What is it about interest Rates and Credit Financing?

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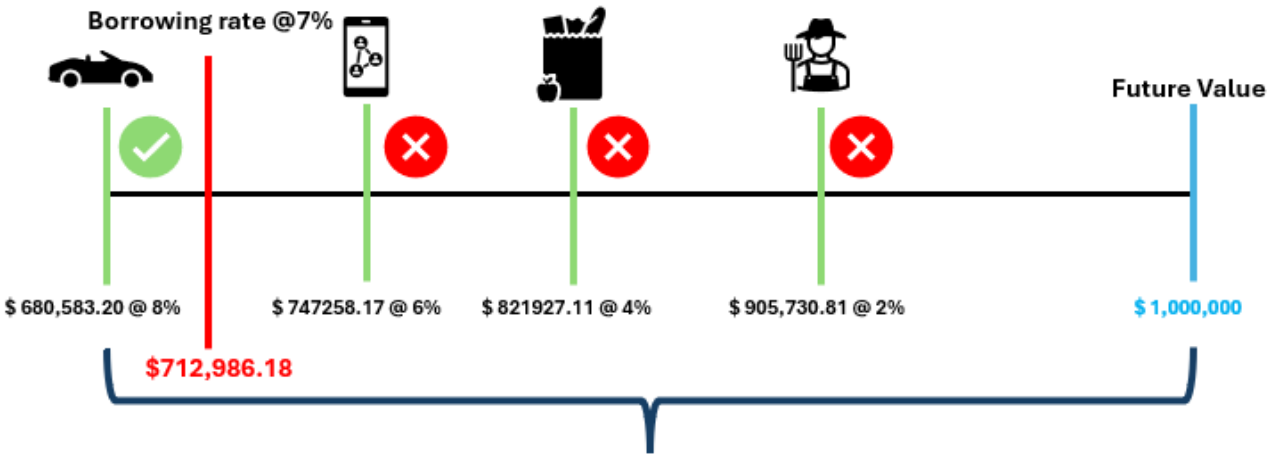


Why would a household save and not consume or start a business?

This is a topic that often comes up for discussion among my close family members. Most people can usually decide whether to buy a Prada/Versace versus a Ralph Lauren, but what varies is the motivation to save. Not everyone shares the same motivation to save.

For instance, if you live in a country where the fixed deposit interest rate is 1% or close to zero (as has been historically true for Japan, Germany, and Switzerland), then why would a household save? They might prefer to spend the money or, even better, invest it in a new business.

Thus, we can safely assume interest rate is an incentive to park money aside.

Let us do some basic number play and see what comes out

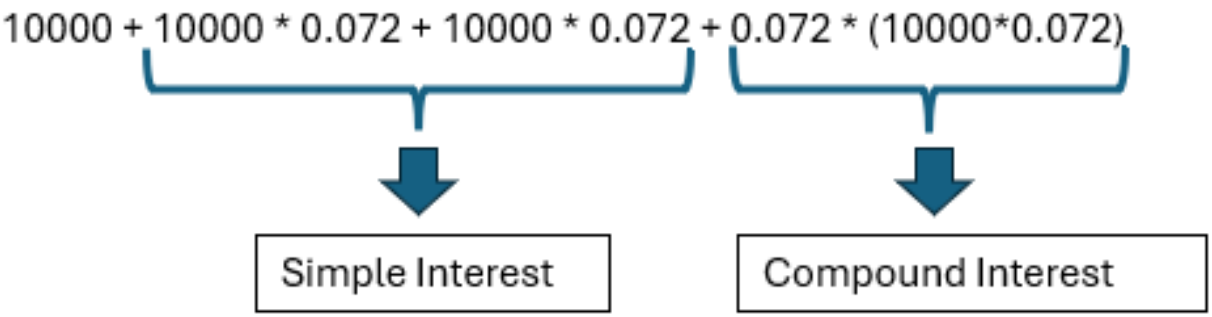
If I park 10000 USD for one year in a fixed deposit - which promises a 7.2% interest rate, after 1 year, I will get the following:

10000 + 10000 * 0.072, which is basically => 10000 (1 + 0.072)

Now, if we generalize this occurrence through a formula, considering the future value as F and the present value (the amount I parked in fixed deposit) as P and interest rate as i . It will look like below:

F = P * (1 + i)

Fair enough, but, what if the household is sensible with money, and they did not have any pressing need to withdraw the fixed deposit after the first year. Let us look at how the numbers will stack up at the end of 2nd year:



When we generalize the above numbers within a formula and simplify it for modularization, this is how it looks

1. F = P + P i + P i + i (P i)

2. Simplifying further, it stands => F = P (1 + 2i + i^2).

3. Trickling down further, the final formula looks like => F = P (1 + i)^2

Thus, we derive the magical formula of compounding present value of money into future:

F = P (1 + i)^2

Below is the table, which I used to convince my mother about parking some money aside and let it rest for the above formula to show its wonder:

Year	Present Value	Future Value Compound Interest	Future Value Simple Interest
1	10000.00	10720.00	10720.00
2	10000.00	11491.84	11440.00
3	10000.00	12319.25	12160.00
4	10000.00	13206.24	12880.00
5	10000.00	14157.09	13600.00
6	10000.00	15176.40	14320.00
7	10000.00	16269.10	15040.00
8	10000.00	17440.47	15760.00
9	10000.00	18696.19	16480.00
10	10000.00	20042.31	17200.00
11	10000.00	21485.36	17920.00
12	10000.00	23032.31	18640.00
13	10000.00	24690.63	19360.00
14	10000.00	26468.36	20080.00

Credit - Who Provides and Who Consumes?

Wait... What is in essence the difference between business/investor investing versus my mother putting some money aside in fixed deposits?

Let us break this down:

Any household parking money in fixed-income instruments, like bonds, fixed deposits, etc. is a provider of credit.

Businesses are consumers of credit. When businesses need to expand, they buy machinery, properties, plants, equipment and other factors of production. And unless, the business has a good amount of free cash flow lying around, they raise money either through debt (consumption of credit) or through equity (this is where investors come in - they provide the liquidity required to expand the business and become part of the business)

The cost of debt is generally lower than the cost of equity. So, businesses prefer to borrow rather than dilute ownership - Let us give it a thought - why would a business dilute a part of its ownership, if it can expand using its free cash flow or by borrowing at a lower cost?

Borrow and Expand - How do businesses decide?

Whenever you speak or listen to any businessman or listen to conference calls, you would frequently hear - they are planning capex (capital expenditure) to meet new demands. Sound

Good? Well, as an investor one should be skeptical - How is the business funding the capex, is what the investor should wonder.

If the capex is funded using the company's free cash flow - Well then great, investors should only be worried about how much the future rate of return is expected out of this investment. Now, this is a separate analysis in itself, and surely a story for another day.

But what if the business has borrowed? Then the question boils down to - Does the cost of borrowing satisfy the present value of investment?

Well, let us break it down.

To find whether the cost of borrowing satisfies the reasonable cost of capex, we will go back to our dear old friend => $F = P (1 + i)^t$

Now, P is the present value of the investment (How much is the business prepared to invest now for the future benefit (F) which it wants to achieve)

i is the rate of return the business is expecting to achieve out of this investment

t is the gestation period required for the investment.

F is the amount the business predicts it will recover after the gestation period of the investment.

So, the businessman knows, or I would say can reasonably predict the future revenue the investment can generate, and the amount of time it would take for the investment to start generating the predicted future revenue.

Let us say, the predicted future revenue is => $ 1,000,000.00

The predicted gestation period is => 5 Years

And rate of return the business wants to achieve from this investment is => 8%

Then, we inject the above numbers into our favorite equation, which stands at:

$1,000,000 = P (1 + 0.08)^5$

So, the amount of money the business will be prepared to invest today to achieve that conservative goal of an extra $1,000,000 at 8% ROI in 5 years is unknown.

Let us derive:

1. Let us insert $(1 + i)^t$ in the denominator on the either side of the equation => $F = P (1 + i)^t$:

2. We end up getting the golden formula of present value, which is the heart of valuing any assets. Yes, that's right - ANY assets:

$P = F / (1 + i)^t$

Plugging in our numbers we get the present value as $680,583.20

Ok, let us pause here … take a deep breath and step back a bit to look at a conversation with my uncle a few days ago:

My uncle was planning to open a niche home décor store as an extension of his existing general furniture business. He was aiming to target the affluent art connoisseur whose aesthetic preferences lean towards classical and contemporary art forms. Clearly, he was trying to ascend towards luxury and lifestyle space from the more generic consumer needs area.

He told me he was looking at an extra $ 1,000,000 in revenues and he is targeting a return on investment (whatever he makes today) of 8% and he is willing to wait for 5 years for the investment to take its shape and form.

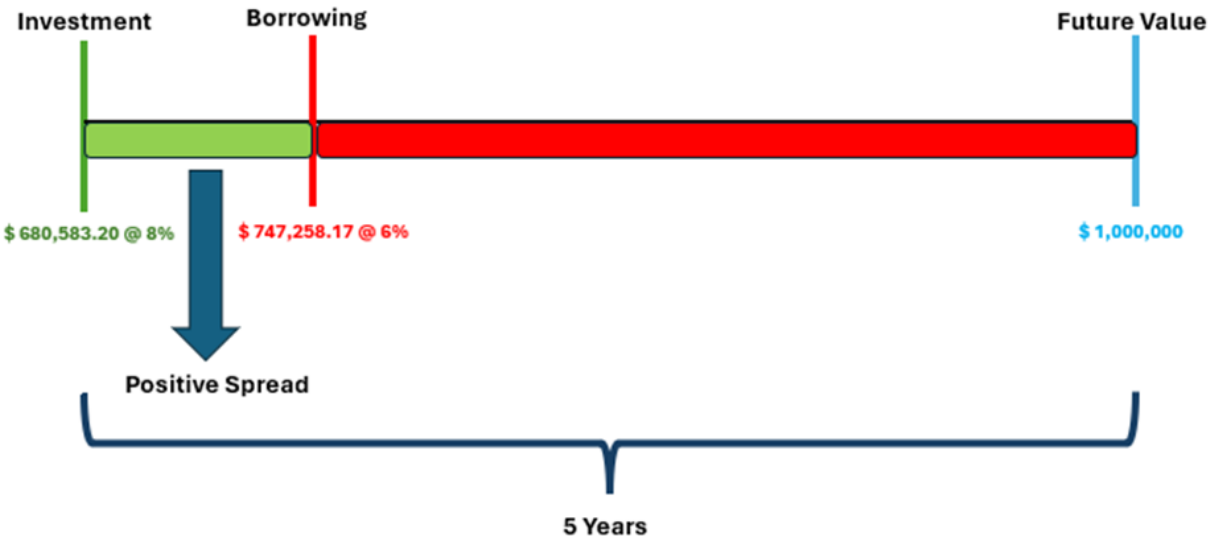
In essence, my uncle is saying : If he invests in the project $680,583.20 today, he intends to get back at least $1,000,000.00 after 5 years (as per the present value derived above)

But there is one problem - My uncle does not have $680,583.20 today. He has no other way to initiate the project but to borrow. Here is the bigger problem, my uncle is against borrowing.

So, I told him, what if you get someone who will lend you $747,258.17 today, and you can pay them the $1,000,000 after 5 years (the future value of his dream project) ? My uncle replied - “Then I would definitely borrow”.

So, you see, why did my uncle agree? Because he was able to borrow at 6% (present value of $1,000,000.00 after 5 years at 6%) for an 8% IRR project. Thus, he was getting a ‘Positive Spread’ on the investment.

Below picture illustrates the positive spread which my uncle derived:

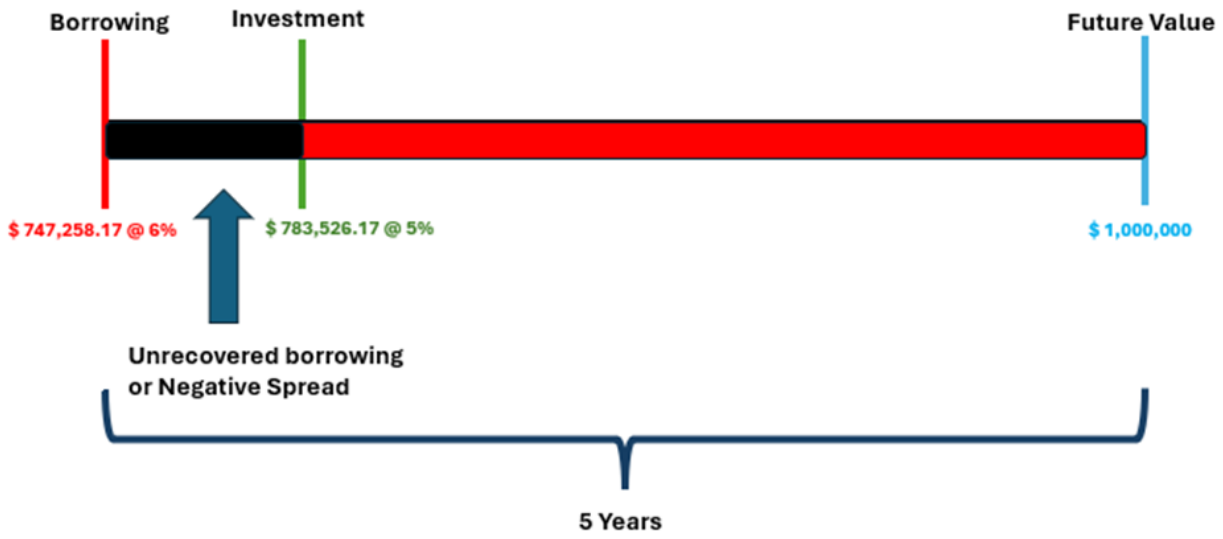


Positive spread illustration

Relation between the prevailing interest rate and business activity

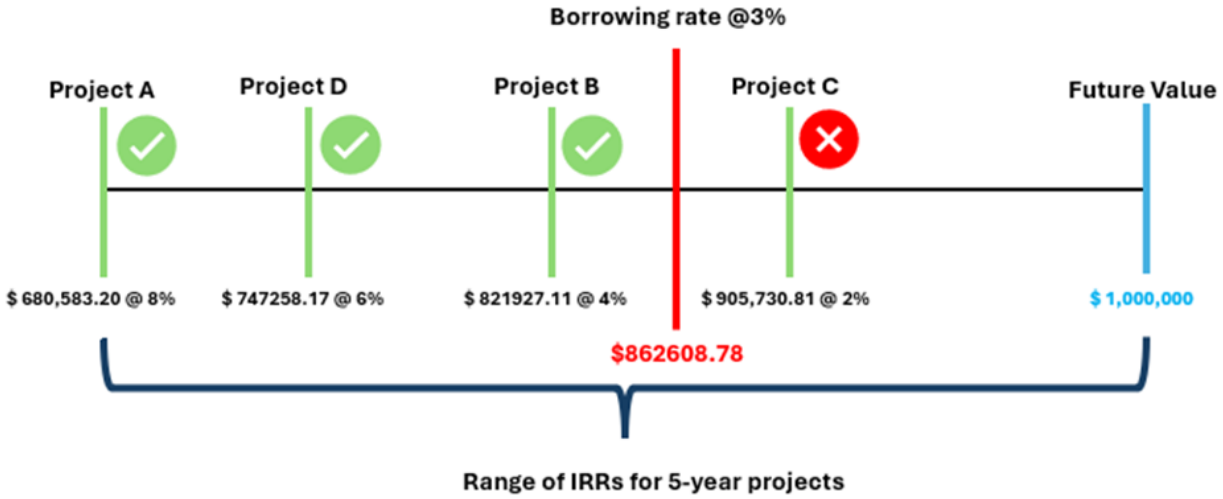
Now that you know my uncle's mindset - can you tell me whether he would have gone ahead with the investment if the IRR for the business was 5%, or let's say any rate less than 6%?

The answer lies very clearly in the below picture - His investment would lose money due to the higher cost of borrowing.

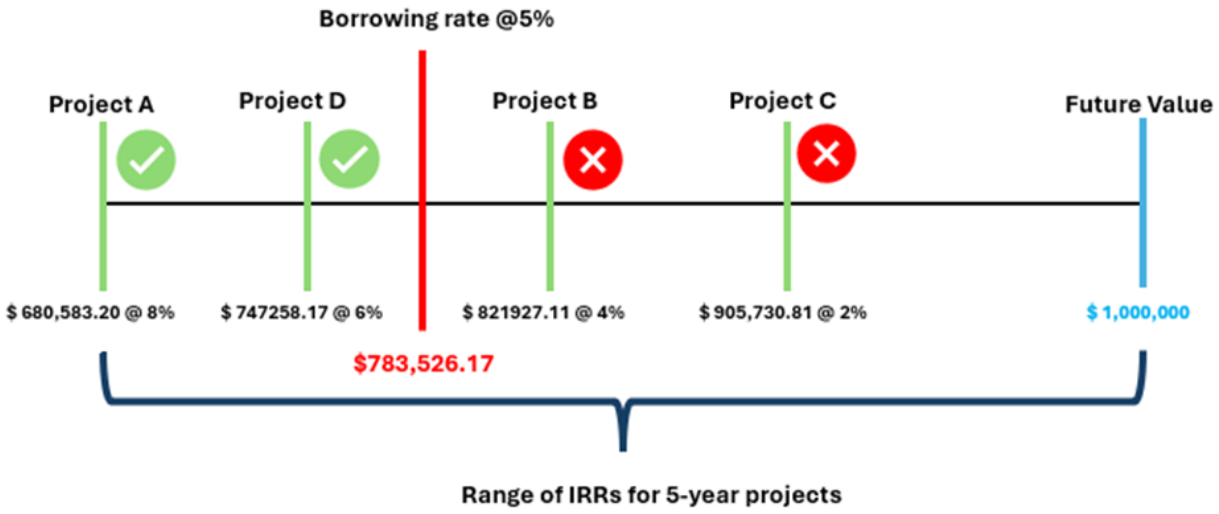


Negative spread illustration

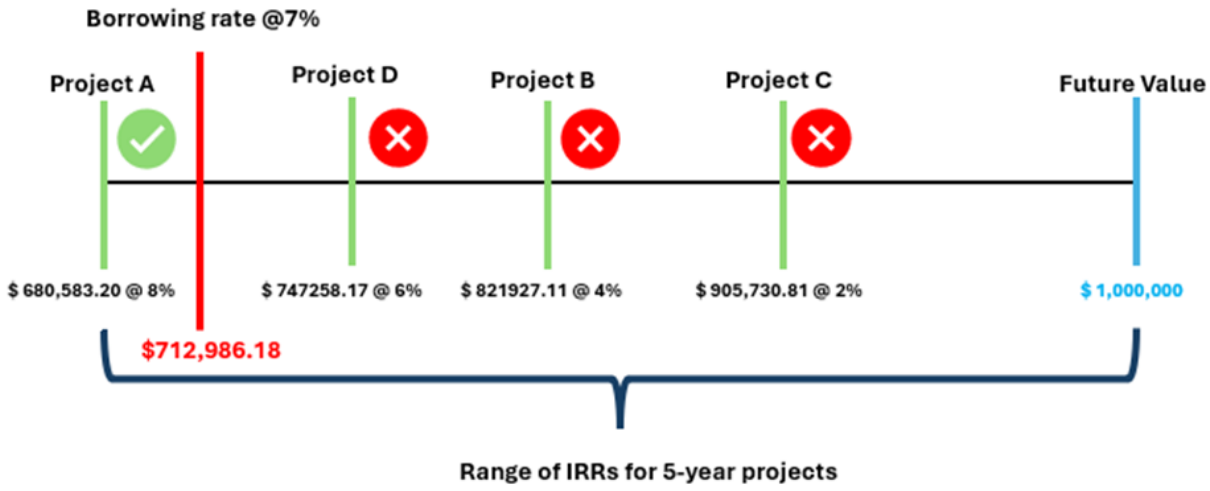
Thus, as the borrowing rate increases the range of projects which becomes non-executable becomes higher:



At a 3% borrowing rate, 3 projects get executed



At a 5% borrowing rate, only 2 projects get executed



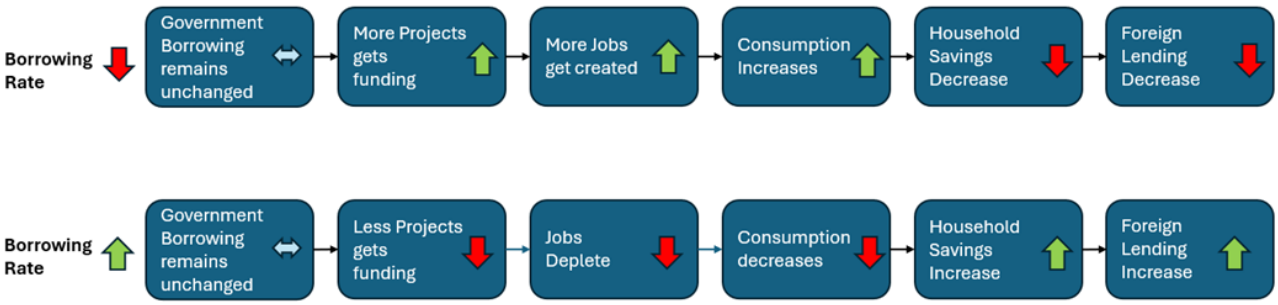
At a 7% borrowing rate, only 1 project gets executed

Thus, the amount of business activities increases when the cost of borrowing goes down. Hence, the amount of output that the economy generates goes up. This results in more jobs and overall positive market sentiment prevails.

More importantly, the subject that we started with - the incentive to save decreases. So, in a lower borrowing rate environment, my mother would rather consume than save in a fixed deposit - as the rate of interest she would get is much less. Thus, consumption improves, which leads to increased demand for goods and services.

I will leave you with the below picture which provides a segue into the topic of demand and supply of credit in the economy, which results natural evolution of the interest rate which the

economy demands.



Impact of changes in Borrowing Rate

Something to Consider:

In the four projects we've discussed, project A has the highest IRR of 8%. This project remains feasible across all the interest rate scenarios we've analyzed.

Now, this project is my uncle's dream venture, focusing on a niche market of home décor for affluent art connoisseurs who appreciate classical and contemporary art. It's a luxury segment business with high risk and high potential returns, naturally attracting the highest internal rate of return (IRR).

What if my uncle had decided to open a grocery store selling daily staples? This type of business would have been considered low risk and low return, with an IRR (internal rate of return) of 4%, which is lower than other potential projects. Project B would only receive funding if the borrowing rate is 3%.