

# Borrowing Money Loan Details



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Welcome again to our Farm Management and Finance educational series. Borrowing money is something that is a necessary aspect of running a farm or ranch business for most of us, at least at some point in the business life. In this segment lets explore some of the basic details of borrowing money for business purposes.

## Outline

- Types of Loans
- Interest Rates and the Impact of “Rate”
- Terms
- Down Payments



So here is what we hope to cover, or at least provide an overview of. The most common “types” of loans used by agricultural operations, interest rates, and more importantly the impact of interest rate on the loan and loan payments. We have been quite blessed (perhaps spoiled is a more appropriate term) for a very long time period by historically low overall interest rates. Those of us who have to borrow money for our businesses of course hope that continues, however, history suggests that this may not always be the case. I also want to cover a few details regarding the impact of some other “terms” of loan contracts, and a related topic, how various levels of down payments might impact the loan overall.

# Types of Loans

- Short Term (year or less) specific purpose
  - Buy feeder or stocker cattle
  - Buy operating inputs to put out a crop
    - Expect to be “self liquidating”.
    - Can be one-time single purpose, or can be a revolving “line of credit”
    - Generally require renewal, or “re-negotiation” with lender on an annual basis



Agricultural producers often need short term loans, often called “operating” loans. For simplicity, we will consider any loan for a purpose of under one year to be a short term loan. Examples include loans to purchase stocker or feeder cattle, or loans for inputs to put out a specific crop. The main point is that the proceeds from the activity that the loan is taken out for are expected to fully “pay back” the loan. For example, if you take out a loan to purchase stocker cattle, then when you sell the cattle a few months later there is expected to be enough money to pay the loan back, or if you borrow money to buy seed and fertilizer to put out a crop, then when the crop is harvested there should be enough money to pay back the loan. Therefore, operating loans are what we call “self liquidating” loans. Traditional operating loans were often single purpose loans, meaning you take out a loan for a very specific purpose like buying a particular lot of stocker cattle, and pay it off when those stocker cattle are sold. If in the mean time you need money for another lot of stocker cattle before the other one is sold, or if you also need money to plant your soybean crop, you take out a separate loan and pay it off when that activity is completed. Those types of loans still exist in some instances, however, it is becoming more common for operating loans to be set up on a “line of credit” where all borrowing needs are projected for a time period (like a year), and the loan is a line of credit where funds are drawn out as needed (to buy stocker cattle or crop inputs), and then the line of credit is paid back as funds become available from the sale of cattle or crops, for example. The line of credit might not get paid down to zero, because at the end of the year there might still be a lot of stocker cattle that have not been sold, or there might be crops that are growing but have not been harvested and sold yet. The

borrower needs to visit with the lender to “renew” the operating line, usually on an annual basis, to make sure that the funds are being drawn and paid back appropriately. Warning flags are triggered for both the producer and the lender when the carry over operating line of credit balance increases from year to year and the farm is not growing.

# Types of Loans

## ■ Longer Term “Amortized” loans

- Used to purchase assets that last more than 1 year
  - Breeding Cows
  - Machinery
  - Land
  - Etc.
- Pay accrued interest, along with a portion of the principle with each payment (annually, monthly, etc.)



Longer term (multi-year) loans are typically what are known as “amortized” loans. This means that the principle is paid off a little bit at a time over the period of the loan. Typically we think of these types of loans being used to purchase assets that are expected to last more than a year, such as breeding livestock, equipment, land, or buildings. In many instances it is common to set the loan up to somewhat match up with the expected productive life of the asset that is being purchased, though we would of course like for the loan to be paid off before the asset completely wears out or becomes worthless. The exception to that at least here in the U.S. is land. Of course we don’t ever expect land to “wear out”. In fact, we usually expect it to increase in value over time. We don’t, however, see land loans in the U.S. that go on forever. With that said, in some other countries it is not unheard of to see real estate loans that are extremely long term in nature (like 100 years). In the U.S. they are usually more like 35, 30, or perhaps a little longer.

With amortized loans, the accrued interest is typically paid with each payment cycle (annually, monthly, etc.). In addition, a portion of the principle is paid with each payment.

# Amortized Loans

- Level Principle Payment

- Pay same amount of principle each payment, but interest payment declines over time, so total payment declines over time



Perhaps the least common, but certainly not uncommon, type of amortized loan is the “level principle payment” loan. Under this type of loan an equal amount of principle is made with each payment, along with the accrued interest. So for a 5 year, \$10,000.00 level principle payment loan, the borrower would repay \$2,000.00 of the principle with each payment, plus whatever interest had accrued over that payment period. Therefore, with this type of a payment plan while the principle portion of the payment stays the same over time, the interest portion of the periodic payment will decrease as the loan gets paid down because interest is accruing on a smaller remaining principle amount each subsequent year or period.

## Amortized Loans Level Principle

Year	Beg. Prin.	Prin. Pmt.	Int. Pmt.	Tot. Pmt.	End. Prin.
1	\$56,500.00	\$8,071.42	\$1,271.25	\$9,342.67	\$48,428.57
2	\$48,428.57	\$8,071.42	\$1,089.64	\$9,161.07	\$40,357.14
3	\$40,357.14	\$8,071.42	\$908.03	\$8,979.46	\$32,285.71
4	\$32,285.71	\$8,071.42	\$726.42	\$8,797.85	\$24,214.28
5	\$24,214.28	\$8,071.42	\$544.82	\$8,616.25	\$16,142.85
6	\$16,142.85	\$8,071.42	\$363.21	\$8,434.64	\$8,071.42
7	\$8,071.42	\$8,071.42	\$181.60	\$8,253.03	0



This example amortization table shows the no-till drill purchase example from the example case farm set up on a seven year level principle payment loan at 2.25% annual interest. Notice that the principle portion of the payment remains the same for each payment, but the interest portion declines. Therefore, the total payment declines somewhat each year. This type of a payment plan might be attractive in a situation where the borrower thinks they will be better able to make a little bit larger payments early in the life of the loan. For example they may think commodity prices will decline a bit later, resulting in less money available to make payments with a few years down the road.

# Amortized Loans

## ■ Level Total Payment

- Total payment remains the same over the life of the loan. The interest portion declines over time, and the principle portion increases over time.
- Most common type of amortized loan



The most common type of amortized multi-year loan is the level payment loan. These are loans where the total payment remains constant over the life of the loan. Since each payment includes all accrued interest up to that payment time, the early payments when the principle balance is still large will include more interest, and as the principle balance gets paid down the later payments will include less interest and more principle. Most people are very familiar with level payment amortized loans. Most car loans, home loans, etc. are this type of loan.



## Amortized Loans Level Payment

Year	Beg. Prin.	Prin. Pmt.	Int. Pmt.	Tot. Pmt.	End. Prin.
1	\$56,500.00	\$7,542.76	\$1,271.25	\$8,814.01	\$48,957.24
2	\$48,957.24	\$7,712.48	\$1,101.53	\$8,814.01	\$41,244.76
3	\$41,244.76	\$7,886.01	\$928.00	\$8,814.01	\$33,358.75
4	\$33,358.75	\$8,063.44	\$750.57	\$8,814.01	\$25,295.31
5	\$25,295.31	\$8,244.87	\$569.14	\$8,814.01	\$17,050.44
6	\$17,050.44	\$8,430.38	\$383.63	\$8,814.01	\$8,620.06
7	\$8,620.06	\$8,620.06	\$193.95	\$8,814.01	\$0.00



This amortization table shows the \$56,500.00 no-till drill loan set up on a 7 year level total payment plan at 2.25% interest. Notice that the total payment remains the same over the life of the loan, but unlike in the level principle payment plan example, here the principle portion of the total payment increases over time, while the interest portion declines. Early in the life of the loan, the total payment is higher using the level principle payment plan than it is for the level total payment plan, however, the opposite is true late in the life of the loan.

## Interest Rate

- Interest rates represent the “time value of money”
- Suppliers of money need to be paid to compensate for
  - Forgone consumption
  - Inflation
  - Risk
- Over time in general interest rates change to account for changing inflation expectations. At any one point in time different interest rates observed primarily reflect different risks



Interest, and interest rates, and important topic when talking about loans. So, why do we have interest rates anyway? And why do they change over time? Interest rates represent the value of money over time. You have probably heard the old saying, “a dollar today is worth more than a dollar at any time in the future”. True because of interest. Money has value over time for three reasons, there is the pure time value of money, which is a function of the fact that people just like to have stuff now rather than later. So if I am going to loan you money today, that means I don’t have that money myself to go buy stuff with, so I have to make that tradeoff, do something else with my money instead of buying something with it. Suppliers of money demand to be compensated for that forgone consumption. There is also an expectation that the things I need to buy will cost more money at some later date in the future than they do today, simply because the price of stuff goes up over time. We of course call that “inflation”. If I am going to loan you money, instead of buying things that I want with it, I will demand that I at least be made whole, or compensated enough at a later date that I can at least buy the same stuff that I could have bought and consumed if I had not loaned you my money.

Finally, if I am going to loan you money I probably want a little cushion in there to account for the fact that there is a chance you wont pay me back. There are other risks as well, but one of the big ones is default risk, the chance that the borrower will not pay back any, or all of the amount borrowed.

Changing interest rates over time, for example at the time of this recording interest rates while still very low from an historical perspective have increased somewhat from the levels of say one year ago. Interest rates in the the 1980's were much higher than they are today, and so on. These interest rate changes over time are primarily caused by changes in inflation, and inflation expectations over time. As the overall economy "heats up" inflation fears and expectations increase and typically interest rates increase as well. Conversely, during times of economic slowdown inflation fears decrease and interest rates tend to decrease as well. The Federal Reserve often tries to counter these "demand" influences on interest rates by trying to influence the overall "supply" of money to keep interest rates from moving too far in one direction or the other too fast.

Another observation is that many different interest rates can be observed at any one point in time. As a matter of fact, a particular lender might quote different interest rate offers to two different customers on the same day for similar types of loans. That is a direct result of different perceived risks. Loans that are perceived to be more risky for the lender will only be made if the reward (interest rate) is high enough to compensate for the higher degree of perceived risk. This is of course why most credit card debt is associated with a higher interest rate than many other loans. On average the percentage of total credit card debt that does not get paid back is simply higher than for some other common types of loans.

## The Impact of Interest Rate

- Using the Level Total Payment plan, the original “\$56,500.00 drill purchase” was financed at 2.25% annual interest
  - Annual payment was \$8,814.00 per year for 7 years
- If the interest rate were 5.5% instead of 2.25%
  - Annual payment increases to \$9,942.00 per year



As an example of the impact of interest rate on loan payments, we showed previously that using the level total payment amortized loan on the \$56,500.00 drill purchase at a 2.25% interest rate financed over 7 years (payments), the annual payment was \$8,814.00 per year. If the only financing that the borrower could obtain were at a 5.5% interest instead of 2.25%, with all other terms the same the annual payment increased to \$9,942.00 per year.

Interest expenses were one factor that made the farm financial crisis of the 1980's such a financially challenging time period.

## The Impact of Repayment Term

- Using the Level Total Payment plan, the original “\$56,500.00 drill purchase” was amortized over a 7 year payment plan
  - Annual payment was \$8,814.00 per year for 7 years
- If the repayment term was shortened to 5 years instead of 7
  - Annual payment increases to \$12,074.00 per year



Another factor that definitely impacts the “feasibility” of an amortized loan is the repayment term. Going back to the \$56,500.00, 2.25% drill purchase loan, the payment based on a 7 year loan is \$8,814.00 per year. Some lenders are reluctant to finance equipment over that long of a time period. If the borrower could only get a 5 year loan, the all else equal the payment would increase to \$12,074.00 per year. You can easily see that in tight margin years this makes the payment much more difficult to make. On the other hand, if the borrower can feasibly handle the larger payments, the shortened repayment term results in significantly less total interest being paid over the life of the loan. For all amortized loans, including longer-term real estate loans, finding that appropriate balance between a long enough repayment term to keep the total payment low enough to feasibly handle, even during lean times, and a short enough repayment term that the borrower keeps total interest expenses as low as possible and builds equity as quickly as they can is a challenge.

## Large Longer – Term Amortized Loans

### ■ Land Purchase, for example

- A \$250,000.00 land loan (20 years) at 5.5% annual interest the annual payment would be \$20,919.83
  - Over the life of the loan you would make a total of \$418,396.00 in payments (\$168,396.00 in interest)
- Increasing the down payment so that the loan is only \$200,000.00 at 5.5% annual interest reduced the annual payment to \$16,735.87
  - Over the life of the loan you would make a total of \$334,717.00 in payments (\$134,717.00 in interest)



To demonstrate a common example of a longer-term real estate loan (read from slide)

If the borrower could come up with another \$50,000.00 in down payment to reduce the initial loan amount, reduces the annual payment substantially, and reduces the amount of interest paid over the life of the loan by a considerable amount.

Interest is a very real expense, and over time it can really add up. Make sure that assets are earning a total return that will at least keep up with the interest expenses over time.

## Partially Amortized Loans

- Only part of the principle is paid off over the amortization period, then a “balloon” debt remains at the end
- Example, \$250,000.00, 20 year loan, 5.5% annual interest with a \$100,000.00 balloon
  - Payment would be \$18,051.90 (instead of \$20,919.83) (but at the end you still owe \$100,000.00)
- Why would anyone want to do this?



The final type of amortized loan I want to mention in this video is the partially amortized loan. This is a loan where only part of the principle is paid off over the amortization period, then then something has to be done with the remaining “balloon” debt at the end of the loan contract. An example would be (read from slide)

Under what circumstances would someone want to do this?

These types of loans are actually quite common. In many situations these types of loans are used when the borrower never really intends to keep the underlying property until the end of the loan contract. For example, a person may buy a house but they only really intend to live there for 10 years. They use a 20 year loan with a balloon for example, to keep the payments a bit lower while they are there, and at the same time build a little bit of equity, then sell the house and pay off the remaining debt (including the balloon) before the end of the loan contract. So, it is a balance between keeping the payment a bit lower, and building equity faster. Used only to finance assets that tend to go up in value, or at least tend not to go down in value, so the lender is assured there will be plenty of collateral value at the end of the loan contract.

## Summary

- How money is borrowed can significantly impact the financial health of the business
- Length of payment term, interest rates, etc. can have both cash flow and profitability implications.



So in summary.....

Thanks for your attention to this segment on the details of lending.