PITFALLS OF LEVERAGING

ADVISORS NEED TO LEARN FROM THE CONSEQUENCES OF MARKET HISTORY.

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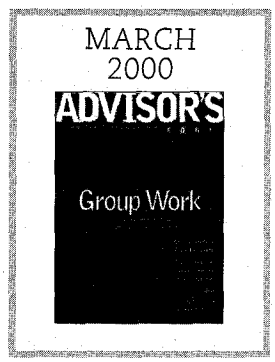
This is the first of two parts

The notion of borrowing money to invest likely isn't first and foremost on most people's minds in a down market. But I've come across yet another study touting the benefits of leveraging retirement savings.

The release of the June 2008 working paper, Life-Cycle Investing and Leverage: Buying Stock on Margin Can Reduce Retirement Risk, written by Ian Ayres and Barry Nalebuff, both from the Yale School of Management, claims that historically equities have returned about 9%, while the cost of margin was 5%; the difference of 4% is the equity premium and serves as the source of additional returns.

Ayres and Nalebuff then use Monte Carlo simulations to support their dubious claim that young people should borrow against their retirement savings to obtain better returns.

Recent business collapses prove academic theory doesn't always translate well into reality, but my main concern is to show how advisors can protect clients from bad bets using leveraging.



"Leverage: It Cuts Both Ways," page 53

When we borrow money to invest, there are as many as six participants in this transaction:

- The investor, or client;
- The lender, be it a bank, brokerage or another financial institution;
- The seller, the advisor or broker;
- The dealer, the organization the advisor works for;
- The manufacturer, the fund company; and
- The overhead in the form of taxes.

When borrowed money supports investments that do well, everyone on this list wins. When things turn sour, only two participants lose. The first is the tax department (no gain, no tax). The second is the investor, your client. All other participants either still make money, or lose nothing. So the first question you should be asking is: Are you comfortable with this? The second is whether or not this strategy, based on market history, will really benefit your client.

When a client borrows to invest there's an implied declaration that either the client, or the advisor, is confident about beating the market. In order to appreciate **continued on page 24**

continued from page 23 this behavioural anomaly, I decided to examine actual market history starting from 1900, but without the aid of simulators or averages of any kind. This analysis indicates leveraging for better returns is a risky strategy and is unsuitable for most (if not all) investors. For transparency's sake, let's define a few terms:

Own-to-loan ratio—Assume the client had $100,000 in an investment account. Then, he or she borrowed another $100,000 and invested this too. Now, the client has $200,000 in investments. Half of that is his own money, the other half is other people's money. In that scenario, the own-to-loan ratio is 1. Similarly, if the client had $300,000 of his own money invested, and borrowed another $100,000 to invest, then the own-to-loan ratio would be 3.

Loan Repayments—The client can repay interest only, or can pay a fixed amount. If he pays interest only, the dollar amount of payments will fluctuate. If he pays 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 payments are less than the interest, then the principal amount increases over time.

In all the calculations, loan repayments come out of the portfolio, unless there's nothing left there. In those cases the additional out-of-pocket loss is calculated and added to the loss created by leveraging. Loan payments are usually paid monthly, but to keep things simple, let's assume the money is borrowed at the beginning of the year and all payments are made at the end of the year.

Interest Rate—This may be a fixed rate, say 8%, calculated on the loan balance. In most cases, it's 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 net interest cost will be less.

Term of the Loan—This is the length of time in years by which the loan is repaid. Generally, if markets do well the repayments continue until the end of the term, at which time the loan balance is paid off. More than likely, a client will get stopped-out before the end of the loan term, in which case the entire loan amount, plus accrued interest, is paid back to the lender.

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

1. Depleted Portfolio: In the model, when the portfolio value is less than one year's loan repayment amount, the portfolio is considered depleted. When the portfolio depletes, the client can either continue repaying the loan as if nothing has happened, or pay off the loan balance from the small amount left in the portfolio, or from other savings. Paying off the loan when the portfolio depletes creates smaller losses.

2. Margin Stop: A client can also 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 continued on page 26

Capital Addition

Impact of leveraging on the portfolio by borrowing $100,000.

Year	Assets	Loan Balance	Interest %	Interest Amount	Payments
1990	$200,000	$100,000	11.17%	$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

Straight Up

Impact on Bob's portfolio if he invested without leveraging for greater returns.

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

continued from page 24 below 70% of the loan balance, you liquidate investments and pay off the loan.

3. Trailing Stop: History shows an unlucky streak usually follows a lucky streak. If a client invests using other people's money and gets lucky, he may want to sell part of the holdings and pay off the loan before his 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, then 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.

Case Study

Bob is 30 years old. He has $100,000 in an aggressive, 100% S&P500 portfolio. To calculate his portfolio growth, use the historical index return plus dividends less his portfolio costs, which are 0.5%.

He decides to borrow $100,000 to enhance his returns. He pays only the interest, which comes 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's planning to pay back the loan principal from the portfolio.

If Bob started investing in 1990, we can see advantages to leveraging. In a non-leveraged portfolio, Bob's assets grew from $100,000 in the beginning of 1990 to $491,811 in the beginning of the year 2000, an increase of $391,811 (see "Straight Up," page 24).

But, by adding $100,000 over the same period, his net assets grew from $100,000 in the beginning of 1990 to $647,550 in the beginning of 2000, an increase of $547,550. Using other people's money to invest, Bob had a net profit of $155,739 after paying back the loan principal and interest expenses (see "Capital Addition," page 24).

But what if Bob decided to use the same strategy in a different year?

In an alternate example, Bob's assets grew from $100,000 in the beginning of 1973 to $182,957 in the beginning of the year 1983, an increase of $82,957 (see "Earlier Start," this page). But, if Bob borrowed $100,000 to invest that year, he would have seen his net assets shrink from $100,000 in the beginning of 1973 to $53,588 in the beginning of the year 1983, a decrease of $46,312 (see "Losing Proposition," this page).

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.

While picking only two random investment years doesn't reveal a complete picture of the impact of leveraging, it does provide insight into the importance of weighing up multiple variables when selecting this investment strategy. It also provides context for part two, which will look at the cost-benefit calculations based on market history for all years since 1900 using leveraging calculation. Next month we'll see the bigger picture of how leveraging can actually be a risky strategy for the average investor. AE

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Earlier Start

Impact of Bob investing only his own money in 1973.

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

Losing Proposition

Impact of Bob borrowing $100,000 to invest 17 years earlier.

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