

In this video, I'm going to tell a simple story illustrating how the risks and rewards of stocks and bonds differ. You'll meet three characters-- Electra, an entrepreneur who starts a company; Steve, who makes a stock-like investment in Electra's company; and Brandon, who makes a bond-like investment in Electra's company. Electra has just graduated from the Haas School of Business. And she wants to start her own business. She decides to open an ice cream shop in downtown Oakland. She does extensive market research, analyzing successful and unsuccessful ice cream shops in the Bay Area. She finds suitable locations and gets lease terms from her potential landlord. She prices the equipment and furniture she'll need, as well as the cost and time needed to renovate and decorate. She finds out what licenses and permits she'll need and how much it will cost her to incorporate her company, Ice Cream Electra Incorporated.

She draws up a business plan. Electra estimates that she'll need \$200,000 to start the business and run it for the first year. She's living with her parents and doesn't plan to pay herself a salary. She forecasts three equally likely scenarios-- winning big, scraping by, and going broke. In the winning big scenario, the ice cream shop makes a first-year profit of \$120,000. In the scraping by scenario, the profit is \$30,000. And in the going broke scenario, the ice cream shop goes bankrupt. Electra is lucky enough to have not one but two rich uncles-- Uncle Steve and Uncle Brandon. Both uncles are willing to invest \$100,000 in her business. But they want different terms. Uncle Steve wants to invest his \$100,000 in exchange for ownership of half of the company. Uncle Brandon wants to make a long-term loan of \$100,000 at an annual interest rate of 20%. So which do you think is a better investment?

Uncle Steve's? Uncle Brandon's? Why? Let's go through the three scenarios and see how each of the uncles makes out. In the winning big scenario, Ice Cream Electra makes a first-year profit, before interest and taxes, of \$120,000. Assuming that all of the \$120,000 of profits are distributed, who gets what? What payments does Uncle Steve receive? What's his investment now worth? What payments does Uncle Brandon receive, and what's his investment now worth? Uncle Brandon receives an interest payment of \$20,000. That leaves \$100,000 of profits, which Uncle Steve and Electra split evenly. We're going to ignore taxes in this example. So Uncle Steve gets \$50,000 and Electra gets \$50,000. Furthermore, after such a good first year, the company's prospects are greatly improved because some things that were unknown a year earlier are now better understood. The store has customers. And it's shown that it can sell ice cream for a profit. Since its prospects are improved, the company's worth much more than it was to begin with.

Let's say it's worth \$200,000 more. So in the winning big scenario, Steve not only receives a dividend payment of \$50,000, but the company is worth \$200,000 more than it was to begin with. And he owns half of it. So his investment has appreciated \$100,000. So what is Steve's total return on his initial investment of \$100,000? Well, he gets \$50,000 in dividends, plus \$100,000 in capital appreciation. That's \$150,000. And we can divide that through by his initial investment of \$100,000. Multiply it by 100 to put it in percentage terms. And he has a return of 150%-- pretty good, actually really good. Now Uncle Brandon's loan is worth a bit more now than it was to begin with because he's more likely to be repaid in full. So how much more is it worth? That's going to depend on

factors, including the time remaining on the loan and whether Electra is allowed to repay the loan early. Let's assume that the value of this loan is now \$103,000. So what's Uncle Brandon's return on his investment? He gets \$20,000 in interest, plus \$3,000 in capital appreciation. Again, we divide by the initial investment of \$100,000, multiplied by 100. And Uncle Brandon's return is 23%.

Now let's turn to the scraping by scenario. The first-year profit is only \$34,000. Assuming all of the \$34,000 are distributed, who gets what? Uncle Brandon is going to receive his interest payment of \$20,000. And Uncle Steve and Electra have only \$14,000 to split between them. So they each get \$7,000. Since it isn't clear whether the company's going to fail or succeed, we're going to assume that the value of the company doesn't change. What is Steve's total return on his initial investment of \$100,000? He gets \$7,000 in dividends, 0 capital appreciation. Divide that by his initial investment of \$100,000 equals 7%. In the scraping by scenario, Uncle Brandon receives his \$20,000 interest payment, and the value of his loan doesn't go up or down. So his return on investment is \$20,000 divided by his initial investment of \$100,000, and that's 20%.

Now let's take a look at the going broke scenario. Ice Cream Electra Incorporated goes bankrupt. After selling the equipment and furnishings and paying off creditors, all that's left is \$90,000. So Uncle Brandon receives no interest payment. And the \$90,000 of his initial investment of \$100,000 is returned to him. And the investment, of course, has no further value. Uncle Steve and Electra get nothing. And Steve's investment of \$100,000 in the company is lost. So what's Uncle Steve's return? He's got a capital loss of \$100,000 on initial investment of \$100,000. So he's lost 100%. What about Uncle Brandon's return? Well he invested \$100,000 and got back \$90,000. So he has a capital loss of \$10,000, divided by his initial investment of \$100,000. And that gives him a loss of 10%. If we average the three scenarios, who do you think will have made the better investment? And how does all this relate to stocks and bonds?

Uncle Brandon is making a long-term loan to the company. His investment is like a bond. It pays a pre-determined interest rate. If the company does very well, as in the winning big scenario, the bond price may appreciate because the company's credit rating is now higher. We assumed an appreciation of \$3,000. But Uncle Brandon receives his promised interest payment, no more than that. If the company scrapes by, its credit rating doesn't change. So the bond price stays the same. And Uncle Brandon receives his promised interest payment. If the company defaults on the loan, as in the going broke scenario, it goes into bankruptcy. And what Uncle Brandon receives will depend upon the value of the company's assets and how much money is owed to creditors with claims that get paid before his. In this example, Uncle Brandon loses \$10,000 in principle when the company goes bankrupt. If we assume that each of the three scenarios is equally likely, and we include capital appreciation and losses, what is Uncle Brandon's expected average return? He's got a return of 23% in the winning big scenario. He's got a return of 20% in the scraping by scenario. And he's got a return of minus 10% in the going broke scenario. That gives him an average return of 11%. What about Uncle Steve? Uncle Steve has bought ownership in the company. He's a shareholder. In the winning big scenario, he receives \$50,000 in dividends. Plus, his stock appreciates by \$100,000. In the scraping by scenario, he gets dividends of \$7,000, and his stock remains the same in value. And in the going broke scenario, he receives no dividends, and he loses his entire \$100,000 investment. So what's Uncle Steve's expected average return? Well, it's 150% plus 7% minus 100%, all divided by 3, or an average of 19%.

Uncle Steve's expected return of 19% is 8% higher than Uncle Brandon's expected return of 11%. However, Uncle Steve also bears much more risk. While there's a one third chance that Brandon will lose a tenth of his investment, there's a one third chance that Steve will lose all of his. Now, of course, I made up the numbers in this example. And bankruptcy rates of publicly traded companies are far lower than 33% a year. But the basic pattern illustrated in this example applies to investors in publicly traded stocks and corporate bonds. Stock investors earn, on average, higher returns than bond holders. But they also face more frequent and larger losses.