow from year 6 is worth only $1188 in today's dollars. Finally, in year 7 we have both the $1350 net cash flow, and the $25000 salvage value to discount, so we are discounting a total of $26,350 expected to be received 7 years into the future, which results in a present value of $22,549. Adding all of the future years (1 through 7) discounted cash flows together, and then subtracting off the $56,500 initial purchase price of the drill results in a Net Present Value of $-26,451.

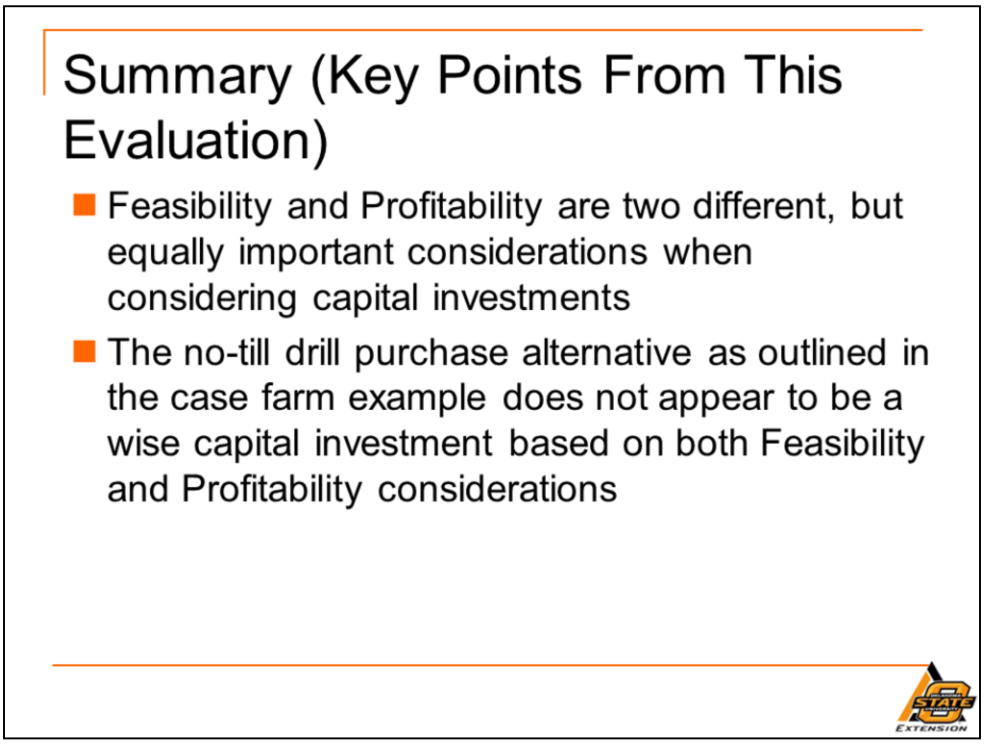
The first thing to notice is that even when using a very low discount rate, the resulting NPV is negative, indicating that the proposed capital investment is not profitable (will

not generate an acceptable rate of return). The second thing to notice is that the NPV is not only negative, but negative by a large amount relative to the size of the capital investment alternative being considered, so not only does the idea appear to not be profitable, it appears to not even be close



Just as a check, we calculated the other commonly used capital budgeting profitability indicator tool, the Internal Rate of Return. Remember, IRR and NPV are closely related, in fact IRR is the discount rate that if used in the NPV calculation would result in an NPV of 0. We know without even running the analysis that IRR has to be less than the 2.25% used in the original NPV calculation, because 2.25% resulted in a large negative NPV, so IRR has to be lower than that.

In fact, the calculated IRR turns out to approximately -10%, indicating that the proposed no-till drill purchase would result in a significantly negative return on investment.



Feasibility and Profitability are tow different, but both important economic concepts to consider when considering a big ticket item purchase. In this instance, the $56,500.00 drill purchase simply does not appear to be a wise decision. First, it does not pass the "feasibility" test. Remember from the financial analysis session that both the current ratios and the debt coverage ratios are projected to deteriorate if this investment is made. Here, we confirm the Feasibility concerns from the Payback Period calculation, suggesting that it would take about 42 years to pay for this capital investment with the current farm plan.

Second, it does not pass the "profitability" test either. Again, remember some initial profitability indicators from the financial analysis session such as return on assets and return on equity were projected to worsen if the drill purchase were made for the existing farm plan. Here, we find profitability concerns also show up from a capital budgeting standpoint. The projected NPV is hugely negative relative to the size of the proposed investment, and the calculated IRR suggests a negative return on investment of about 10% (again that's negative 10%).

Thank you for following along as I worked through the drill purchase example from a capital budgeting standpoint.