



Getting Started in Ag: Net Cash Flow versus Net Present Value

Cash-flow Projections

Cash-flow statements describe the cash inflows and outflows from various sources for a farm or ranch business. Assembling and using cash-flow statements and projections is

cash-flow projections. Cash-flow forecasts are often most accurate when they are based on historical income and expenses at an enterprise level, preferably not an educated guess. For instance, a producer considering changing a cropping system from alfalfa to corn would need to account for the effects of

basis to provide an accurate picture of profit or loss for each enterprise.

Net Present Value

Net present value (NPV) is defined as the present value of a potential change determined by summing up the present value

Other Risk Analytics at RightRisk.org:

- Forage Risk Analyzer
- Enterprise Risk Analyzer
- Risk Scenario Planner
- Multi-Temporal Risk Analyzer

	2022	2023	Jan	Feb	March	April	May	June	July	August	Sept	October	Nov	Dec	Total
Income:															
1 Ag Income	35000	28000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	4000	4000	29000
2 Custom Feeding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 grain sales	0	58450	13950	1500	0	0	18000	0	0	5000	5000	5000	5000	5000	58450
4 Hay Sales	25000	0	0	0	0	0	0	0	0	0	0	0	0	0	25000
5 silage sales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Livestock Sales	54000	77450	69950	0	0	0	4500	0	0	0	0	0	3000	0	77450
7 grain price	0	36564	19000												36564
8 crop insurance pmt	2450	0													2450
9 Other income	0	0													0
10 Consulting (Personal)	10500	10500	0	0											10500
11 Teaching (L&Ann)	48950	52150	3950	3950	3950	4000	3950	3950	3950	3950	4000	4000	4000	4000	52150
12 Total Income	176900	243114	104850	7450	5950	6000	28450	5950	5950	21450	11000	12564	16000	17500	243114
Expenses:															
13 Pasture lease	0	0													0
14 Farmhand lease	2000	5000													7000
15 Chemicals/spraying	9800	7500					7500								17300
16 Feed Purchased	11500	9700	1000	1350	1350	0	0	0	0	0	0	4000	1000	1000	9700
17 Fuel/Feed	5510	8500					6000								8500
18 Gas, Fuel, Oil	13695	8000					3500								8000
19 Insurance-Property/Li	2335	2235	1550	125	0	0	280								2235
20 Insurance-Personal	1170	1170	120	130	100	270	130	250							1170
21 Equipment maintenance	2500	15500	1000	1500	1000	1000	5000	200	200	200	2500	200	2500	200	2500
22 Seed	280	15000													15000
23 Supplies/parts	5420	5000	0	0	500	500	500	500	500	500	500	500	500	500	5000
24 Real Estate Taxes	3124	2000													2000
25 Property Taxes	850	1100													1100
26 Utilities	10185	9250	400	400	400	750	750	1200	1200	1200	1200	1200	200	350	9250
27 Vet/Medicine	900	1900					600								1900
28 Water Taxes	3903	3900													3900
29 Custom hire (baling)	1500	0													1500
30 breeding bulls	3750	6500													6500
31 Capital Improvements	0	0													0
32 subtotal farm	111880	162255	4070	4875	9750	2520	24250	2150	4400	1900	5500	8900	17450	11480	97255
33 machinery purchases	8500	8500													8500
34 Living/Other Expenses	24000	30000	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	30000
35 Car payment	4308	3966	358	358	315	315	315	315	315	315	315	315	315	315	3966
36 Debt Repayment:															
37 Machinery Payments	3850	5600					1750								5600
38 Real Estate Note	24500	24150				24150									24150
39 Interest Payments	9887	3000										1000	1000	1000	3000
40 Cattle Loan (private lands)	0	6000													6000
41 Total Expenses	186914	174871	6928	7733	36715	5335	28825	4965	7215	4715	8315	12715	25115	21295	169871

Table 1: Example Cash-flow Projection.

an important step in financial planning. Most agricultural lenders require both a cash-flow statement summarizing the past financial year as well as a projection for the coming year (see Table 1).

The information provided by cash flows is also important from a risk management standpoint. A comprehensive picture of your cash position and expectations for coming months can allow you to better plan for uncertainty and take advantage of potential opportunities.

The link between time, cash flow and decision-making is fundamental to financial success. The time value of money shows up in the form of interest, opportunity cost and other aspects of planning, but it is especially important to account for in planning cash flows. As a new or beginning producer, you may not realize the effect this can have on

the time value of money implied by this change when completing an enterprise budget for the coming year.

Before you can plan for next year, you must know how last year turned out. It is important to keep both production records and all receipts and disbursements. Save all income and expense receipts including, but not limited to, sales tickets, paid invoices, checking records and credit statements. These records should be sorted by enterprise or type of expense.

Analysis of income and expenses at the enterprise level can help the manager to determine where the profit centers are, as well as any areas that need improvement. Whole-farm expenses like insurance, mortgage payments or fuel expenses should be allocated to each enterprise on a per-unit

of cash inflows and outflows over a period of time. Net present value analysis allows the manager to compare a projected rate of return with an associated discount rate. In other words, money is not free; it has a cost



Figure 1: Partial Budget Framework.

associated with its use over time. Evaluating business decisions on a cash-only basis,

Proposed Change: Change from alfalfa to corn (per acre)					
Interest Rate: 0.00%					
CASH-basis analysis					
YEAR	Projected Total Added Returns	Projected Total Reduced Costs	Projected Total Added Costs	Projected Total Reduced Returns	Projected NET ANNUAL Return
1	900	420	275	750	295
2	900	420	275	750	295
3	900	420	275	750	295
4	-	-	-	-	0
5	-	-	-	-	0
6	-	-	-	-	0
7	-	-	-	-	0
8	-	-	-	-	0
9	-	-	-	-	0

Net Return:	885
MIN Rtn:	0
AVG. Rtn:	44
MAX Rtn:	295

Interest Rate: 9.50%					
PRESENT VALUE-basis analysis					
YEAR	Projected PV-Total Added Returns	Projected PV-Total Reduced Costs	Projected PV-Total Added Costs	Projected PV-Total Reduced Returns	Projected PV-NET ANNUAL Return
1	900	420	275	750	295
2	822	384	251	685	269
3	751	350	229	626	246
4	-	-	-	-	0
5	-	-	-	-	0
6	-	-	-	-	0
7	-	-	-	-	0
8	-	-	-	-	0
9	-	-	-	-	0

Net Return:	810
MIN Rtn:	0
AVG. Rtn:	41
MAX Rtn:	295

Table 2: Example of MTRA input for changes from alfalfa to corn.

without accounting for the time value of money, results in overly optimistic results and will most likely lead to poor decisions down the road.

Budgeting and Accounting for NPV

A partial budget breaks a potential decision into its possible effects by classifying those effects into one of four categories: added returns, reduced costs, reduced returns and added costs (see Figure 1). The net effect of any potential change or decision can quickly be summed into the potential positive benefits (added returns and reduced costs) minus

-Partial budget tool that includes both risk and time

-Estimates the impact of decisions up to 20 years into the future

Multi-Temporal Risk Analyzer

the potential negatives (reduced returns and added costs).

When building a partial budget, include only items that will change due to the potential adjustments; do not include items such as costs that will remain constant regardless of the situation. For example, if a producer were considering a change in an existing crop rotation, fixed costs like land payments

or property insurance would not be included because those costs remain the same regardless of the crop grown. However, expense items such as different seed, fertilizer or tillage operations would be included in the budget.

Make sure to carefully consider and include all revenue and expense categories that are expected to change as a result of the switch. This will help to ensure more meaningful, accurate and realistic results.

It is also important that all estimates for individual cost and revenue items, such as commodity prices and input expenses, be as realistic as possible; these estimates can dramatically affect the outcome of a partial budget analysis. The Multi-Temporal Risk Analyzer (MTRA) tool from RightRisk.org estimates both cash-only and NPV outcomes for proposed management changes up to 20 years, as well as the effects of risk over time.

For example, consider a producer switching from alfalfa to corn. This producer assumes a \$900/acre value for the corn crop (200 bushels at \$4.50/bushel) as added revenue. Reduced costs total \$420 per acre from reduced harvesting (\$350), fertilizer (\$50) and insecticide (\$20) expenses. Added per-acre costs for the corn include seed (\$125), tillage (\$50), harvesting (\$50) and herbicides/pesticides (\$50), totaling \$275 per acre. Reduced returns per acre include \$750 in alfalfa sales (5 tons/acre at \$150/ton).

After entering these values into the MTRA analytics tool, the results on a cash-only basis show a net return of \$895 per acre over the 3-year period (see Table 2). Remember, this

ANNUAL RETURN, Cash-basis and Present Value-basis

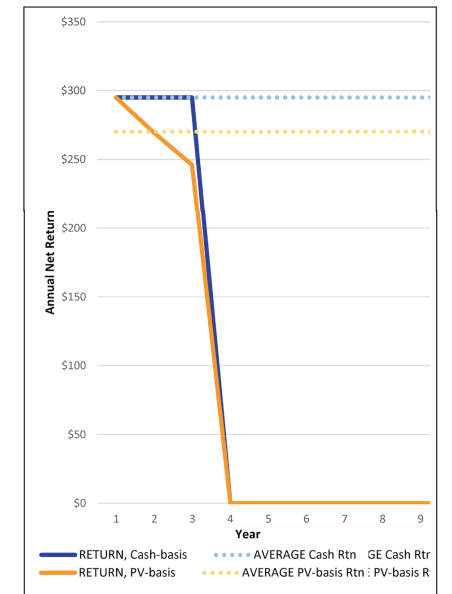


Figure 2: Example of MTRA output graph comparing cash-only to NPV returns for a change from alfalfa to corn.

result assumes that the time value of money or interest rate is zero.

Alternatively, if we assume an interest rate, sometimes called a discount rate, of 9.5 percent to account for a positive time value of money, the results are much different. Following the switch in crop rotation, the net return declines due to the positive interest rate. Accounting for the 9.5 percent discount rate, net returns fall to \$810 per acre over just the first 3 years; returns begin declining after the first year. In total, this amounts to \$85 per acre when compared to the cash-only budget (see Figure 2). This reduction in income would be significant if the switch in crops were made without understanding the possible consequences.

Clearly, it is important to consider the time value of money by calculating the net present value for any management changes under consideration. A cash-only analysis or cash-flow projection is inadequate in times of positive interest rates. As a new or beginning producer, make sure that you have a firm grasp of these concepts and that you properly account for them in any financial planning. Thoughtful planning that incorporates net present value can go a long way toward preparing for the unexpected.

FOR MORE INFORMATION

Visit RightRisk.org for a variety of risk analytics tools, self-paced courses and other materials to learn more about financial management and planning. These resources can be extremely beneficial to new and beginning producers looking for interactive financial management tools.