



# Setting The Record Straight: Achieving Success Beyond a Day with Leveraged and Inverse Funds

*Live Webinar*

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# Welcome



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The logo for ProShare Advisors LLC is displayed in a serif font. It is centered within a light green rectangular area that features a decorative pattern of thin, white, curved lines. Above this area is a solid dark green horizontal bar.

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# **Understanding Returns of Leveraged and Inverse Funds**

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Head of Investment Strategy

# Agenda

- Background on leveraged and inverse funds
- Understanding compounding
- Putting volatility in perspective
- Realized returns and multiples
- Monitoring and rebalancing over time

# What are Leveraged & Inverse ETFs

## Conventional Index Funds\*

Seek to match the index return

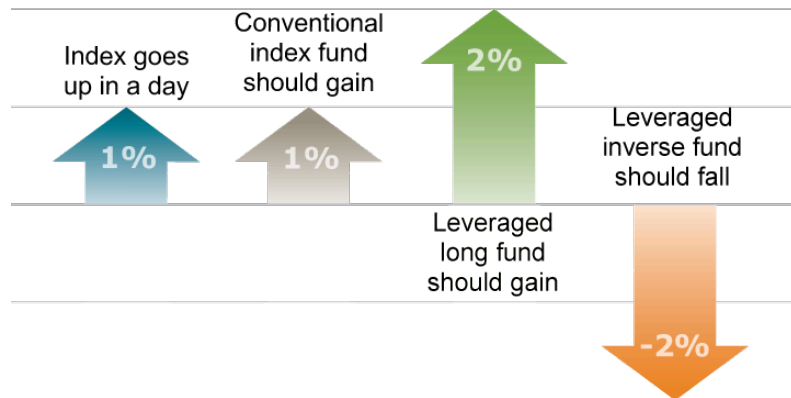
## Leveraged Long Funds\*

Seek a multiple of the index return on a daily basis

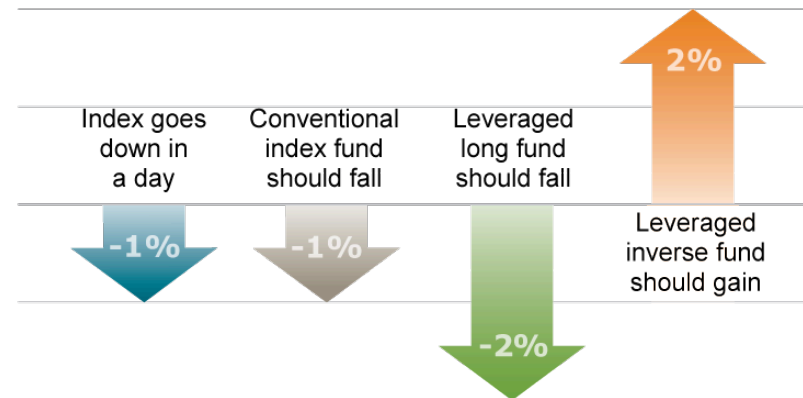
## Leveraged Inverse Funds\*

Seek a multiple of the inverse return of the index on a daily basis

### Up Day



### Down Day



- Conventional index fund
- Leveraged index fund
- Leveraged inverse index fund

\* Before fees and expenses.

## How are they being used

- Capture gains through short-term trading
- Component of overall portfolio strategy
  - Target exposure with less cash
  - Overweight/underweight exposures
  - Hedge
  - Isolate alpha, hedging the beta or benchmark risk of a portfolio of securities

## Why funds are rebalanced daily

- Consistent leverage each trading day helps investors limit risk by preventing leverage from becoming too excessive
- An open-end fund that provides a specified, constant leverage level for all investors is not possible

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## **Understanding compounding**

# Example of compounding on indexes and leveraged funds

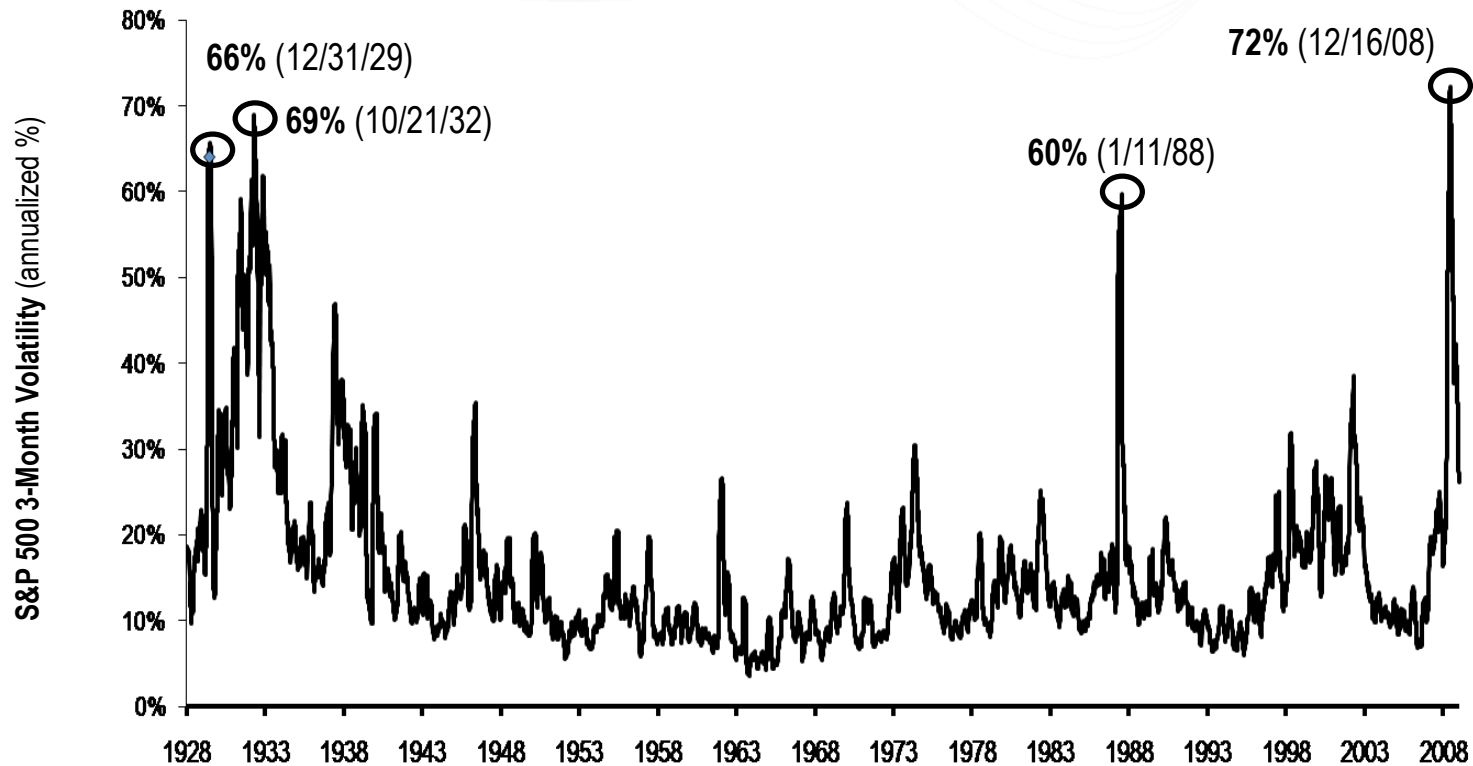
	INDEX	2x FUND
	Daily Return	Daily Return
<b>UPWARD TREND</b>		
Day 1 Return	+10%	+20%
Day 2 Return	+10%	+20%
Compounded 2-day Return	+21%	+44%
<b>DOWNWARD TREND</b>		
Day 1 Return	-10%	-20%
Day 2 Return	-10%	-20%
Compounded 2-day Return	-19%	-36%
<b>VOLATILE MARKET</b>		
Day 1 Return	+10%	+20%
Day 2 Return	-10%	-20%
Compounded 2-day Return	-1%	-4%

## Universal effects of compounding on investment returns

- Compounding affects all investments over time
- Upward trending periods enhance returns
- Downward trending periods reduce losses
- Volatile periods reduce returns and may increase losses
- Positive and negative effects of compounding are significantly magnified in a leveraged fund
- The impact of compounding on a 2x leveraged fund is greater than 2x

# Leveraged and inverse funds affected by record volatility

Highest short-term volatility levels for U.S. equities in 80 years affected all investments, including leveraged funds



Source: Journal of Indexes , August 2009. Past performance is no guarantee of future results.  
For illustrative purposes only.

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## **The effect of compounding on leveraged strategies**

### **An historical analysis**

The study is for hypothetical purposes only and is not intended as an investment recommendation. **Results are for the S&P 500 Index only; results with respect to other indexes will vary.**

# Methodology: Historical Analysis of Leveraged & Inverse Index Returns

- S&P 500®
  - Studied 50 years covering all possible 2, 7, 30, 91, and 183 day holding periods for leveraged and inverse versions (+2x and -2x) of an S&P 500 Index
  - Compared the returns of daily objective strategies based on 2x and -2x the S&P 500
- Additional research
  - Analyzed holding periods for a variety of other indexes
    - NASDAQ-100 from 1985-2008
    - Dow Jones U.S. financial and energy sectors from 1992-2008

## S&P 500 2x Returns: Compounding Effect Was Close to Zero on Average

From 1959-2008, average differences between daily objective 2x S&P 500 strategy and 2 times the index return:

Holding Period	Average Difference
2-Day	-0.0000%
7-Day	-0.0003%
30-Day	-0.0017%
90-Day	0.0426%
183-Day	0.1949%

While individual period returns varied, the effect of compounding on average was about neutral across the holding periods we studied.

# High percentage of realized multiples close to the daily multiple for 2x S&P 500

## Frequency Returns Fell within Various Multiple Ranges Over Various Holding Periods (1959-2008)

Realized Multiple Ranges		Historical 2x Daily Objective S&P 500				
		2-Day	7-Day	30-Day	91-Day	183-Day
1.75	2.25	99.2%	96.3%	90.0%	82.6%	80.0%
1.50	2.50	99.6%	98.1%	94.7%	90.9%	90.1%
1.00	3.00	99.8%	99.0%	97.3%	95.5%	95.1%
Negative or “flipped”		0.0%	0.2%	0.7%	1.1%	1.2%

Source: Bloomberg, June 2009. ProFunds Group Investment Analytics. **Past performance is no guarantee of future results.** For illustrative purposes only. Not indicative of an actual investment. Does not take into account any fees or transactional costs. **Results are for the S&P 500 Index only; results with respect to other indices will vary.**

## High percentage of realized multiples close to the daily multiple for -2x S&P 500

### Frequency Returns Fell within Various Multiple Ranges Over Various Holding Periods (1959-2008)

Realized Multiple Ranges		Historical -2x Daily Objective S&P 500				
		2-Day	7-Day	30-Day	91-Day	183-Day
-1.75	-2.25	97.3%	89.5%	73.4%	55.4%	44.2%
-1.50	-2.50	98.7%	94.6%	85.3%	74.9%	70.2%
-1.00	-3.00	99.4%	97.1%	92.3%	86.6%	84.5%
Positive or "flipped"		0.1%	0.7%	2.0%	3.6%	3.4%

Source: Bloomberg, June 2009. ProFunds Group Investment Analytics. **Past performance is no guarantee of future results.** For illustrative purposes only. Not indicative of an actual investment. Does not take into account any fees or transactional costs. **Results are for the S&P 500 Index only; results with respect to other indices will vary.**

# Results for Dow Jones U.S. Oil & Gas Daily Objective Strategy

Frequency Returns Fell within Various Multiple Ranges Over Various Holding Periods (1992-2008)

Realized Multiple Ranges		Historical 2x Daily Objective Dow Jones U.S. Oil & Gas				
		2-Day	7-Day	30-Day	91-Day	183-Day
1.75	2.25	98.4%	92.6%	83.1%	68.6%	61.0%
<b>1.5</b>	<b>2.5</b>	99.3%	96.2%	<b>91.1%</b>	82.6%	76.9%
1	3	99.6%	98.0%	95.1%	90.8%	87.7%
Negative or "flipped"		0.1%	0.4%	1.2%	2.1%	3.1%
		Historical -2x Daily Objective Dow Jones U.S. Oil & Gas				
		2-Day	7-Day	30-Day	91-Day	183-Day
-1.75	-2.25	95.1%	80.6%	58.9%	38.1%	33.5%
<b>-1.5</b>	<b>-2.5</b>	97.6%	89.6%	<b>75.5%</b>	58.4%	54.6%
-1	-3	99.0%	94.6%	86.9%	74.7%	69.0%
Positive or "flipped"		0.2%	1.4%	3.6%	7.1%	8.8%

Source: Bloomberg, June 2009. ProFunds Group Investment Analytics. **Past performance is no guarantee of future results.** For illustrative purposes only. Not indicative of an actual investment. Does not take into account any fees or transactional costs. **Results are for the S&P 500 Index only; results with respect to other indices will vary.**

## ProFunds Group Study Conclusions

- The impact of compounding over long run was neutral
- For selected indexes, there was a high likelihood of achieving returns close to the stated multiple times the index returns
  - The shorter the period and lower the index volatility, the higher the likelihood
- The likelihood of the direction of returns being “flipped” was low

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**Monitoring and rebalancing:  
Mind the gap**

## Rebalancing can be an effective tool

- Some investors want returns closer to the stated multiple times the index returns over longer periods
- Monitoring fund value vs. index returns
  - Add or reduce position in fund during holding period
- May help get close to stated daily multiple over time
- Similar concept as rebalancing asset allocations
- Rebalancing doesn't always increase returns
  - In trending markets, rebalanced returns may in fact be lower (although closer to the multiple) than if no rebalancing was done

# The rebalancing equation

Index Return Greater  
Than Fund Return

*Increase*  
Fund Exposure

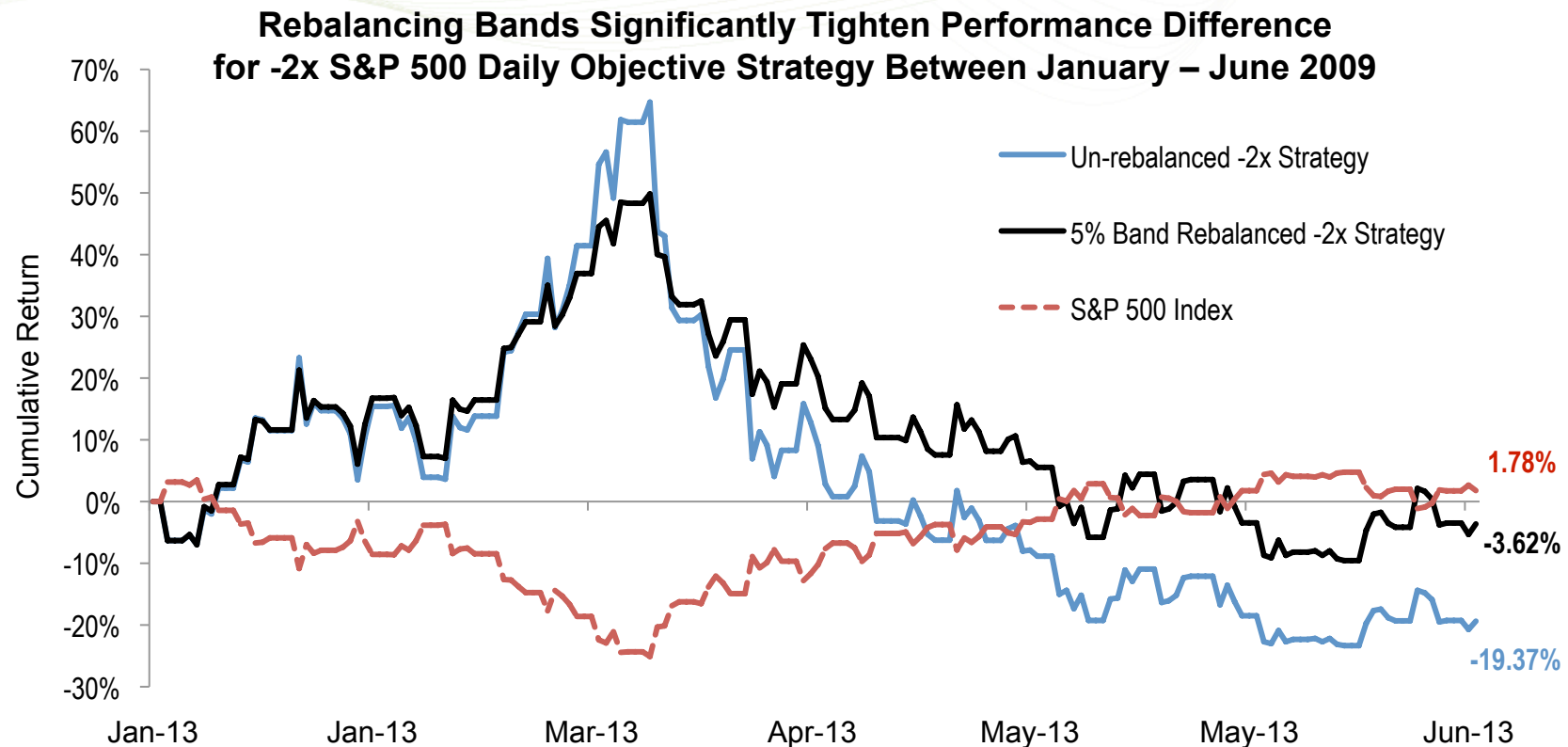
## Rebalancing Process

Rebalance Amount =  
Initial \$ Invested x (1 + Index Return) – Current \$ Assets in Position

*Decrease*  
Fund Exposure

Index Return Less  
Than Fund Return

# Rebalancing a -2x S&P 500 Daily Objective Strategy in early 2009



\*Cumulative Return on S&P 500 Index, un-rebalanced and rebalanced -2x one-day target strategies (using 5% rebalanced bands) for period from December 31st, 2008 through June 30th, 2009

# The Performance of Leverage Funds Summary

- Effect of compounding is universal
  - Trending periods enhance returns or reduce losses
  - Volatile periods hurt returns
  - Compounding has greater effect on leveraged funds
- Historically, on average, the effect of compounding was neutral
- High likelihood of getting close to 2x the index return over relatively short periods
  - The shorter the period and the lower the index volatility, the higher the likelihood
- Rebalancing can be used to approximate daily target over time

## Additional Information

See “Understanding Returns of Leveraged and Inverse Funds” in the September/October issue of **Journal of Indexes**.

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# Q&A



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