

INDUSWEALTH

3W's of valuation

When a kid is asked to choose between 2 toys, the kid is trying to figure out which gives her/him greater pleasure (value). As the kid grows up she has to continue to value various options, which profession to pursue, which career to choose, which city to live in, who and when to get married etc. All of these choices are fairly tough to evaluate and some more so than others.

Some of the relatively easier ones are choosing between various investment options. These are relatively easy as they have fewer subjective dimensions and the frameworks to evaluate these are available.

In simple terms, all financial products are **transformers (or convertors)**

- They transform current money into future money - for example - deposit products. You give (deposit) money today and they will give you money in the future.
- They transform future money into current money – for example - loan products. You get (borrow) money today and then you are paying money in the future.

Valuation of financial products is about valuing of money over time – for instance

- If one is buying a house with a 30 year loan – one is evaluating the benefits of the house that one will enjoy vs the EMI one will be paying for next 30 years. Here **future income is transforming into home ownership today.**
- If one is saving to buy a car by giving up current consumption, one is valuing the benefits of the car ownership later vs the gratification from spending the money. **Current income is transforming into a car ownership later.**

For most of the common products (deposit, loan, insurance, etc.,) this valuation is relatively straight forward as long as one has a good idea about the **3 W's**

- **What are you paying or getting** – clarity about the amounts one is going to pay or receive
- **When are you paying or getting** – clarity about when the payments or receipts will
- **What does it cost** – This is basically evaluating
 - What one is giving up if one is taking a loan and buying something today or
 - If one is postponing consuming today to buy something later on.

This is called **opportunity cost**

- If one is taking a loan to buy something today, the person can see what else he can do with the money. This may seem more complex, but that person can use the following guidelines to evaluate his options:
 - A person with limited risk appetite one should look at the bank FD rate (postpone the purchase and put the money in an FD)
 - A person with an appetite for equities one should look at the long term Index returns (postpone the purchase and put the money in Equities)
 - A person running a business should use the expected long term rate of return from the business (postpone the purchase and put the money in the business)

Once one has a clear idea of the 3W's all one has to do is list down all the cash flows on a timeline and then discount them to current date.



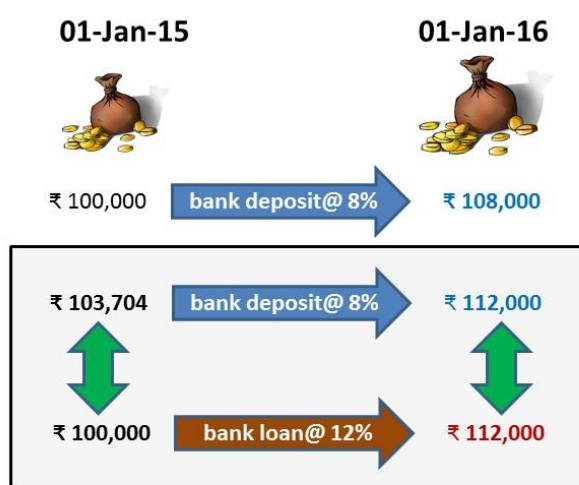
INDUSWEALTH

Let's use this 3W framework to understand what is the **real cost of a loan**

All of us intuitively understand that if we borrow to purchase something we are paying more than if we paid fully up front, but we may not look into the actual numbers. This article is an attempt to present a case to do so.

When we borrow, we have the convenience of enjoying something we cannot afford today. For this we are pay an interest on the money we borrow. This can also be looked at as premium we are paying to enjoy something today.

Looking at borrowing as **Premium paid today**



- Anand gets 8% interest from his bank
- Anand needs to have ₹ 103,704 in the bank today to have ₹ 112,000 in a year @8% interest
- Anand borrows ₹ 100,000 @12% from the bank today, he has to repay ₹ 112,000 in a year
- ₹100,000 loan today is equal to a deposit of ₹103,704 → Taking a loan is equivalent to **paying a premium of 3.7%** for a good worth ₹ 100,000

INDUSWEALTH

Let's say Anand has ₹ 100,000 (1 Lakh) with him today. If he puts it in a bank fixed deposit at 8% interest, he will have ₹ 108,000 at the end of the year. This is his opportunity cost. If he consumes this today he is forgoing the interest he will receive on that money.

Based on the example, when Anand borrows @12% to buy something worth ₹ 100,000 that is same as him paying ₹ 103,704 today to purchase the good. It is a 3.7% premium for the good (when his opportunity cost is 8%). The cost of the ₹ 1 lakh loan for Anand is ₹3,704.

We can look at all loans as the premium paid to enjoy something today.

Let's look at an example, a simplified version of the home loan before we look at real-life examples:

Real cost of a loan

Anand purchases a house worth ₹ 400,000

He borrows the money from a bank where he has to pay ₹ 50,000 each December for next 30 years (12% interest)

His opportunity cost is 8% (if he did not buy a house, he would be putting his money in a bank deposit paying 8%)

Amount	₹ 50,000	₹ 50,000	₹ 50,000	₹ 50,000	₹ 50,000	...	₹ 50,000	Current value of his payments
Date	Dec-2015	Dec-2016	Dec-2017	Dec-2018	Dec-2019	...	Dec-2044	
Discount rate	8%	8%	8%	8%	8%	...	8%	
Today's value	₹ 46,296	₹ 42,867	₹ 39,692	₹ 36,751	₹ 34,029	...	₹ 4,969	₹ 562,889

Anand is actually paying ₹ 562,889 for the house whose current value is ₹ 400,000

₹ 162,889 in **today's money** is being paid to the bank as interest. This is a 40% increase in the cost of the house

Anand should buy as long as he understands that the loan is same as paying ₹ 562,889 for the house today, i.e., a 40% premium on the current house price.

INDUSWEALTH

Let's look at the premiums one pays based on their opportunity cost in real life terms:

Premium paid for a long term loan

% Premium being paid based on opportunity cost EMI is for ₹ 1,00,000 (₹ 1 Lac) borrowed for 30 yrs						
		Opportunity cost				
Interest rate	EMI	6.0%	6.5%	7.0%	7.5%	8.0%
9.0%	805	34.2%	27.3%	20.9%	15.1%	9.7%
9.5%	841	40.2%	33.0%	26.4%	20.3%	14.6%
10.0%	878	46.4%	38.8%	31.9%	25.5%	19.6%
10.5%	915	52.6%	44.7%	37.5%	30.8%	24.7%
11.0%	952	58.8%	50.7%	43.1%	36.2%	29.8%
11.5%	990	65.2%	56.7%	48.8%	41.6%	35.0%
12.0%	1,029	71.6%	62.7%	54.6%	47.1%	40.2%
12.5%	1,067	78.0%	68.9%	60.4%	52.6%	45.4%
13.0%	1,106	84.5%	75.0%	66.3%	58.2%	50.8%
13.5%	1,145	91.0%	81.2%	72.2%	63.8%	56.1%
14.0%	1,185	97.6%	87.5%	78.1%	69.5%	61.5%

- Extending the previous example, if one borrows ₹ 1 lakh for 30 years @11% then their EMI would be ₹ 952.

Assuming their opportunity cost is 6.5% they are paying a premium of 50%. That means they are paying ₹ 1.5 lakhs for the purchase today.

- For most people the opportunity cost is bank FD which works out to 6.5% (post tax).
- If a person is borrowing ₹ 50 Lakhs for a home loan @ 11% for 30 years and their opportunity cost is 6.5% then it is equivalent to them paying ₹ 75 lakhs for the house today.

INDUSWEALTH

A typical home owner who is taking a long-term loan to purchase a home is paying a premium of 30% to 50%. When home owners who take a loan calculate the appreciation of price they don't take the premium paid into account so they get an exaggerated figure as the rate of return, thus making it look like a better investment than it actually is.



Premium paid for a short term loan

% Premium being paid based on opportunity cost EMI is for ₹ 1,00,000 (₹ 1 Lac) borrowed for 5 yrs						
		Opportunity cost				
Interest rate	EMI	6.0%	6.5%	7.0%	7.5%	8.0%
9.0%	2,076	7.4%	6.1%	4.8%	3.6%	2.4%
9.5%	2,100	8.6%	7.3%	6.1%	4.8%	3.6%
10.0%	2,125	9.9%	8.6%	7.3%	6.0%	4.8%
10.5%	2,149	11.2%	9.9%	8.5%	7.3%	6.0%
11.0%	2,174	12.5%	11.1%	9.8%	8.5%	7.2%
11.5%	2,199	13.8%	12.4%	11.1%	9.8%	8.5%
12.0%	2,224	15.1%	13.7%	12.3%	11.0%	9.7%
12.5%	2,250	16.4%	15.0%	13.6%	12.3%	11.0%
13.0%	2,275	17.7%	16.3%	14.9%	13.5%	12.2%
13.5%	2,301	19.0%	17.6%	16.2%	14.8%	13.5%
14.0%	2,327	20.4%	18.9%	17.5%	16.1%	14.8%

- If one borrows ₹ 1 lakh for 5 years @12.5% then their EMI would be ₹ 2,250. Assuming their opportunity cost is 6.5% they are paying a premium of 15%. That means they are paying ₹ 1.15 lakhs for the purchase today.
- For most people the opportunity cost is bank FD which works out to 6.5% (post tax).
- If a person is borrowing ₹ 10 Lakhs for a car loan @ 12.5% for 5 years and their opportunity cost is 6.5% then it is equivalent to them paying ₹ 11.5 lakhs for the car today.

Premium paid based on tenure of the loan

% Premium being paid based on opportunity cost EMI is for ₹ 1,00,000 (₹ 1 Lac) borrowed@ 12%						
Interest rate 12%		Opportunity cost				
Loan term - Years	EMI	6.0%	6.5%	7.0%	7.5%	8.0%
1	8,885	3.2%	3.0%	2.7%	2.4%	2.1%
2	4,707	6.2%	5.7%	5.1%	4.6%	4.1%
3	3,321	9.2%	8.4%	7.6%	6.8%	6.0%
4	2,633	12.1%	11.0%	10.0%	8.9%	7.9%
5	2,224	15.1%	13.7%	12.3%	11.0%	9.7%
7	1,765	20.8%	18.9%	17.0%	15.1%	13.3%
10	1,435	29.2%	26.4%	23.6%	20.9%	18.3%
15	1,200	42.2%	37.8%	33.5%	29.5%	25.6%
20	1,101	53.7%	47.7%	42.0%	36.7%	31.6%
25	1,053	63.5%	56.0%	49.0%	42.5%	36.5%
30	1,029	71.6%	62.7%	54.6%	47.1%	40.2%

- Extending the previous example, if one borrows ₹ 1 lakh for 3 years @12% then their EMI would be ₹ 3,321. Assuming their opportunity cost is 6.5% they are paying a premium of 8.4%. That means they are paying ₹ 1.084 lakhs for the purchase today.
- For most people the opportunity cost is bank FD which works out to 6.5% (post tax).
- @ 12% borrowing cost and 6.5% opportunity cost - A loan of 1 year tenure will have 3% premium, one of 5 year tenure will have 13.7% premium, 20 year will have 47.7% premium, and 30 year will have 62.7% premium.

INDUSWEALTH

Key takeaways from this analysis:

- Borrowing makes sense when the interest rate on the loan is closer to the opportunity cost. The greater the gap between interest rate and the opportunity cost greater is the premium paid.
- If one has an investment opportunity to get a higher rate of return with a similar risk as a bank, that person can borrow at a higher rate, as the premium paid is low.
- If the opportunity cost is greater than the lending rate, it always makes sense to borrow. In this case one needs to look into the risks being taken, higher returns usually have higher risks associated with them.
- For a given opportunity cost and borrowing cost – the shorter the loan duration the smaller the premium. One can consider postponing a purchase decision and save for a while so as to pay smaller premiums.

If we think of loans in terms of the premium paid or the total cost of ownership then it will help us make more prudent decisions.

Happy investing....

