

Dual Momentum Investing

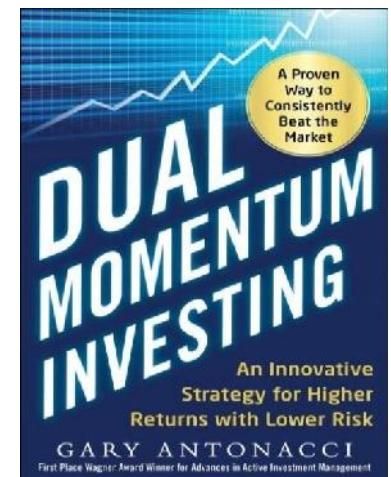
Gary Antonacci

Portfolio Management Consultants



Gary Antonacci

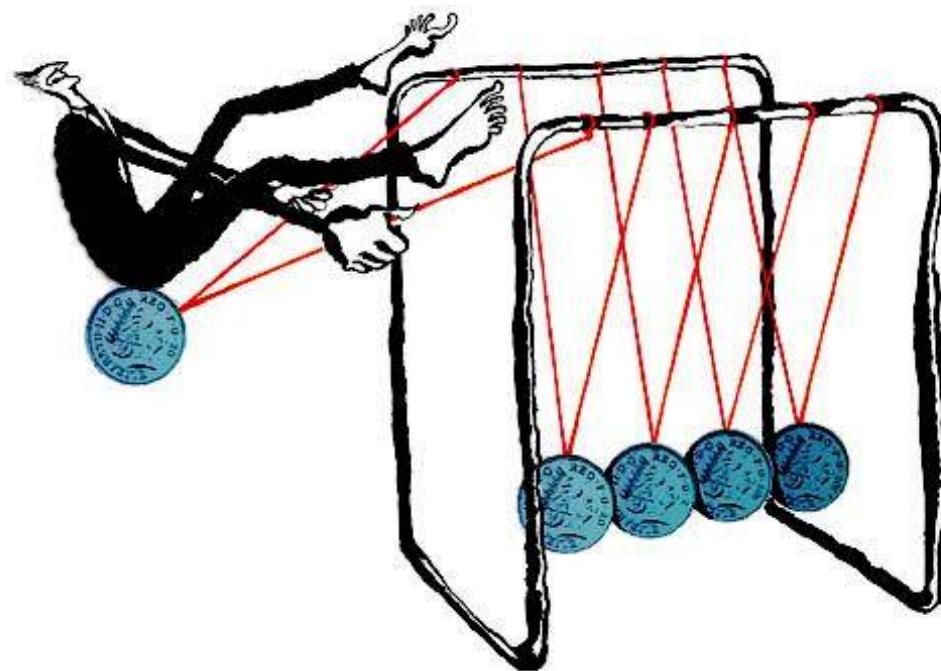
- Over 40 years' experience with underexploited investments
- 2012 first place winner of the NAAIM Wagner Award
- Author of *Dual Momentum Investing: An Innovative Approach to Higher Returns with Lower Risk*



Topics for Today

- What is momentum?
- Why does it work?
- What are its issues?
- How to best use it?

What is Momentum?



Sir Isaac Newton (1643-1727)

A body in motion tends
to stay in motion.



Buy strong stuff!



Isaac Newton's Nightmare
South Sea Stock
December 1718 – December 1721



Isaac Newton's Nightmare
South Sea Stock
December 1718 – December 1721



Isaac Newton's Nightmare
South Sea Stock
December 1718 – December 1721



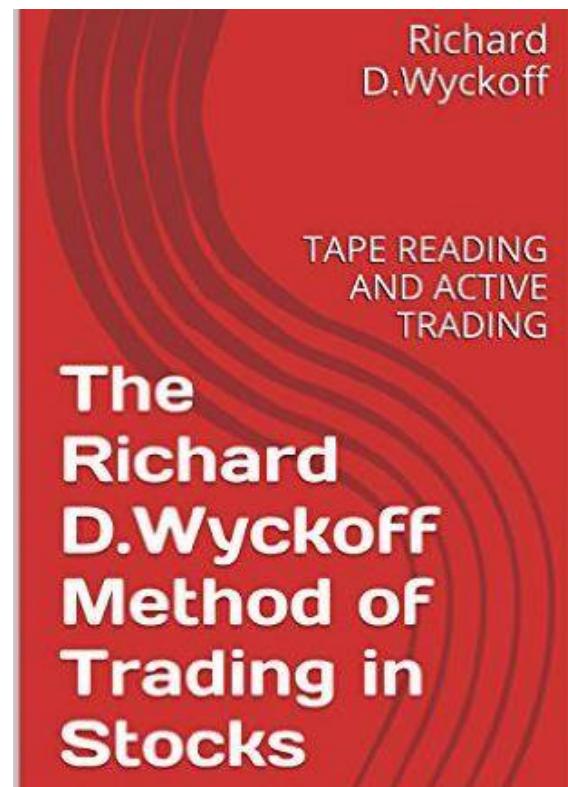
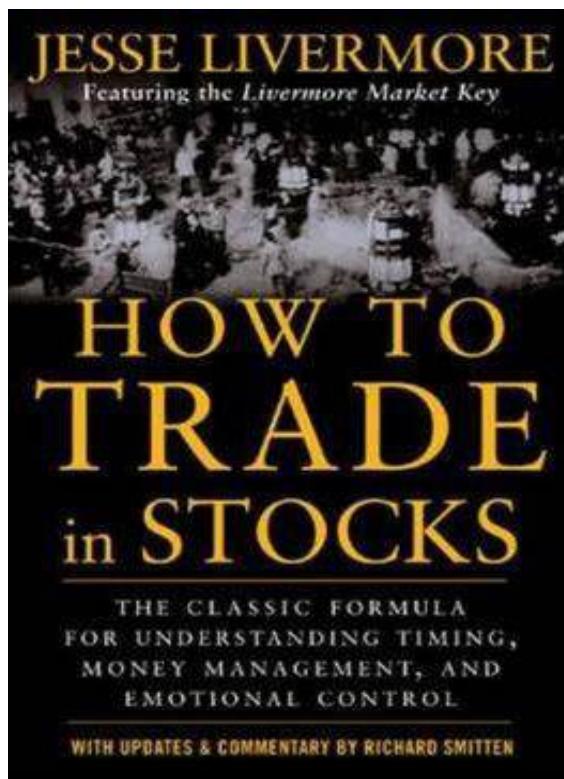
David Riccardo (1772-1823)

Cut your losses short, and
let your profits run on.

The Great Metropolis, 1838



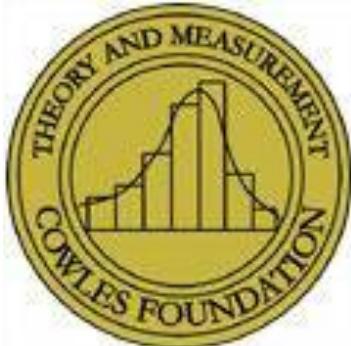
Jesse Livermore and Richard Wyckoff



Alfred Cowles III & Herbert Jones

Econometrica, July 1937

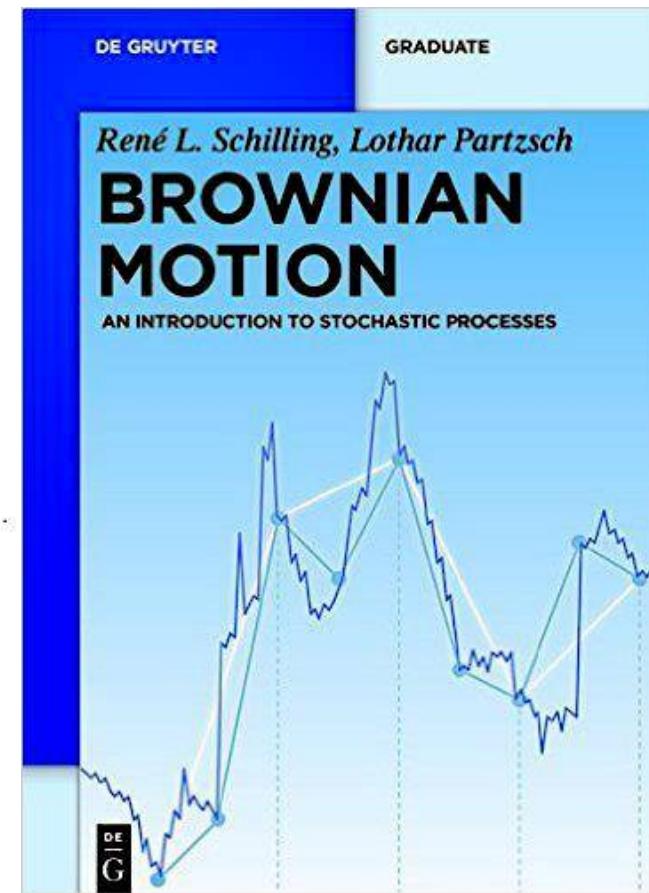
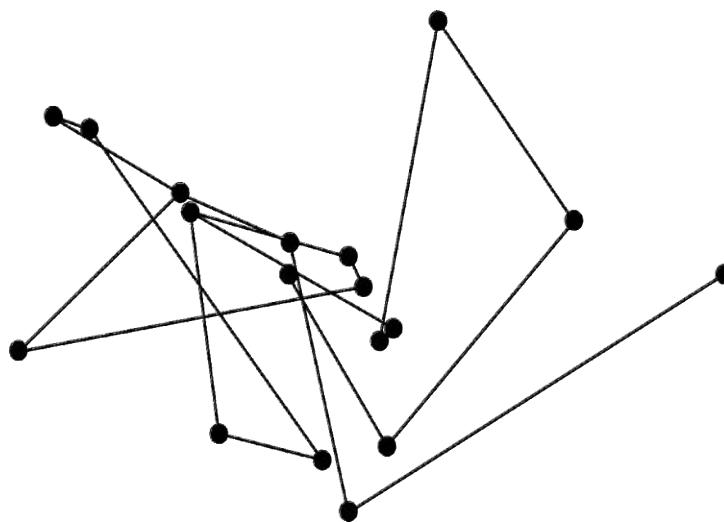
NYSE stocks from 1920-1935



The tendency is very pronounced for stocks that have exceeded the median in one year to exceed it also in the following year.

- Cowles & Jones

Random Walk Hypothesis



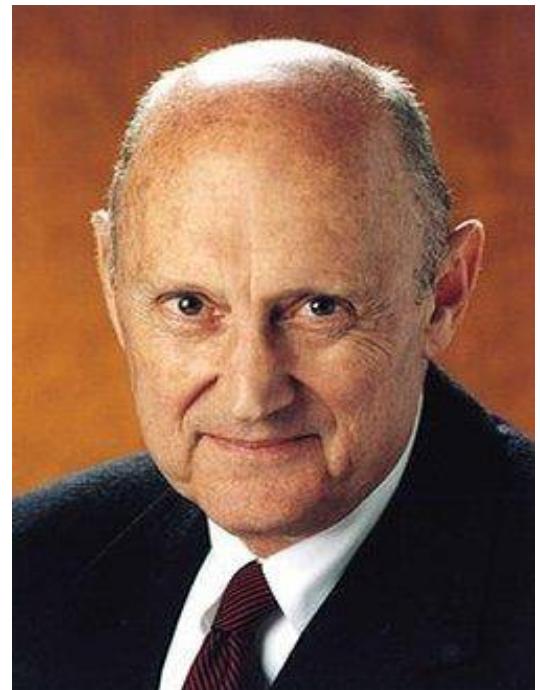
Efficient Market Hypothesis

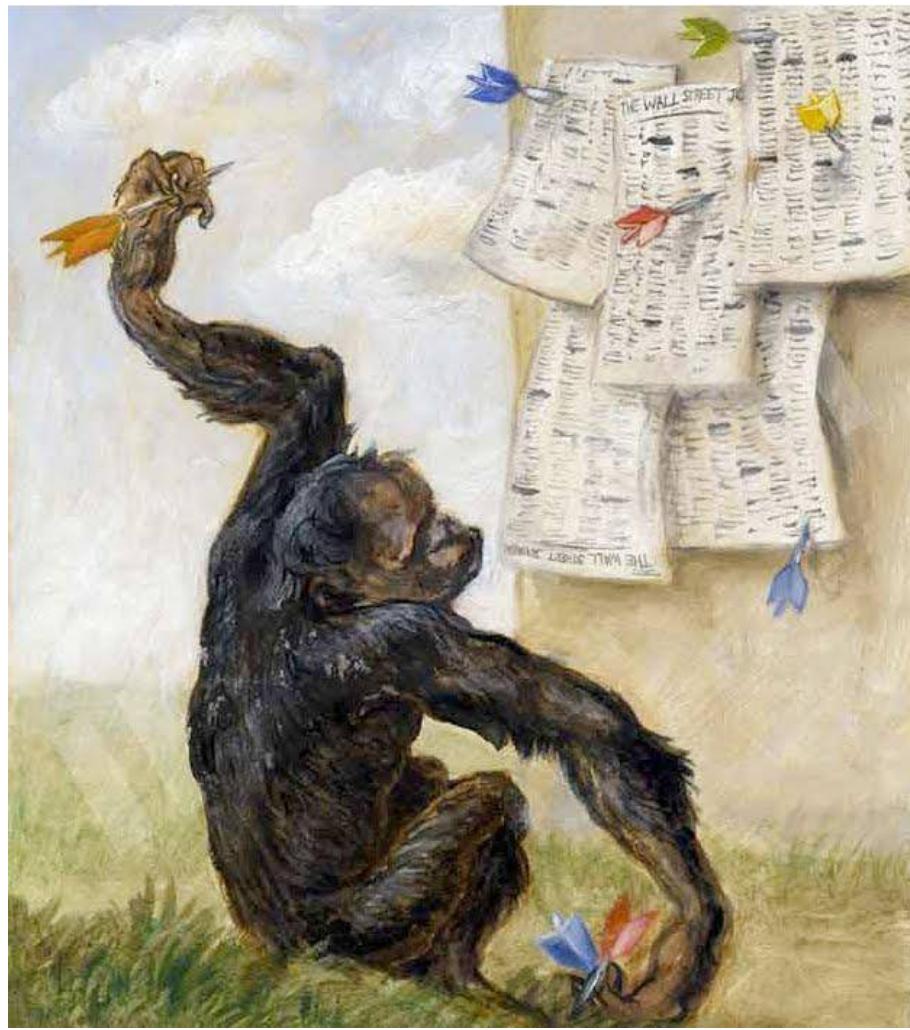


A blindfolded monkey throwing darts at a newspaper's pages could select a portfolio that would do just as well as one carefully selected by experts.

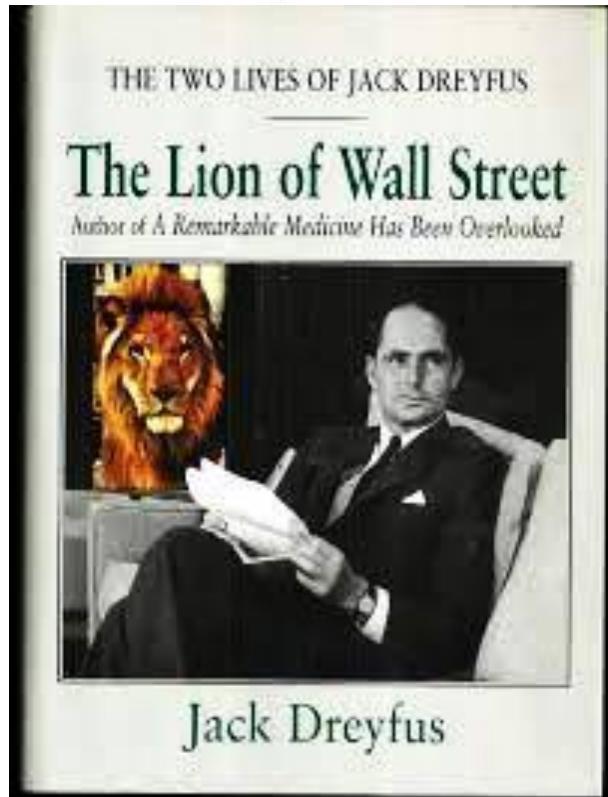
- Burton Malkiel

A Random Walk Down Wall Street





Jack Dreyfus

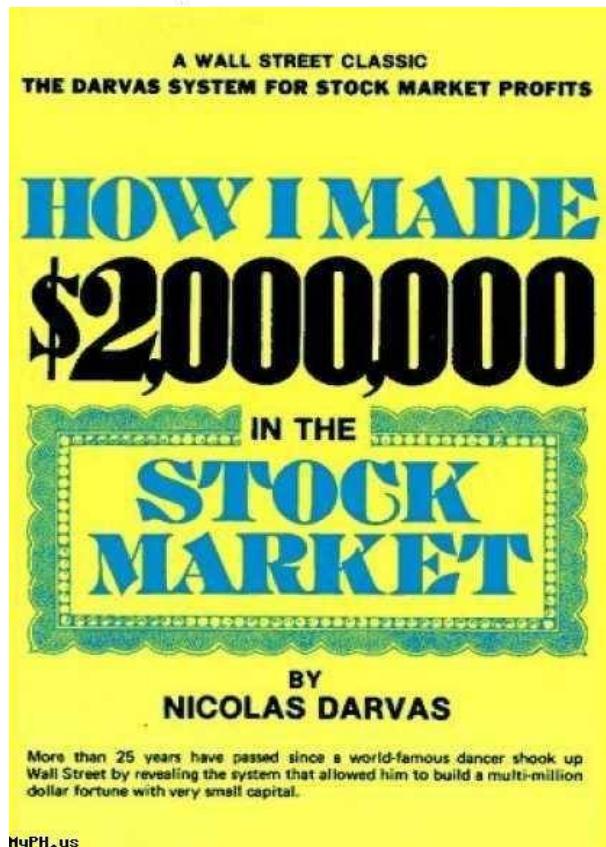


1953 through 1964:

Dreyfus Fund +604%

DJIA +346%

Nicolas Darvas



Richard Driehaus



If there's a large move on significant news, either favorable or unfavorable, the stock will usually continue to move in that direction.

— *Richard Driehaus* —

Academics See the Light



Behavioral finance - 1979

Behavioral finance - 1979

Value and size factors – 1982

Behavioral finance - 1979

Value and size factors – 1982

Mean Reversion – 1988, 1990

Jegadeesh & Titman

Seminal 1993 study using 1962 to
1989 US stock data

Jegadeesh & Titman

Seminal 1993 study using 1962 to 1989 US stock data

Deciles ranked by momentum

Jegadeesh & Titman

Seminal 1993 study using 1962 to 1989 US stock data

Deciles ranked by momentum

3 to 12 month momentum works!

U.S. Stock Momentum

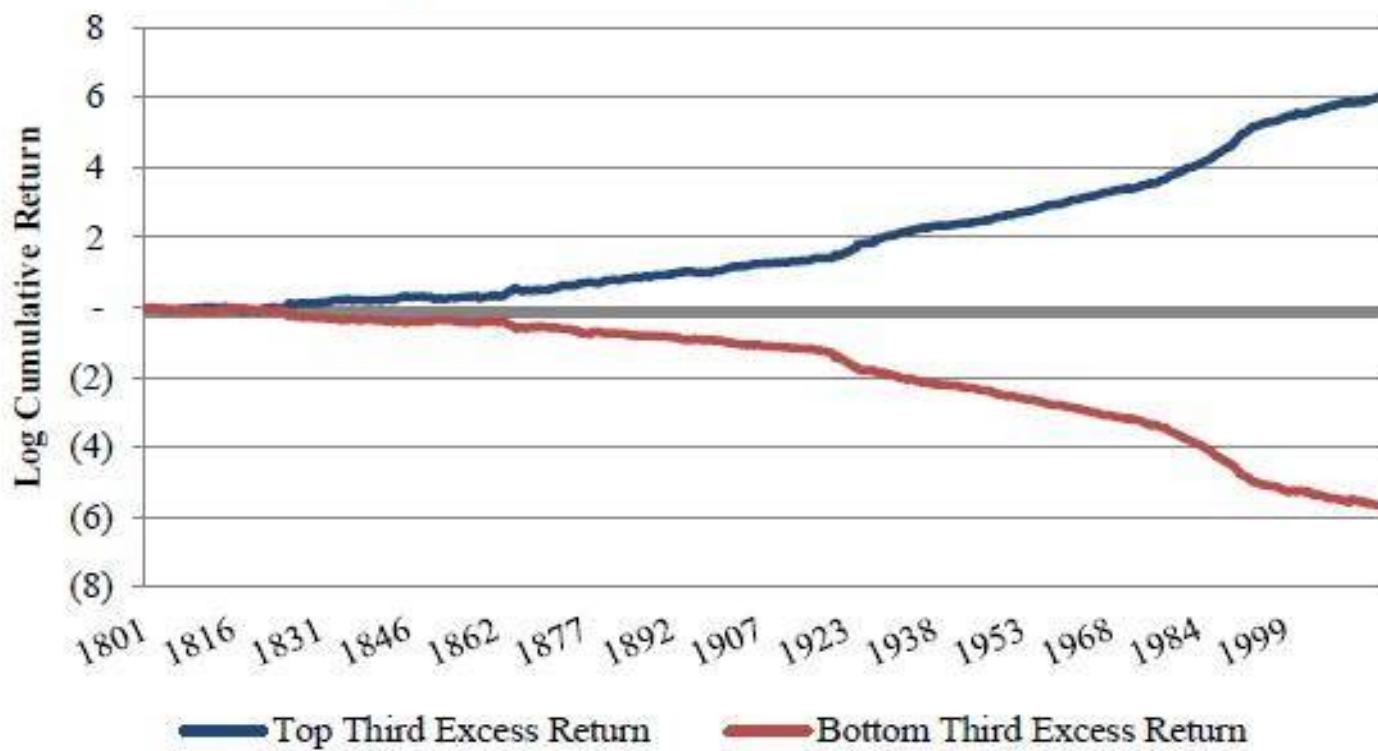
Top and bottom 10%, months 2-12 momentum
Jan 1927-Dec 2014, rebalanced monthly

	Winner	Loser	SP500
CAGR	16.95%	-1.5%	10.0%
Standard Deviation	22.6%	33.9%	19.1%
Downside Deviation	16.7%	22.0%	14.2%
Sharpe Ratio	0.66	-0.02	0.41
Worst Drawdown	-77.0%	-97.0%	-84.6%

Source: Ken French Data Library and Standard & Poor's. Results are hypothetical, and are NOT an indicator of future results, and do NOT represent returns that any investor actually attained.

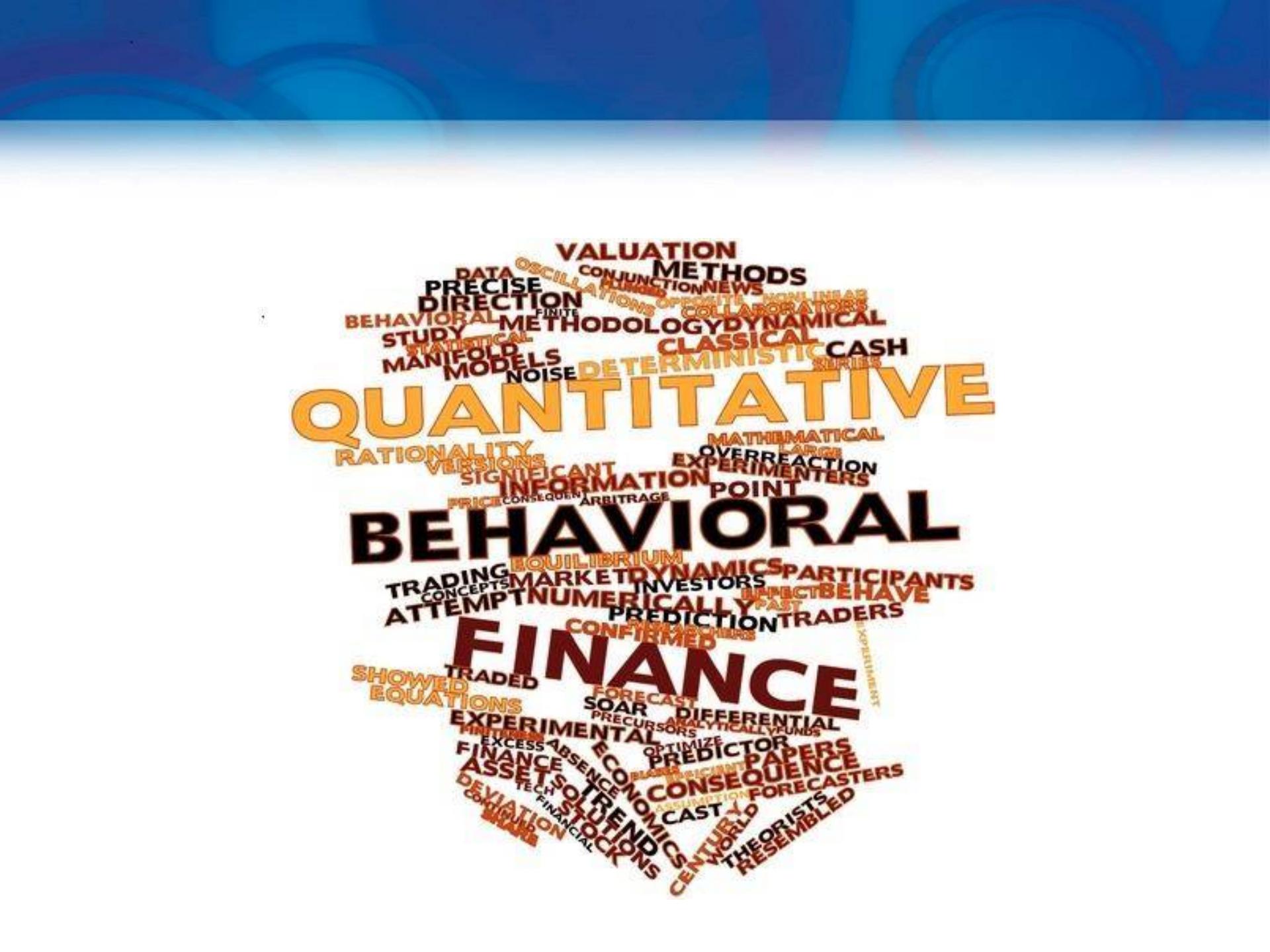
**Momentum works with stocks,
stock indices, sectors, bonds,
commodities, and currencies
from 1800 until now!**

Combined Momentum Log Cumulative Return: 1800 - 2014



Source: Geczy and Samonov (2015), "215 years of Global Multi-Asset Momentum: 1800-2014"

WHY MOMENTUM WORKS

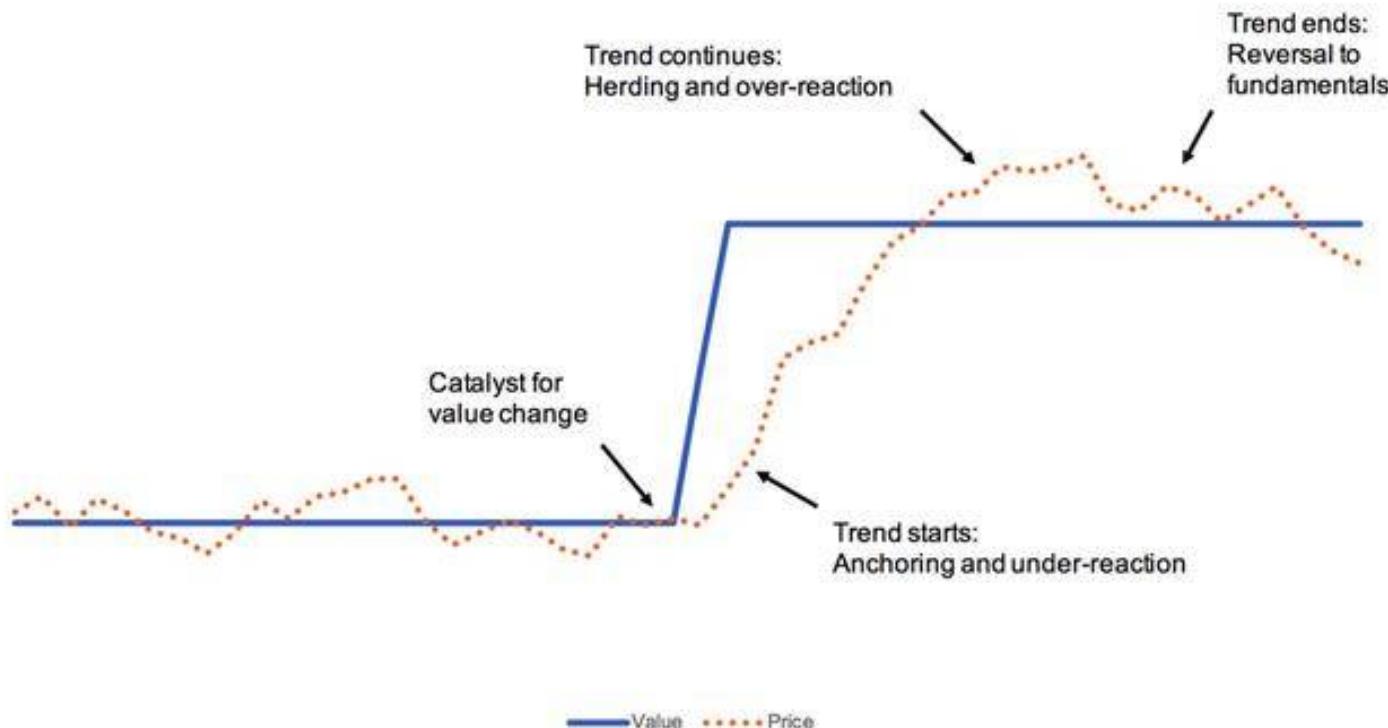


QUANTITATIVE BEHAVIORAL FINANCE

A word cloud centered around the three main concepts of the field, with words related to valuation, methods, direction, methodology, rationality, information, trading, participants, and finance.

VALUATION
METHODS
DIRECTION
STUDY
MANIFOLD
MODELS
NOISE
DETERMINISTIC
CLASSICAL
CASH
RATIONALITY
VERSIONS
SIGNIFICANT
INFORMATION
PRICE CONSEQUENT
ARBITRAGE
MATHEMATICAL
EXPERIMENTERS
POINT
EQUILIBRIUM
MARKET DYNAMICS
INVESTORS
PARTICIPANTS
IMPACT BEHAVE
PREDICTION
TRADERS
CONFIRMED
TRADING CONCEPTS
ATTEMPT NUMERICALY PAST
PREDICTOR
EXPERIMENTAL
MINIMUM EXCESS
FINANCE ASSET SOFTRENDS
DEVIATION CENTRE FORECASTERS
ECONOMICS PAPERS
TECHNICAL ANALYSIS
THEORISTS RESEMBLED

Underreaction and Overreaction



Initial Underreaction

Anchoring/Conservatism



Initial Underreaction

Anchoring/Conservatism

Slow diffusion of information



Initial Underreaction

Anchoring/Conservatism

Slow diffusion of information

Disposition effect

Later Overreaction

Herd^{ing} effect

Later Overreaction

Herd^{ing} effect

Recency bias

Later Overreaction

Herd effect

Recency bias

Overconfidence

Systematic Momentum

- High and consistent returns
- Works with all assets
- Has persisted over time
- Good reasons for it

Fama & French

The premier market anomaly is momentum. Stocks with low returns over the past year tend to have low returns for the next few months, and stocks with high past returns tend to have high future returns.



“Dissecting Anomalies”
Journal of Finance, July 2008

Want To Do Momentum?





MOMENTUM ISSUES

Scalability

	50 Stock Portfolio	100 Stock Portfolio	150 Stock Portfolio	200 Stock Portfolio	250 Stock Portfolio	300 Stock Portfolio	500 Stock Universe
1 month hold	17.0%	14.4%	13.6%	12.7%	12.1%	11.5%	9.8%
2 month hold	16.1%	14.2%	13.2%	12.6%	12.0%	11.4%	9.8%
3 month hold	15.2%	13.8%	12.9%	12.3%	11.7%	11.2%	9.8%
4 month hold	14.5%	13.5%	12.8%	12.1%	11.6%	11.2%	9.8%
5 month hold	14.4%	13.3%	12.6%	12.0%	11.6%	11.2%	9.8%
6 month hold	13.9%	13.1%	12.4%	11.9%	11.5%	11.1%	9.8%
7 month hold	13.7%	12.8%	12.1%	11.7%	11.3%	11.0%	9.8%
8 month hold	13.4%	12.6%	11.9%	11.5%	11.2%	10.9%	9.8%
9 month hold	12.9%	12.2%	11.6%	11.2%	11.0%	10.8%	9.8%
10 month hold	12.6%	11.9%	11.4%	11.0%	10.9%	10.7%	9.8%
11 month hold	12.2%	11.6%	11.1%	10.8%	10.7%	10.5%	9.8%
12 month hold	11.8%	11.3%	10.8%	10.6%	10.5%	10.4%	9.8%

Results are hypothetical, and are NOT an indicator of future results, and do NOT represent returns that any investor actually attained. Please see disclosures for additional information.

Table 2. Value Add of Momentum Strategies Before and After Trading Costs

Region and Definition	\$10B, Large-Cap Portfolio		\$1B, Small-Cap Portfolio	
	Value Add vs. Market, Before Transaction Costs	Value Add vs. Market, After Transaction Costs	Value Add vs. Market, Before Transaction Costs	Value Add vs. Market, After Transaction Costs
United States -2 to -12 months	2.7%	-3.4%	5.2%	0.4%
United States -2 to -12 months, 3-month hold	2.0%	-1.6%	3.7%	0.7%
United States -2 to -6 months	0.0%	-9.7%	2.7%	-5.2%
Average	1.6%	-4.9%	3.9%	-1.4%

Source: Research Affiliates, LLC, using CRSP/Compustat and Worldscope/Datastream data from Hsu et al. (forthcoming).



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Oldest Momentum Funds



■ PowerShares DWA Tech ■ iShares Core US Gr

01 March 2007 - 18 April 2016

Copyright, StockCharts.com



■ AQR Momentum ■ iShares Core US Gr

09 July 2009 - 18 April 2016

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What To Do?



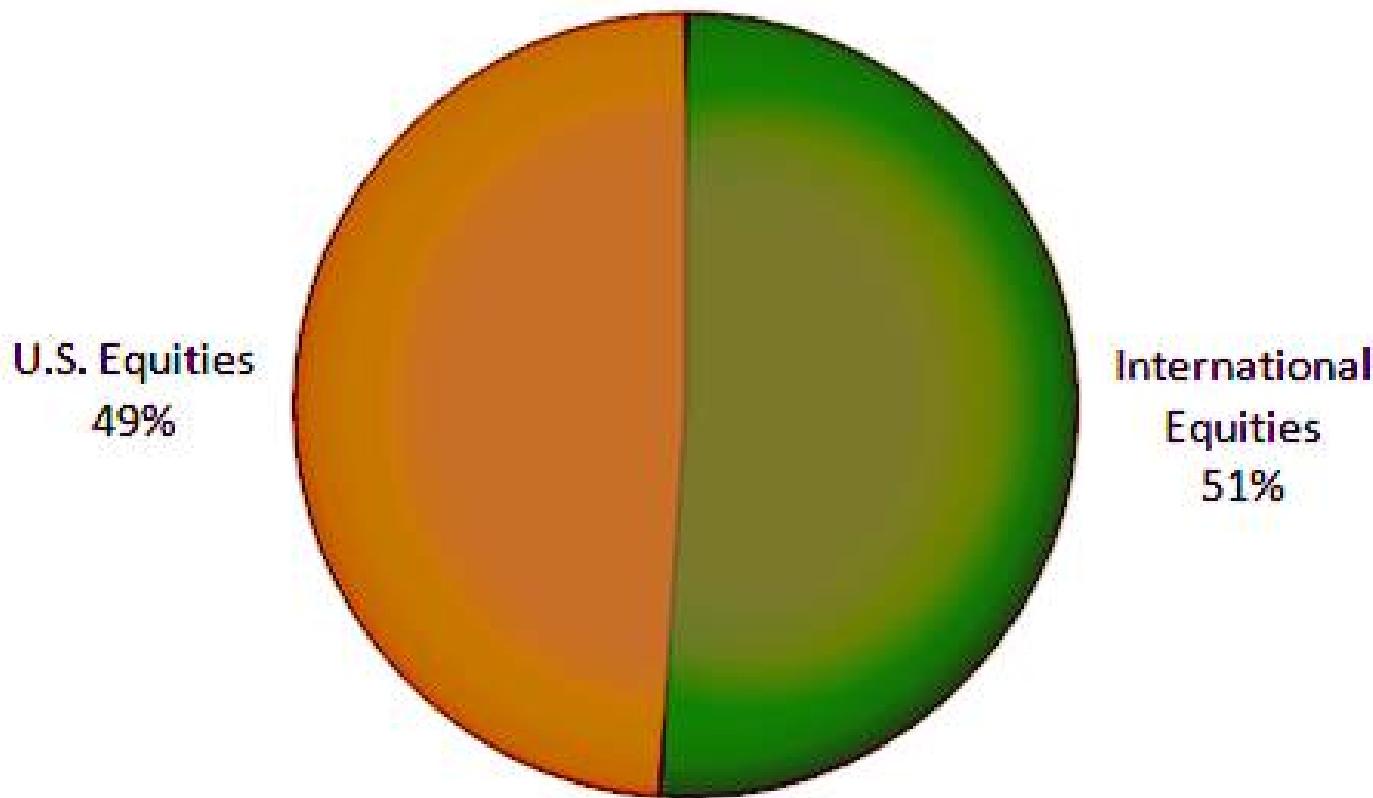
Stock indexes

Stock indexes are a way to measure the performance of a group of stocks. There are many different types of stock indexes, each with its own unique characteristics and purposes. Some of the most well-known stock indexes include the Dow Jones Industrial Average, the S&P 500, the Nasdaq Composite, and the Nasdaq SmallCap. These indexes are used by investors to track the performance of the stock market and to make investment decisions. The Dow Jones Industrial Average, for example, is a price-weighted index that tracks the performance of 30 large, well-known companies. The S&P 500, on the other hand, is a market-value weighted index that tracks the performance of 500 companies across a wide range of industries. The Nasdaq Composite and Nasdaq SmallCap are also market-value weighted indexes, but they track the performance of companies listed on the Nasdaq exchange.

Stock indexes are often used as benchmarks for mutual funds and other investment products. For example, a mutual fund that tracks the S&P 500 is said to be "S&P 500 indexed." This means that the fund's performance is intended to mirror the performance of the S&P 500 index. Stock indexes are also used to calculate stock market indices, such as the Nikkei 225 and the Hang Seng.

Stock indexes are a key part of the stock market. They provide a way to track the performance of the stock market and to make investment decisions. They are also used as benchmarks for mutual funds and other investment products. Stock indexes are a key part of the stock market.

Global Equities % by Market Cap

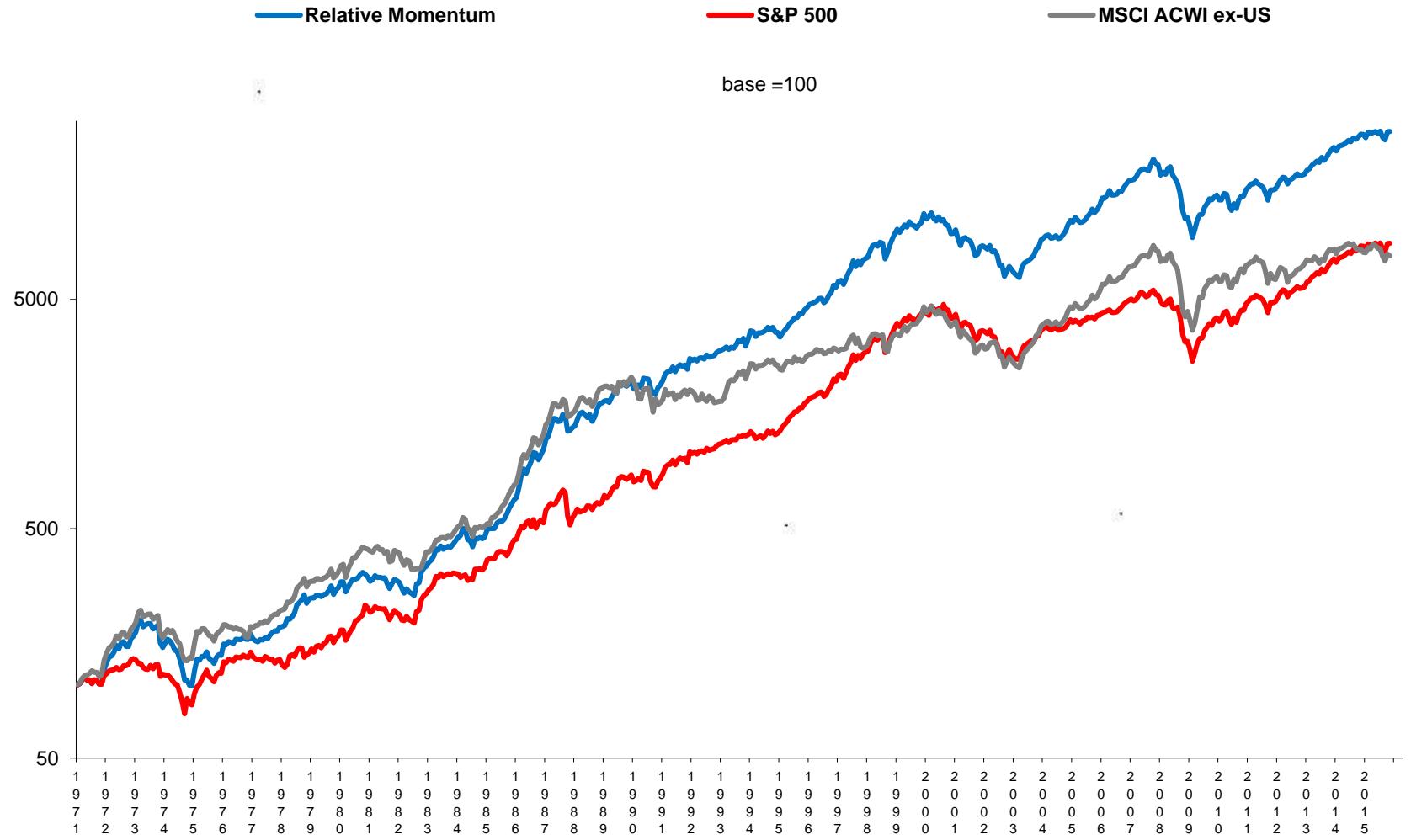


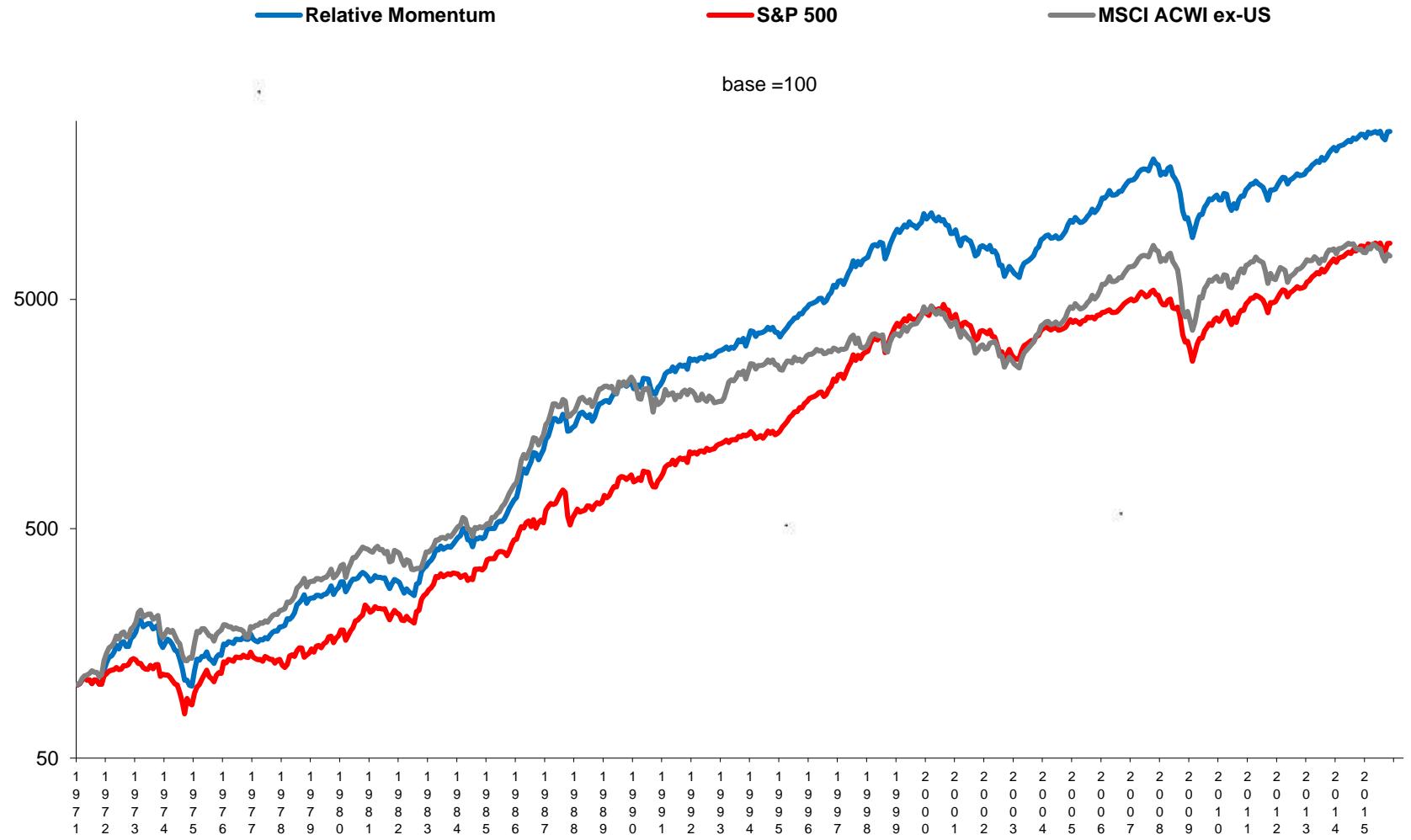
Source: Morningstar Direct 04/30/2014 MSCI ACWI Ex. USA and MSCI USA Index

Relative Momentum

Switch between the S&P 500 and the MSCI All Country World Index (ACWI) ex-US

Monthly rebalancing, 12-month look back





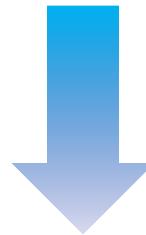
Global Macro Participation



Vertical Diversification

S&P 500

55% always



MSCI ACWI ex-US

45% always

Horizontal Diversification

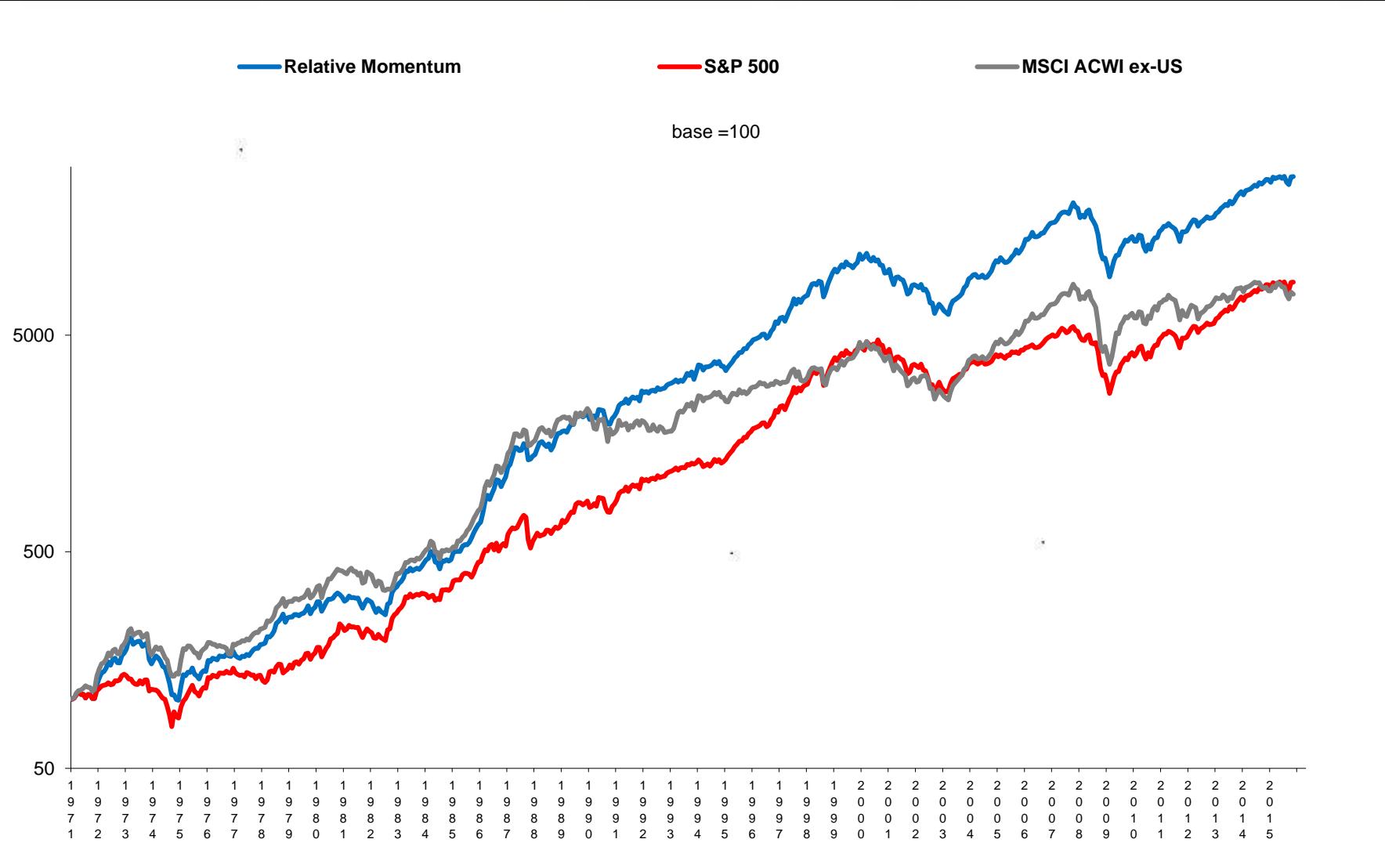
S&P 500

MSCI ACWI ex-US



55% of the time

45% of the time





DANGER

**FALLING
STOCKS**

2014 Dalbar Report

- Past 20 year annualized returns
- Average U.S. equity fund investor: 5.0%
- S&P 500 index: 9.2%

Source: Dalbar, Inc, “Quantitative Analysis of Investor Behavior”

We don't have people with investment problems. We have investments with people problems.

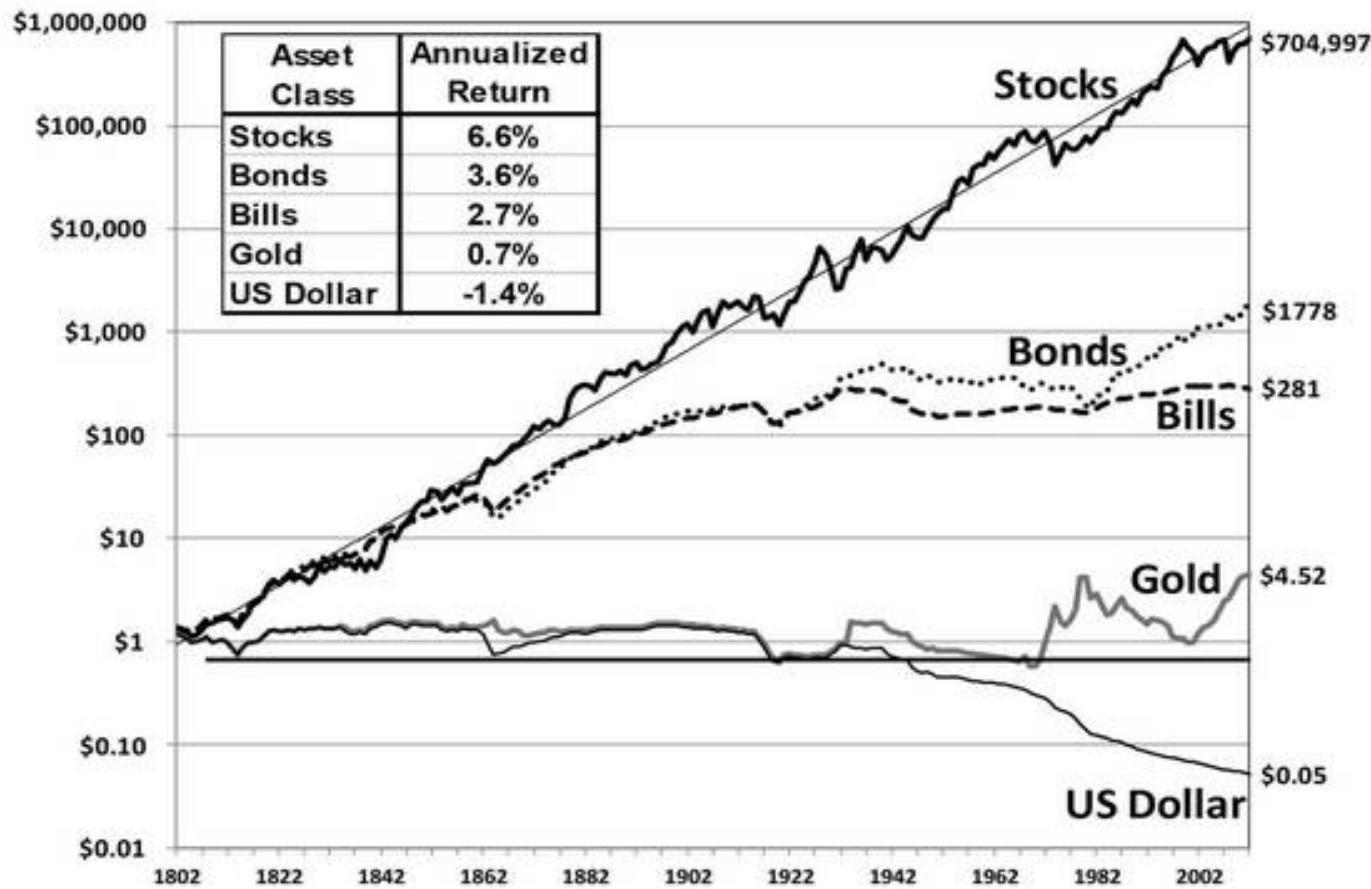
-Gregg Fisher



Bonds



Risk Premiums



Source: Jeremy Siegel, *Stocks for the Long Run*, McGraw-Hill

Bond Risks

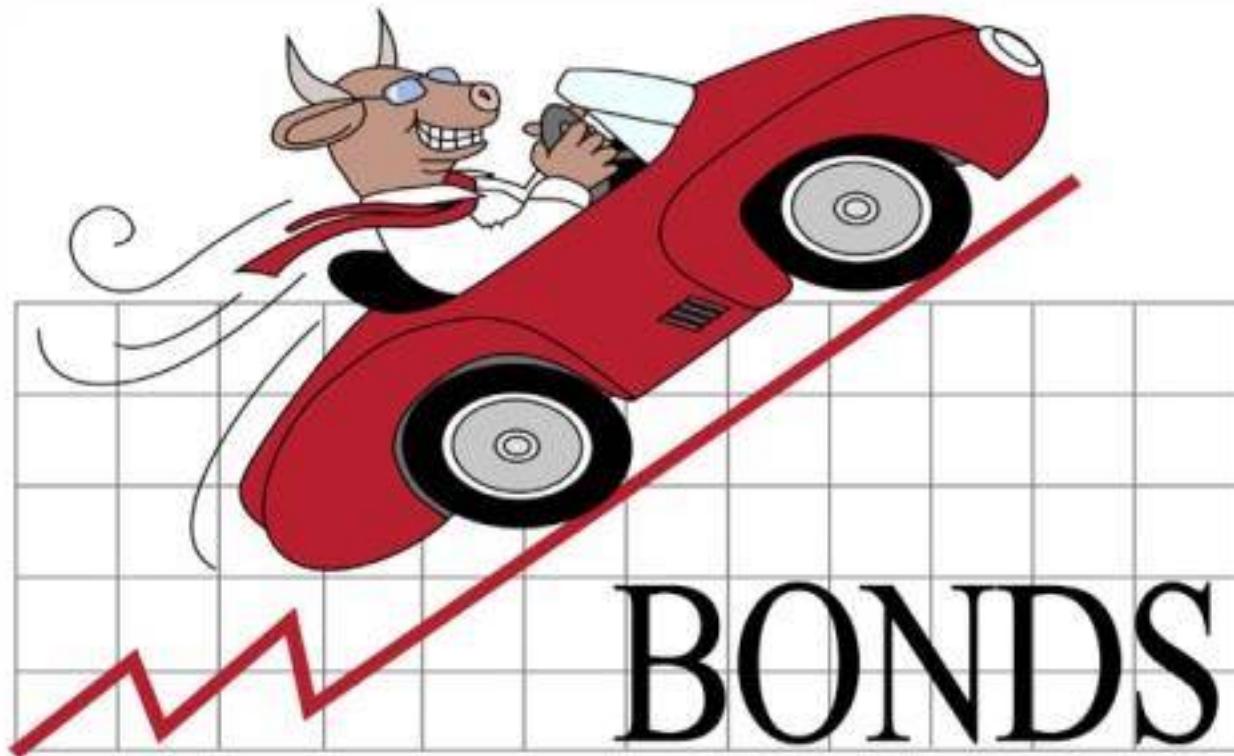
Worst real return drawdown since 1900:

Stocks **-73%**

Bonds **-68%**

Since 1807, worst rolling 10-year real return has been worse for bonds

When To Be In Bonds?

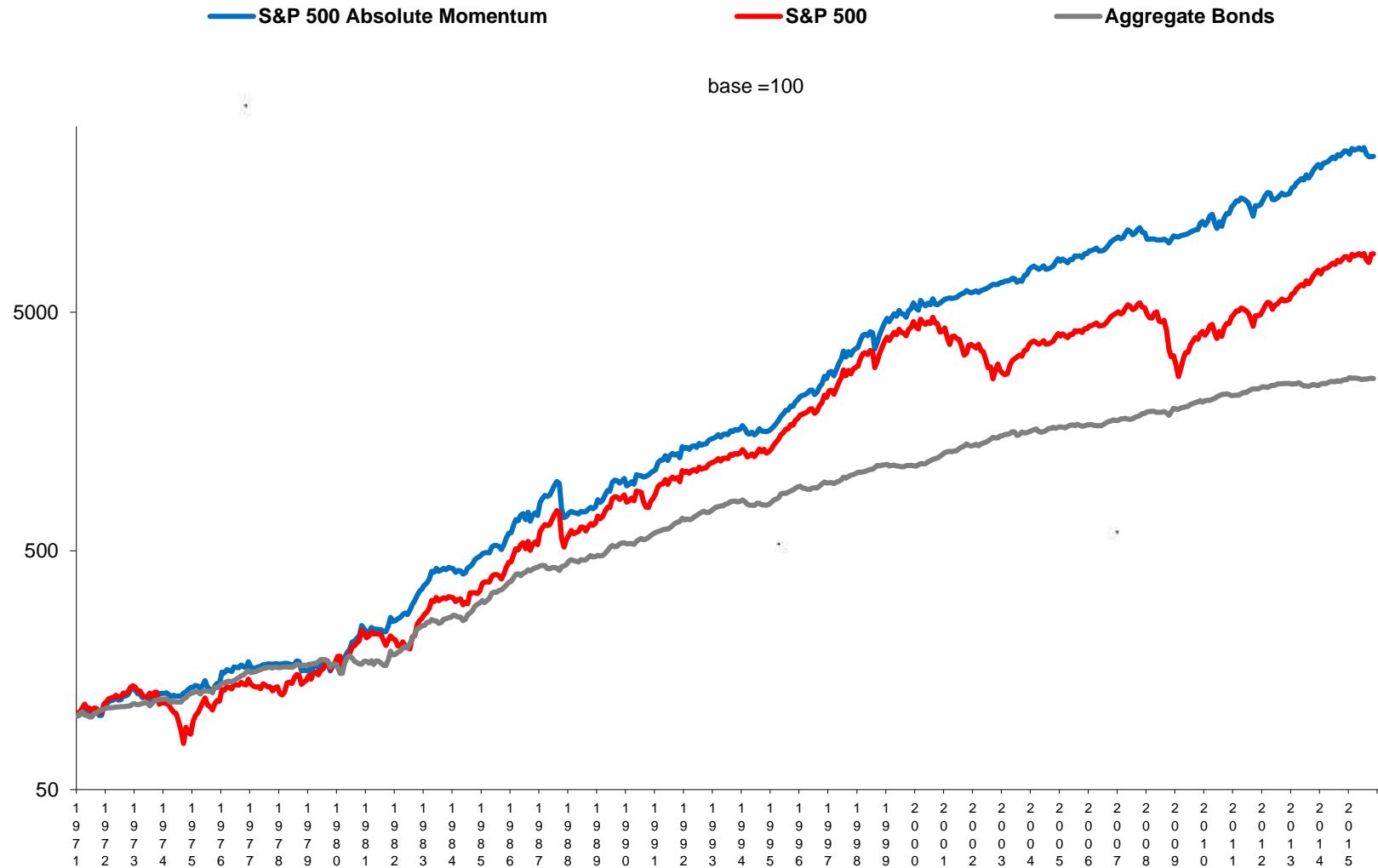


Two Types of Momentum

- **Relative (cross-sectional)**
 - compare performance to our peers
- **Absolute (time-series)**
 - compare performance to our self

Absolute Momentum

- Switch between the S&P 500 and the Barclays US Aggregate Bond index
- Monthly rebalancing, 12-month look back



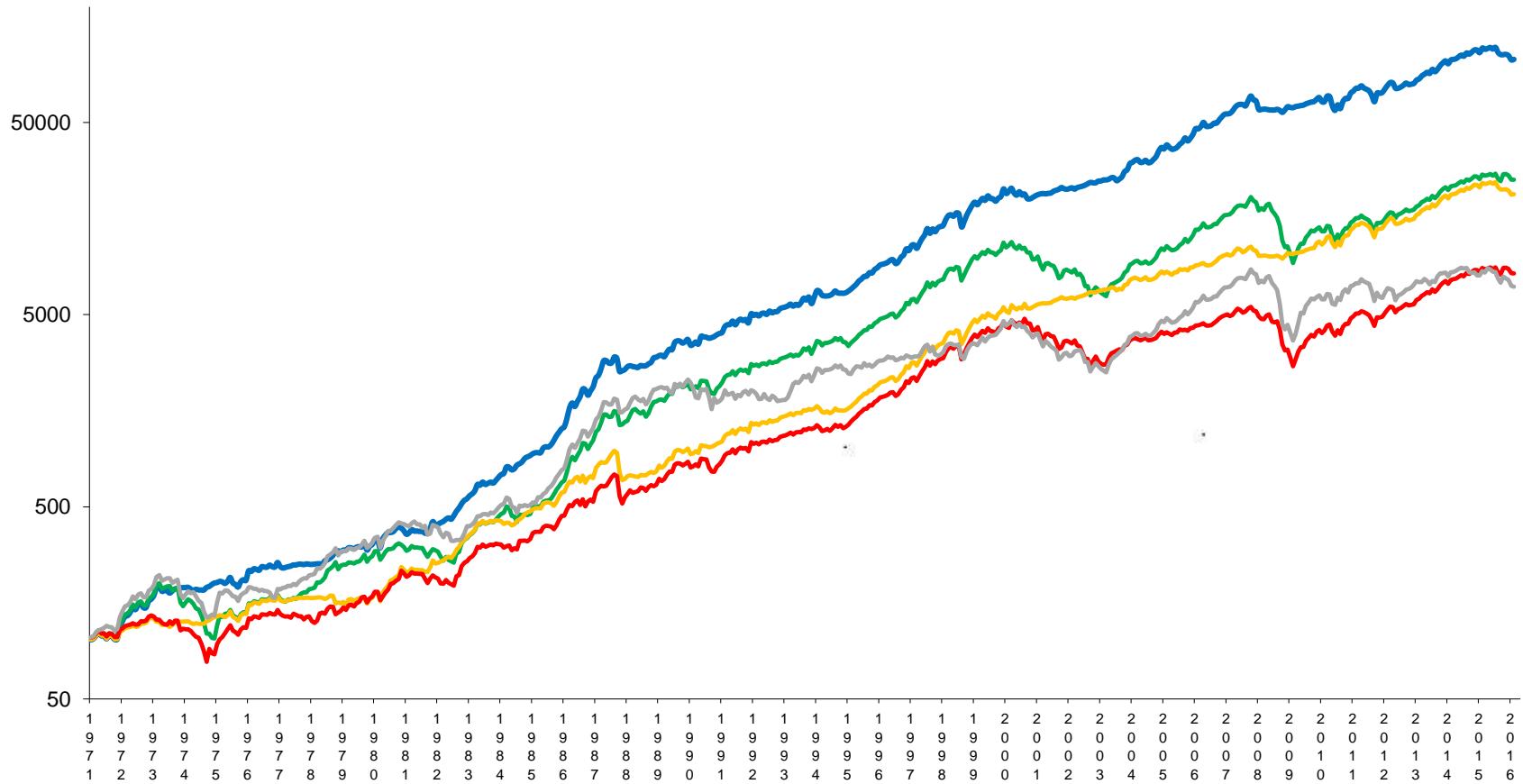
HOW TO BEST USE MOMENTUM

Dual Momentum

- Absolute momentum switches between stocks and bonds
- Relative momentum switches between the S&P 500 and the ACWI ex-US
- Monthly rebalancing, 12-month look back

Dual Momentum Relative Momentum Absolute Momentum S&P 500 MSCI ACWI ex-US

base =100



Dual Momentum

Jan 1971 - Feb 2016	CAGR	Standard Deviation	Sharpe Ratio	Worst Drawdown
Dual Momentum	16.7	12.6	0.87	-17.8
Absolute Momentum	12.6	12.0	0.60	-29.6
Relative Momentum	13.0	16.0	0.51	-54.6
S&P 500 Index	10.2	15.2	0.36	-51.0
MSCI ACWI ex-U.S.	9.8	17.3	0.32	-57.4

Results are hypothetical, are NOT an indicator of future results, and do NOT represent returns that any investor actually attained. Indexes are unmanaged, do not reflect management or trading fees, and one cannot invest directly in an index.

Bull Versus Bear Markets

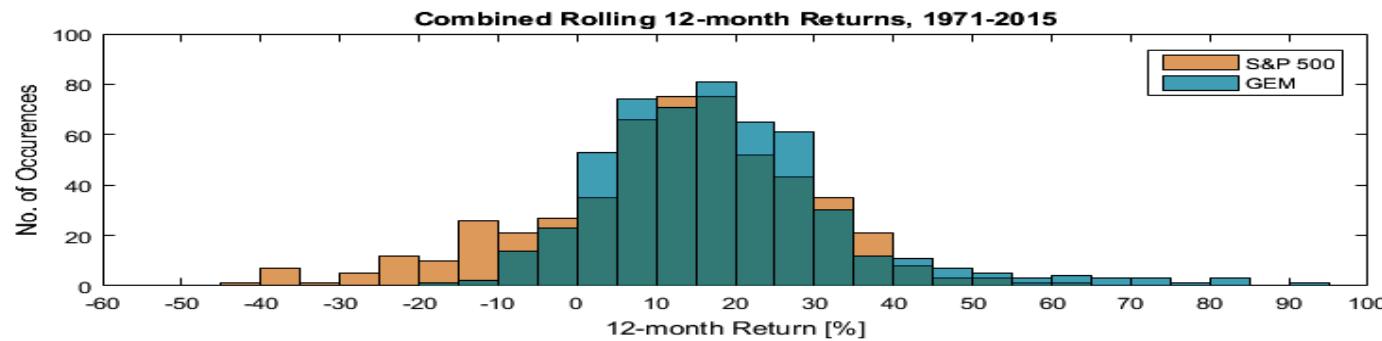
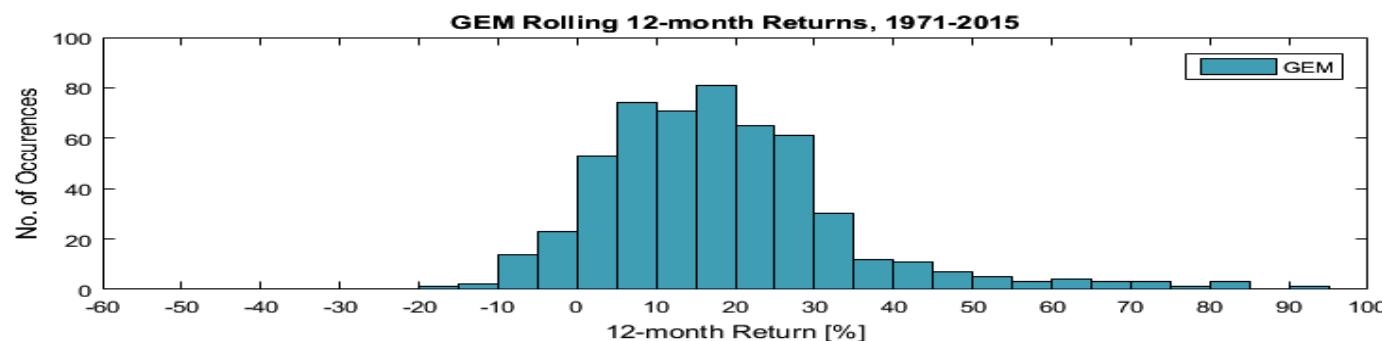
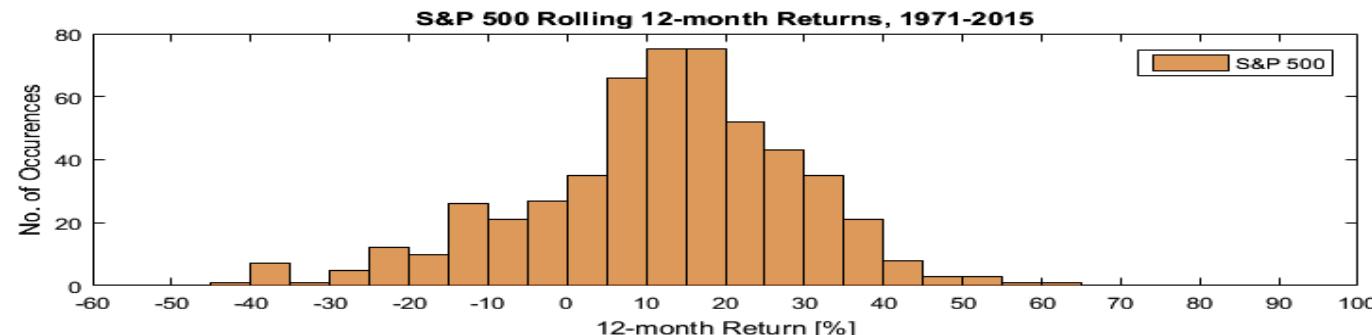
Bull Markets	S&P 500	Abs Mom	Dual Mom
Jan 71-Dec 72	36.0	32.6	65.6
Oct 74-Nov 80	198.3	91.6	103.3
Aug 82-Aug 87	279.7	246.3	569.2
Dec 87-Aug 00	816.6	728.4	730.5
Oct 02-Oct 07	108.3	72.4	181.6
Mar 09-Jul15	227.7	136.8	106.4
Average	277.7	218.1	292.7

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Bull Versus Bear Markets

Bear Markets	S&P 500	Rel Mom	Dual Mom
Jan 73-Sep 74	-42.6	-35.6	15.1
Dec 80-Jul 82	-16.5	-16.9	16.0
Sep 87-Nov 87	-29.6	-15.1	-15.1
Sep 00-Sep 02	-44.7	-43.4	14.9
Nov 07-Feb 09	-50.9	-54.6	-13.1
Average	-36.9	-33.1	3.6

Results are hypothetical , are NOT an indicator of future results, and do NOT represent returns that any investor actually attained. Indexes are unmanaged, do not reflect management or trading fees, and one cannot invest directly in an index.



Characteristics of Dual Momentum

- High Returns
- High Scalability
- Low Trading Costs
- Low Drawdowns

Why Isn't Everyone Doing It?



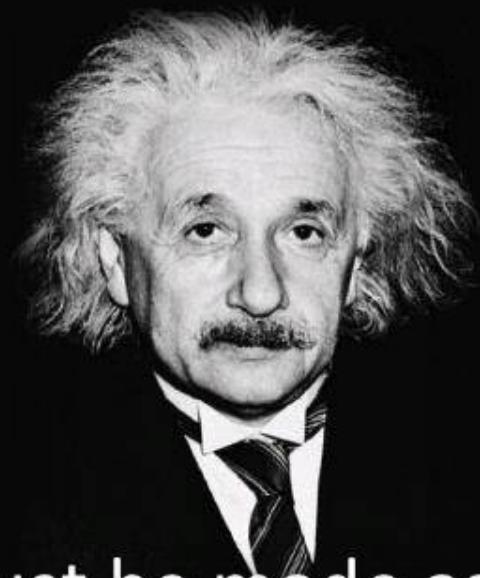
Behavioral Biases



- Anchoring/Conservatism
- Slow diffusion of information
- Familiarity Bias

Too Simple





Things must be made as simple as possible – but never simpler

Counter Intuitive



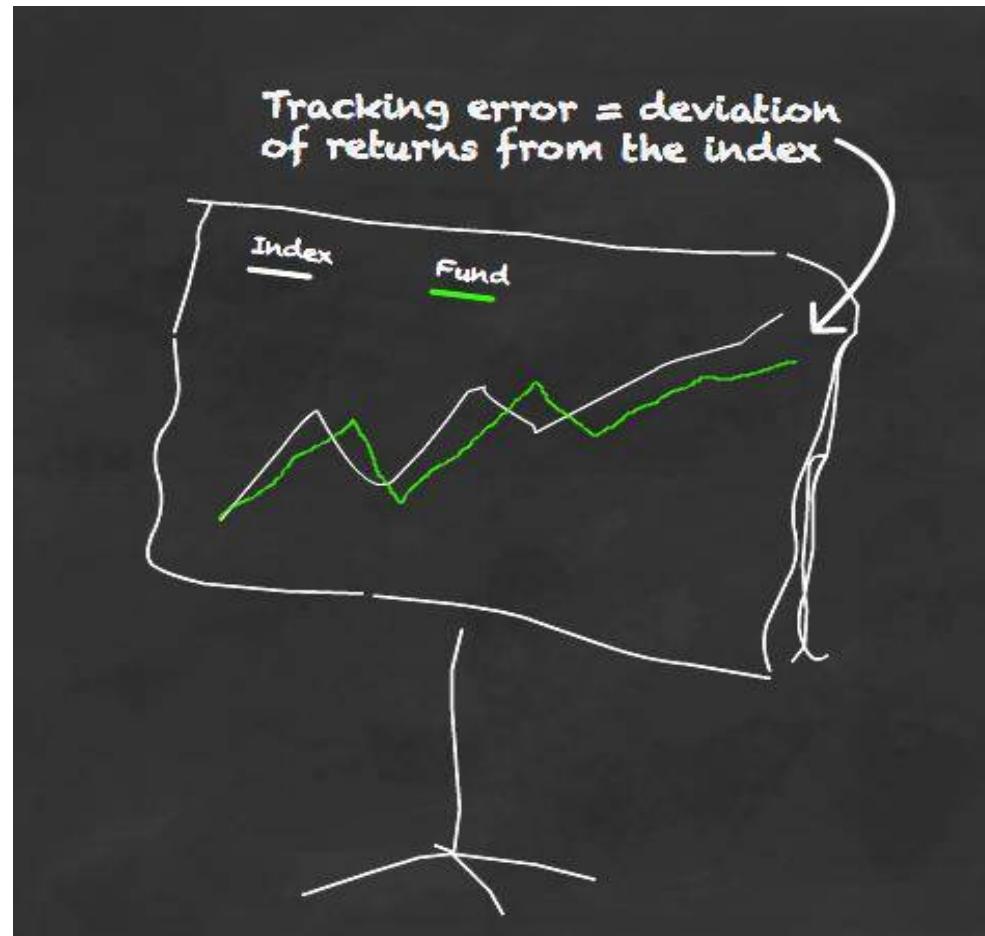
Career Risk



Real Risks ?



Tracking Error



Whipsaws



MARKET VOLATILITY

+1.25%	▲ 283.42	900,000	-2.40%	▼ 274.68	210,000
+2.42%	▲ 51.05	450,000	-0.52%	▼ 55.95	760,000
+4.11%	▲ 12.36	320,000	-3.31%	▼ 16.38	980,000
-0.89%	▼ 421.25	650,000	+1.59%	▲ 365.26	420,000
+3.24%	▲ 526.48	960,000	+3.00%	▲ 698.48	750,000
-1.05%	▼ 862.34	700,000	+0.02%	▲ 365.76	600,000
-5.82%	▼ 624.26	120,000	-0.65%	▼ 684.26	940,000
+7.69%	▲ 982.34	720,000	-0.59%	▲ 598.35	120,000
+2.65%	▲ 698.25	240,000	-0.96%	▲ 685.96	100,000
+4.10%	▲ 741.27	320,000	-5.02%	▼ 785.27	400,000
+1.50%	▲ 663.74	710,000	+2.95%	▲ 531.21	410,000
-0.25%	▼ 282.42	740,000	-2.21%	▲ 286.42	160,000
+4.42%	▲ 532.09	160,000	-0.82%	▼ 598.92	230,000
+4.78%	▲ 696.35	120,000	-0.55%	▼ 590.22	120,000
-0.59%	▼ 451.22	660,000	-0.80%	▲ 491.95	500,000
+1.24%	▲ 426.41	140,000	-2.27%	▲ 566.83	480,000
-2.05%	▼ 541.26	360,000	-0.05%	▼ 631.95	510,000
+1.82%	▲ 281.26	120,000	+0.85%	▲ 864.26	220,000
+3.69%	▲ 112.34	450,000	-0.99%	▼ 132.41	490,000

THE 3 SECRETS OF SUCCESS

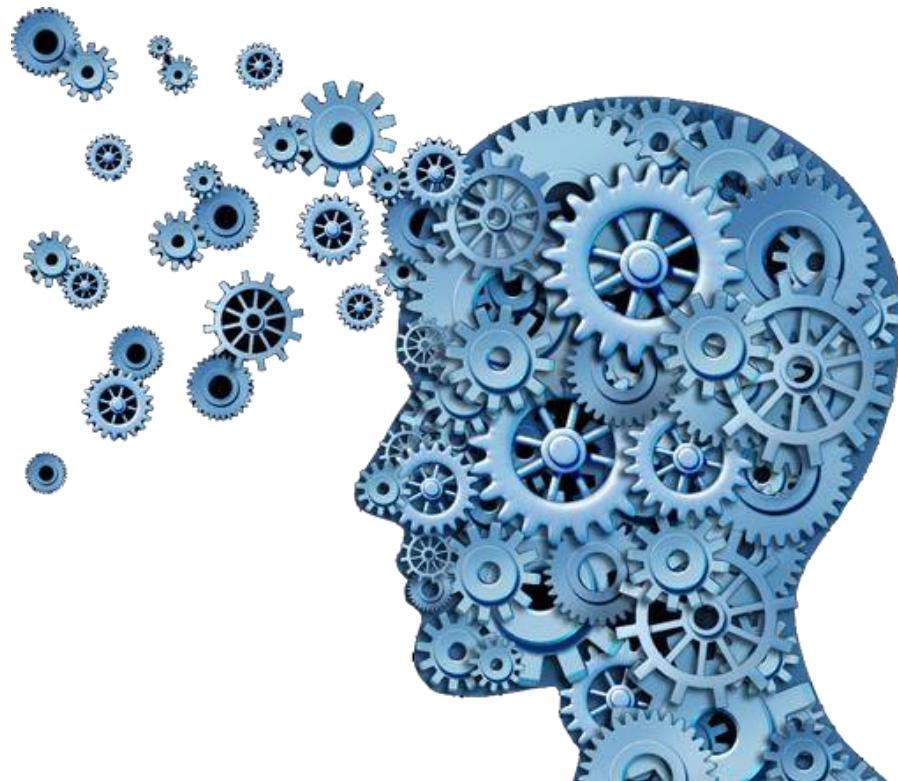
Patience



Discipline



Understanding



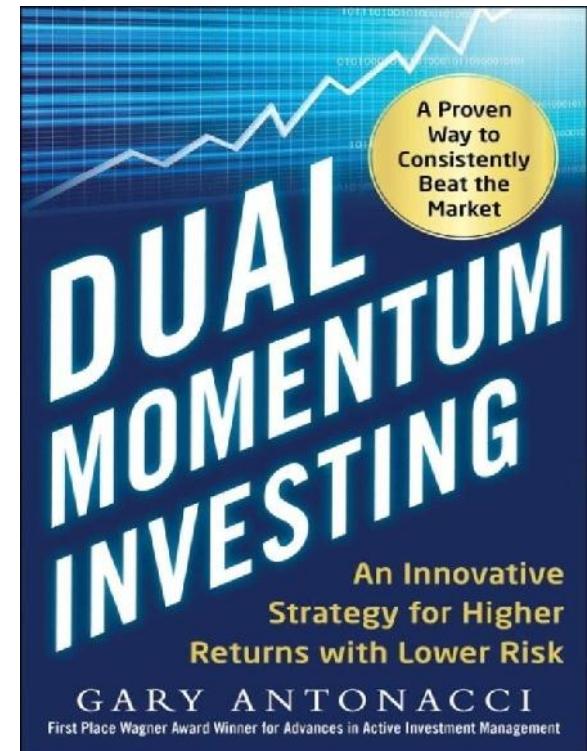
Dual Momentum Investing

USA Best Book Award

Rare Amazon 5 Star Rating

250+ Book Reviews

Easy D-I-Y Instructions





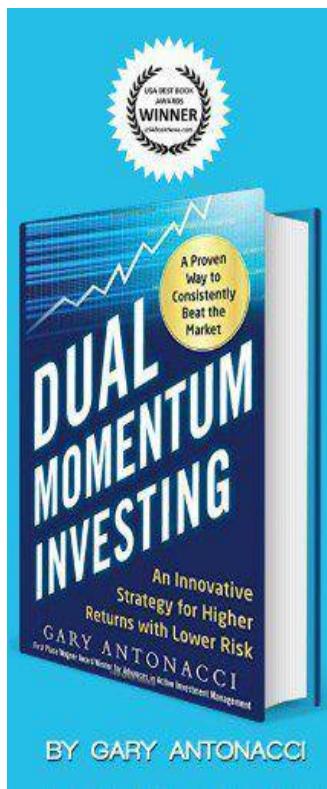
Questions





**The most important metric
is not the returns achieved
but the returns weighed
against the risks incurred.**

**Ultimately nothing should be
more important than the ability
to sleep soundly at night.**



DISCOVER
**DUAL
MOMENTUM
INVESTING**
AN INNOVATIVE STRATEGY FOR
HIGHER RETURNS WITH LOWER RISK

BY GARY ANTONACCI

USA BEST BOOK AWARD WINNER

May the Momentum Be With You!



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A blue and red target with an arrow hitting the bullseye, located on the left side of the slide.

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[Blog: http://dualmomentum.net](http://dualmomentum.net)