Build Knowledge/Investment Theory & Strategy

The Pitfalls of Margin

By Jim Otar, CMT, CFP
Nov. 3, 2008

When the markets turn around again, clients will be tempted to make up for lost time and returns. Margin will look pretty good. Sidestepping the moral arguments, borrowing to invest is a sucker's game.

I was not planning to write about borrowing money to invest. However, I just came across another academic study that concludes that leveraging retirement savings is good and "for all risk preferences, the results are better…whatever savings young people have, they should leverage them up."

As I read it further, it claims that historically, equities have returned about 9%, the cost of margin was 5%, and this equity premium of 4% served as the source of additional returns. And then it goes on using Monte Carlo simulations to arrive at the dubious claim.

I cringe every time I read about "historic averages" calculated by "academics" using "simulators" all on the same page. We are now in a deep financial crisis that is sweeping the world. One of the main culprits of this crisis is the use of complex leveraging and risk management techniques invented by Nobel Prize-winning academics that brought down 158-year-old Lehman Brothers and threatened AIG.

The outcome shows that the inventors of these complex strategies did not know what they were doing—yet again. Remember the LTCM hedge fund that nearly collapsed the world financial markets in 1998?

Next time you see a financial instrument that involves academics or Ph.D.s, steer clear of it. Especially those designed by Nobel Prize winners!

But I am not interested in writing about this current crisis, which, too, shall pass in due time. I am sure many books will be published about it by much more talented writers than I. My interest is to show advisors how to protect their clients from bad bets using leveraging.

Understanding leveraging

When an individual borrows money to invest, there are as many as six participants involved in the transaction:

- **The investor:** Your client

- **The lender:** The bank, brokerage, or another financial institute

- **The seller:** You, the advisor

- **The dealer:** The organization you work for

- **The manufacturer:** The fund company

- **The overhead:** The taxman

When investments do well, everyone on this list makes money one way or another. When things turn sour, there is only one participant who definitely loses money—the client. Other participants either still make money or do not lose anything.

The advisor, the dealer, the manufacturer—they all make money in the form of commissions and trailer fees, win or lose. The lender makes money on the interest, win or lose. And finally, the overhead—the taxman—makes money if the investor wins; otherwise, he does not.

The bottom line is this: Your client is always on the hook. Other players do not have a serious financial calamity if and when the value of investments goes down, as long as the transaction was determined suitable for the client. So, the first question is "Are you comfortable with this?"

The second question refers to investor's odds of winning. What does the history tell us? Does the investor really have a chance?

Borrowing to invest

The reason a person borrows money to invest is that he either initially believed that the odds were on his side, or someone convinced him of that. There are many mantras that Wall Street invented to justify this course of action over the years: "markets go up in the long term," "it is tax-efficient," "higher risk means higher potential return." Or the source of rationalization may be academic studies based on averages that run on simulators.

But there is more to this than simply thinking that the odds are on the investor's side. When someone borrows to invest, there is an implied declaration that the borrower is smarter than the market. Otherwise, why would the bank lend you the money instead of investing it directly in that mutual fund?

Or, if the outcome is going to be so good, why would the bank not ask you to share profits and losses as part of the loan agreement? When you borrow money to invest, you are tacitly declaring that you are smarter and/or luckier than those who lend you the money.

On a personal note, I had more success in my investments when I ignored my own wisdom and paid attention to the market's wisdom. So, let's look at actual market history since 1900 to determine whether borrowing to invest is a good idea. No simulators or averages of any kind are used.

Terms

First, let's clarify some of the terms and definitions used in this analysis:

- **Own-to-loan ratio.** You may start with nothing in your portfolio. You can just go to a financial institution, borrow money, and invest it. You may have to use an existing asset—like your home—as your collateral. If the own-to-loan ratio is 0, basically, you have no investments other than what you bought using the borrowed money.

  On the other hand, you may already have $100,000 in your investment account. You borrow another $100,000 to invest. Now, you have $200,000 in investments. Half that is your own money; the other half is other people's money. The own-to-loan ratio is 1. Similarly, if you had $300,000 of your own money invested, and borrowed $100,000 to invest, then your own-to-loan ratio is 3.

- **Loan repayments.** You can repay interest-only or you can pay a fixed amount. If you pay interest-only, the dollar amount of payments will fluctuate. If you pay a fixed amount, and if these payments are higher than the interest, then part of the money goes to paying down the loan principal. If your payments are less than the interest (which usually does not happen in real life, only in some cases when I run the actual historic data), the loan principal amount increases over time.

  In all my calculations, all loan repayments come out of the portfolio, unless there is nothing left in the portfolio. If there is nothing left in the portfolio to cover all repayments (principal and interest), the additional out-of-pocket loss is calculated and added to the loss created by leveraging.

  Loan payments are usually paid monthly. However, to keep things simple, let's assume that the money is borrowed at the beginning of the year and all payments are at the end of the year.

- **Interest rate.** The interest rate may be fixed—for example, 8% of the remaining loan balance. In most cases, it is a floating rate related to the prevailing interest rate—for example prime rate plus 3%. I used the historical six-month CD yield plus a premium. This is the gross interest paid. If you get a tax write-off, then your net interest cost will be less. I use the gross interest to keep things simple.

- **The term of the loan.** The term is the length of time in years over which the loan is repaid to the lender. Generally, if the markets do well, the repayments continue until the end of the term. At the end of the term, the remaining loan balance is paid off. More than likely, you will get stopped out before the end of the term of the loan, in which case, the entire loan amount, plus accrued interest, is paid back to the lender.

- **Stops.** There are many reasons why you may want to liquidate your portfolio partially or entirely, pay off the loan, and call it quits. I have considered three different "stop-loss" options.

  - **Depleted portfolio.** In this model, when the portfolio value is less than one year's loan repayment amount, I considered the portfolio depleted. When the portfolio depletes, you can continue paying your annual loan repayments as if nothing had happened. Or you can pay off the loan balance using the small amount left in the portfolio and your other savings. I choose the second route—i.e., pay off the loan when the portfolio depletes, because it creates

smaller losses.

- ○ **Margin stop.** You can pay off the loan once the portfolio asset value is below a certain percentage of the loan balance. For example, the margin stop may be 70%, which means when the portfolio value goes below 70% of the loan balance, you liquidate investments and pay off the loan.

- ○ **Trailing stop.** After investing, you might get lucky and the portfolio value might go up. History shows that an unlucky streak usually follows a lucky streak. If you invested using other people's money and get lucky with your investments, you may want to sell part of your holdings and pay off the loan before your luck turns sour. This is called a trailing stop. When the portfolio value goes down to a level below, say, 70% of the peak value, the trailing stop tells you to sell part of your investments and pay off the loan.

The first two types of stops attempt to contain the damage in a losing portfolio. The last one, the trailing stop, is to preserve profits.

How leveraging works

Let's work through examples to demonstrate the effects of leveraging.

Example 1

Bob is 30 years old. He has $100,000 in his portfolio. His portfolio is aggressive—100% S&P 500. For his portfolio growth, use the historical index return plus dividends less his portfolio costs, which is 0.5%.

He decides to borrow $100,000 to enhance the return of his investments. He pays only the interest, which is paid out of his portfolio. The interest rate is equal to the six-month short-term deposit interest plus 3%. At the end of 10 years, he is planning to pay back the loan principal from the portfolio.

It is the beginning of 1990. Figure out how much money Bob makes as a result of borrowing.

If Bob had invested only his own money, here is how his portfolio would have fared using historical market data:

Bob Invests His Own 100K, 1990-2000	
Year	Assets
1990	$100,000
1991	$96,681
1992	$124,638
1993	$133,193
1994	$145,560
1995	$146,828

1996	$199,555
1997	$243,005
1998	$321,030
1999	$409,276
2000	$491,811

Source: Jim Otar

Bob's assets grew from $100,000 at the beginning of 1990 to $491,811 at the beginning of 2000, an increase of $391,811.

Now let's look at what happens when Bob borrows $100,000 to invest. Here is how his portfolio would have grown:

Bob Invests His Own 100K Plus 100K Borrowed, 1990-2000

Year	Assets	Loan Balance	Interest %	Interest Amount	Payments
1990	$200,000	$100,000	1.17%	$11,170	$11,170
1991	$182,192	$100,000	8.91%	$8,910	$8,910
1992	$225,966	$100,000	6.76%	$6,760	$6,760
1993	$234,716	$100,000	6.28%	$6,280	$6,280
1994	$250,230	$100,000	7.96%	$7,960	$7,960
1995	$244,449	$100,000	8.98%	$8,980	$8,980
1996	$323,252	$100,000	8.47%	$8,470	$8,470
1997	$385,166	$100,000	8.73%	$8,730	$8,730
1998	$500,106	$100,000	8.44%	$8,440	$8,440
1999	$629,138	$100,000	8.46%	$8,460	$108,460
2000	$647,550	$0	0.00%	$0	$0

Source: Jim Otar

In this case, Bob's net assets grew from $100,000 at the beginning of 1990 to $647,550 at the beginning of 2000, an increase of $547,550. Because Bob used other people's money to invest, he had a net benefit of $155,739 after paying back the loan principal and interest expenses. Sounds great, doesn't it?

What if Bob borrowed in 1973 instead of 1990?

Example 2

Now we'll use the same basic information as in Example 1, but instead of starting in 1990, we'll start in 1973. If Bob invested only his own money, here is how his portfolio would have fared:

Bob Invests His Own 100K, 1973-1983

Year	Assets
1973	$100,000

1974	$85,834
1975	$64,558
1976	$87,275
1977	$106,980
1978	$99,607
1979	$105,536
1980	$123,835
1981	$161,002
1982	$153,499
1983	$182,957

Source: Jim Otar

Bob's assets grew from $100,000 at the beginning of 1973 to $182,957 at the beginning of the year 1983, an increase of $82,957.

Now, let's look at leveraging. Bob borrowed $100,000 to invest. Here is how his portfolio would have grown:

Bob Invests His Own 100K Plus 100K Borrowed, 1973-1983

Year	Assets	Loan Balance	Interest %	Interest Amount	Payments
1973	$200,000	$100,000	10.93%	$10,930	$10,930
1974	$160,739	$100,000	14.03%	$14,030	$14,030
1975	$106,865	$100,000	10.24%	$10,240	$10,240
1976	$134,230	$100,000	8.70%	$8,700	$8,700
1977	$155,836	$100,000	8.28%	$8,280	$8,280
1978	$136,816	$100,000	10.78%	$10,780	$10,780
1979	$134,180	$100,000	13.88%	$13,880	$13,880
1980	$143,565	$100,000	14.37%	$14,370	$14,370
1981	$172,284	$100,000	20.63%	$20,630	$20,630
1982	$143,625	$100,000	17.60%	$17,600	$117,600
1983	$53,588	$0	0.00%	$0	$0

Source: Jim Otar

In this case, Bob's net assets shrunk from $100,000 at the beginning of 1973 to $53,588 at the beginning of 1983, a decrease of $46,312.

The total cost attributable to leveraging is $129,369, calculated as the lost profit of $82,957 if he had not borrowed to invest, plus the loss of $46,312 due to leveraging.

Of course, picking just two years at random does not reveal the complete picture. But it does indicate that, without a lot of luck, clients who leverage their retirement savings stand to take a hit on the goals they're working toward. As the credit crisis is slowly—and painfully —revealing, debt may enhance performance on the upside, but it can be devastating on the way down.

Jim Otar is a financial planner, a professional engineer, a market technician, a financial writer, and the founder of retirementoptimizer.com. His past articles on retirement planning won the CFP Board Article Awards in 2001 and 2002. He lives and works in Thornhill, Canada, and can be reached at (905) 889-7170, or by e-mail at jimotar@rogers.com.