

DEBT TRAP

LEVERAGING LEANS ON FICKLE FOUNDATIONS: LUCK, INTEREST RATES AND ALPHA.

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This is the second of two parts

Last month, we looked at some of the perils of leveraging, using actual market data starting in years 1990 and 1973.

Of course, plucking two years out of history can't reveal the entire picture, so let's look at a cost versus benefit calculation for all years since 1900, using a leveraging calculator based on market results (see "Leveraging Versus No Leveraging," page 29).

The figures show, starting in 1900, the cumulative profit/loss picture did not turn positive until 1938. I don't know of anyone rich enough, or dumb enough, to keep borrowing for 37 years and pay all that interest, only to break even at the end (or worse).

The statistics speak for themselves:

- › Number of winning years: 59
 - › Number of losing years: 39
 - › Average win amount: \$103,145
 - › Average loss amount: \$47,790
 - › Median profit due to leveraging: \$25,318
 - › Lucky (top 10%) profit: \$189,572
 - › Median profit: \$25,318
 - › Unlucky (bottom 10%) loss: \$66,111
 - › Worst-case loss: \$129,369
- Traders use a concept called the profit factor,

which measures the ratio of dollars won to dollars lost over the entire period. It's calculated as:

$$\text{Profit Factor} = \text{PF} = \frac{\text{WY} \times \text{WA}}{\text{LY} \times \text{LA}}$$

WY = number of winning years
WA = average win amount
LY = number of losing years
LA = average loss amount

In this case:

$$\text{Profit Factor} = \text{PF} = \frac{59 \times \$103,145}{39 \times \$47,790} = 3.27$$

If you're risking money, you want a profit factor larger than three—each dollar of potential loss must come with a \$3 potential gain. Here's the catch: We're talking about a 100-year span. Considering the average investing time horizon for an individual is between 20 and 30 years, this high profit factor doesn't necessarily mean an individual with a limited time horizon will see any gains.

Own/Loan Ratio—If an entire investment portfolio consists of borrowed money, the own/loan ratio is zero. If you have \$100,000 in your portfolio and you borrow \$100,000 to invest, your ratio is 1. Calculations of the profit factor for various own/loan ratios and various loan repayment methods indicate:

- If the own/loan ratio is one or more, the client is better off paying **continued on page 29**

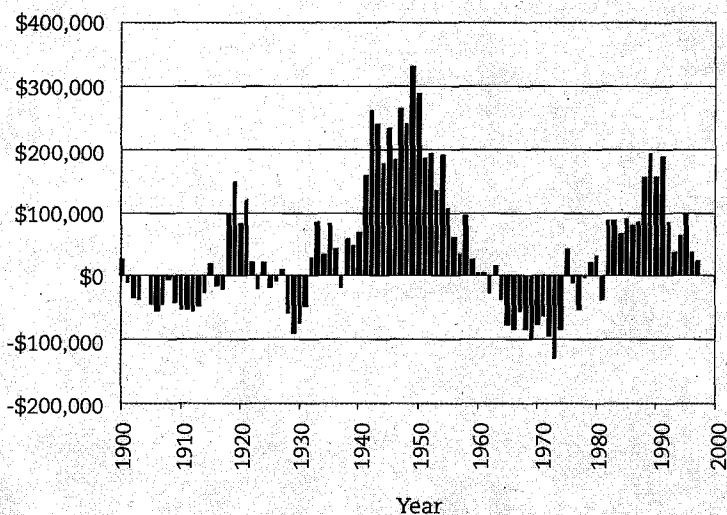
continued from page 27 interest only over the term and repaying the loan principal at the end of the term; and

- If the own/loan ratio is zero, the client is better off paying down at least 15% of the original loan amount each year until the end of the loan term, or until the loan is paid off or until the portfolio depletes.

Depletion Stop—A portfolio is considered depleted when its value becomes less than one year's loan repayment amount. If the portfolio depletes, the investor can either continue repaying the loan as if nothing happened, or liquidate the portfolio and pay the loan off. Paying interest after depletion means worst-case losses will be higher, especially if loan payments include principal and interest.

A client may feel more comfortable holding some fixed income or buying balanced funds in a leveraged portfolio. But, because the cost of borrowing is usually higher than the yield of a fixed income portfolio, it doesn't pay to borrow and then invest in fixed income. If the client is already taking a higher risk

Leveraging Versus No Leveraging



by borrowing to invest, then be prepared to invest 100% in equities. Generally, the highest profit factor occurs when a portfolio is most aggressive.

Margin Stop—When the portfolio value goes below a certain percentage of the loan balance, clients risk a margin call. When that happens, either add cash to the account to improve the

margin ratio, or liquidate some or all of the investments to reduce or eliminate the loan (see "Margin Stop Level," this page). The numbers offer two tips:

- Never meet a margin call, and never add money. Liquidate the loan.
- The optimum stop is at around 80%. If portfolio value falls below 80% of the remaining loan balance, pay off the loan. Don't hope the markets will turn around and wipe out losses.

Trailing Stop—The trailing stop enables clients to pay off the loan on a high note if they're in a profitable position. In cases where the own/loan ratio is zero and 15% of the loan is paid down each year (the optimum), the client is better off not implementing any trailing stops. And, if the own/loan ratio is one or larger, the optimum trailing stop is when the portfolio value goes below 15% of its peak level. This trailing stop decision is made only once, at the end of the calendar year.

But, should a trailing stop be implemented immediately, starting with the first year, or after a few years of investing? An analysis of **continued on page 31**

Margin Stop Level

Margin Stop Level	Loan Repayment Method		
	Paying interest only	Paying 10% of the initial loan amount annually	Paying 15% of the initial loan amount annually
	Profit Factor		
No Stop	2.85	2.53	3.04
60%	3.08	2.94	3.17
70%	3.32	3.13	3.20
80%	3.51	3.42	3.26
90%	2.93	2.89	2.89
100%	2.44	2.26	2.27

(Assume the borrowed money is invested 100% in S&P500 and nothing is invested in fixed income.)

continued from page 29. starting the trailing stop after two, four and six years, showed it's better to implement the trailing stop at the beginning.

Importance of Alpha

Alpha, or excess return over and above the benchmark, is one of the most important factors in the profit/loss picture of leveraging. An analysis leads to two conclusions: Do not leverage unless a portfolio consistently outperforms the index by 4% or better; and, based on current dividend yields, avoid leveraging using market index funds.

A look at historical interest rates shows two relatively long-term waves of profitable leveraging. The first started after 1932; the second, 49 years later, after 1981. There is a common thread between these two waves: They both occurred immediately after sharp drops in interest rates. If a client's lucky, he may be able to catch a similar wave once in a lifetime. But the next such opportunity isn't likely due for two decades. If the client's paying an interest rate 3% higher than a 6-month GIC, then leveraging is unlikely to work profitably over the long term (see "Profit Factor for Net Interest," this page).

Profit Factor for Net Interest

Net Interest Rate	Loan Repayment Method	
	Paying interest only, Own/Loan Ratio=1	Paying 15% of the initial loan amount annually, Own/Loan Ratio=0
	Profit Factor	
6-month GIC yield minus 1%	10.17	9.27
6-month GIC yield plus 0%	7.70	7.18
6-month plus 1%	6.03	5.45
6-month GIC yield plus 2%	4.39	4.29
6-month GIC yield plus 3%	3.42	3.26
6-month GIC yield plus 4%	2.57	nm*

*nm=not meaningful.

Longer loan terms can create a higher profit factor, provided the client doesn't get stopped out. If the loan term is less than 10 years, leveraging is unlikely to work profitably (see "Profit Factor for Loan Terms," this page).

Three of the most important factors determining success of a leverage strategy are luck, interest rates and alpha. You have no control over luck or interest rates. As for alpha, the control is insignificant, absent a disciplined strategy.

After all this discouragement, if your client still wants to borrow money to invest, here are some guidelines:

- Don't allow borrowing more than what the client already owns;
- Don't leverage if your client is within 10 years of retirement.
- Pay close attention to asset selection; you'll need to outperform the index by 4% or better;
- Make sure client's net (after tax) interest cost is at a minimum; it should not exceed a 6-month GIC plus 3%;
- Never meet a margin call; and
- Use a 15% trailing stop. Liquidate sufficient assets to pay off the loan if portfolio value goes below 85% of its peak value at the end of the year.

If your client meets all these points, then good luck, you'll need it. And, when you see another academic study about the benefits of leveraging that uses averages and simulators, take it with a grain of salt. Financial disasters happen not because of market extremes that academics think they can calculate; they happen because of incalculable risks, such as human behaviour. ^{AE} **OTAR**

Profit Factor for Loan Terms

Net Interest Rate	Loan Repayment Method	
	Paying interest only, Own/Loan Ratio=1	Paying 15% of the initial loan amount annually, Own/Loan Ratio=0
	Profit Factor	
5 years	1.80	nm*
10 years	3.42	3.26
20 years	8.15	7.16

(own/loan ratio is zero.) *nm=not meaningful.