Investing Smorgasbord

William Bernstein
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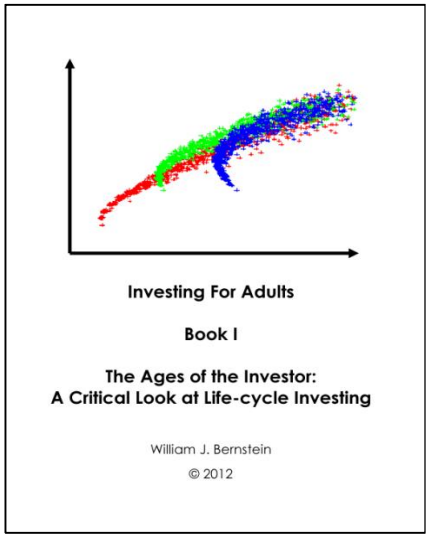
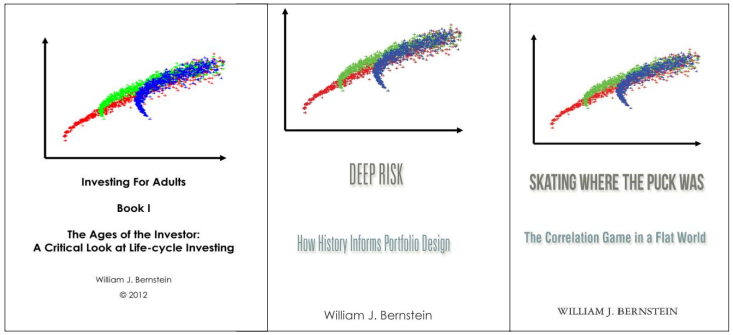
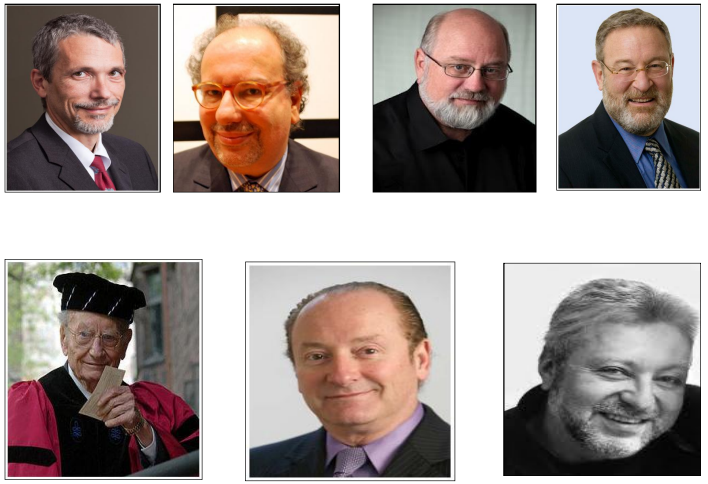
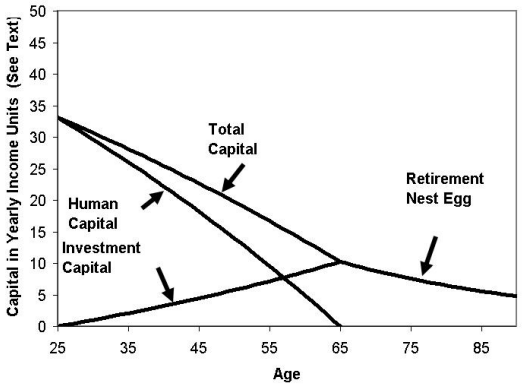




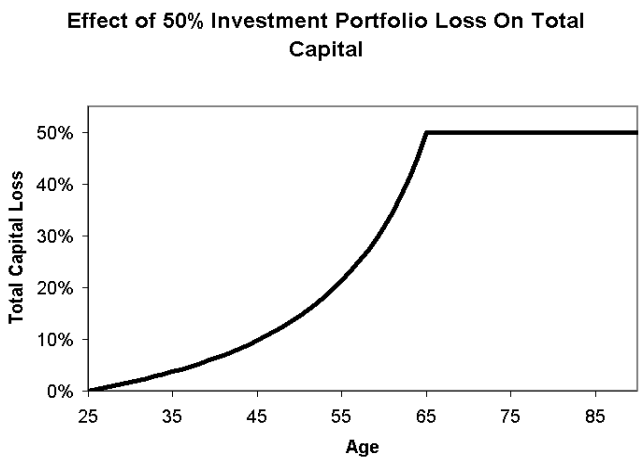




20% Savings Rate
2% Real Portfolio Return
2% Real Discount Rate on Future Earnings
1% Real Annual Wage Increase

Part 1: Sequence Doesn't Matter

- Stock Paradigm: Coin Flip with +30%, -10%
- Expected Return = 10% (Arithmetic average)
- Median Return = 8.17% (Geometric average)
- SD = 20%
- If no portfolio contributions or withdrawals, sequence doesn't matter



Part 2: Sequence Matters

- Add $1,000 to account for 40 years, total contribution = $40,000
- Sequence One: 20 positive returns (+30%) followed by 20 negative returns (-10%). Ending amount = $159,960.
- Sequence Two: 20 negative returns followed by 20 positive returns: Ending amount = $4,307,437.

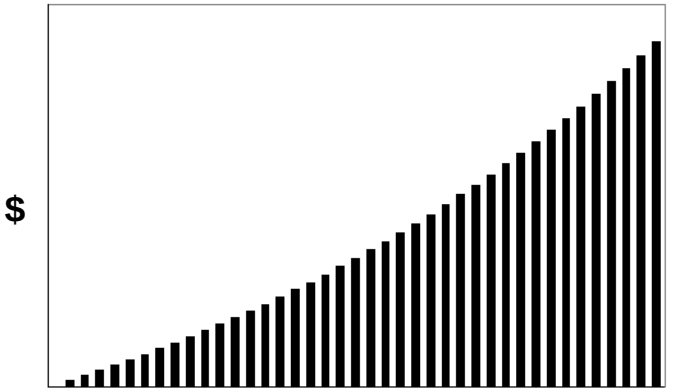
NBER WORKING PAPER SERIES

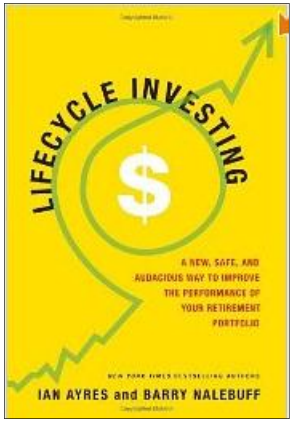
LIFE-CYCLE INVESTING AND LEVERAGE:
BUYING STOCK ON MARGIN CAN REDUCE RETIREMENT RISK

Ian Ayres
Barry J. Nalebuff

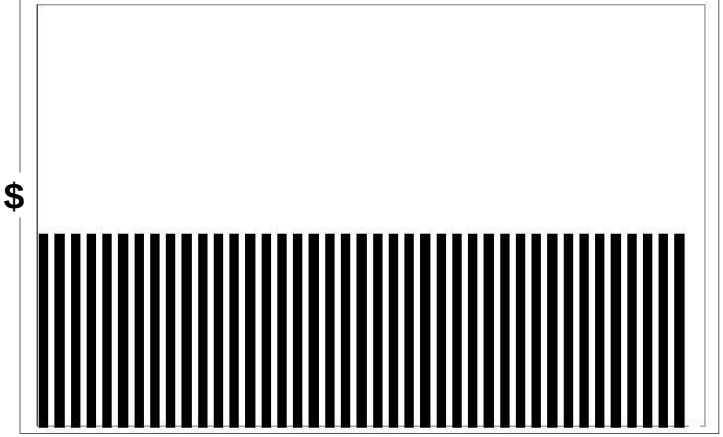
Working Paper 14094
http://www.nber.org/papers/w14094

Typical Stock Exposure in Savings Phase



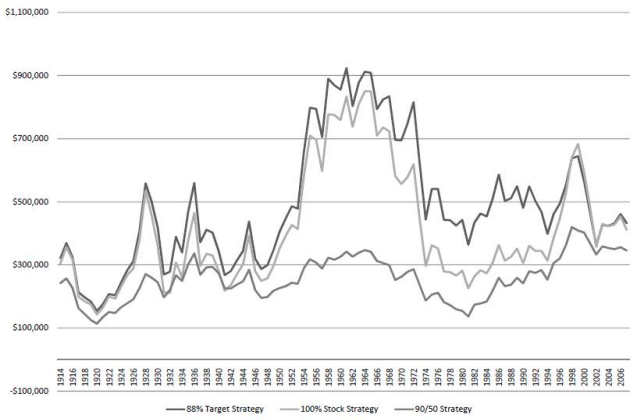


Ideal Stock Exposure in Savings Phase

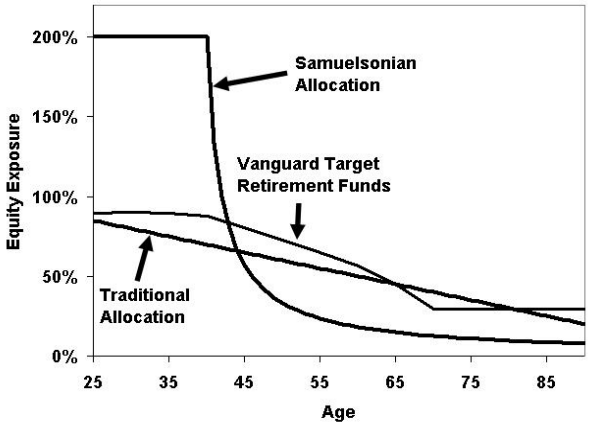


How to Get More Stock Exposure When Young?

- Leverage
- Weight savings towards younger years



Source: Nalebuff and Ayers



What's Wrong with Samuelsonian Allocation?

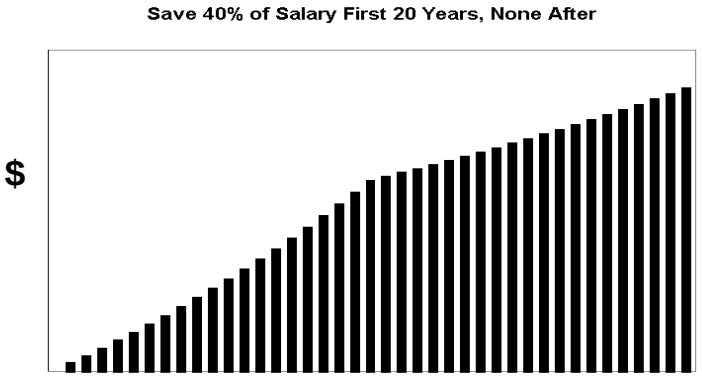
- Increased risk aversion of younger investors
- Implicit leverage costs
- LEAPS-Options-based deployment, or . .
- Leveraged ETF deployment
- ??? Factor-based deployment (small and value)

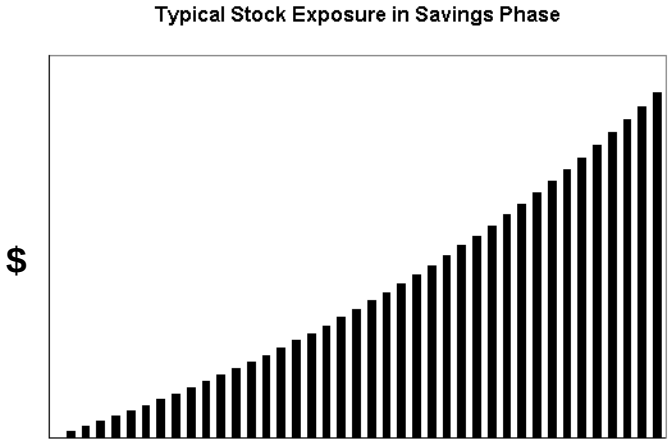
Front-Loaded Savings Strategy

(Save like hell first 20 years, then stop saving and live it up.)

- At a 2% real return, 14 years of double savings followed by no savings gives same final wealth as 40 years of conventional savings.
- Exact opposite of **consumption smoothing**
- Advantages: 1) avoids **hedonic treadmill**. 2) sleep like a baby
- Disadvantages: live in student apartment until you're 45

Front-Loaded Savings Strategy





65-Year-Old-Twins

- Twin A: $1,000,000 at retirement in a DC plan
- Twin B: a $50,000, inflation-adjusted federal government pension with spousal survivorship

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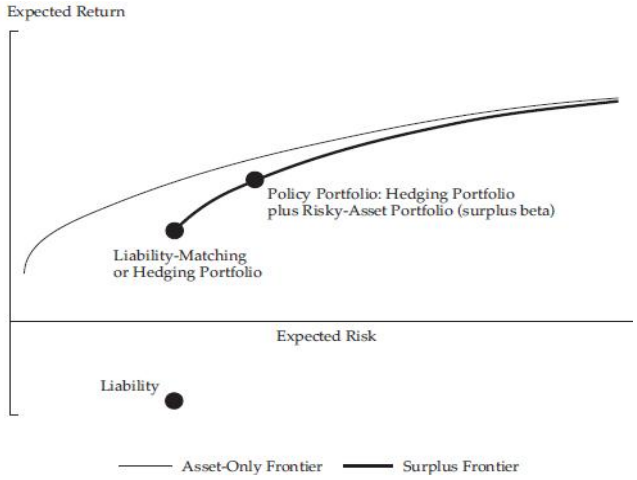
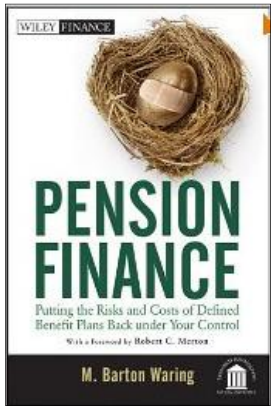
PERSPECTIVES

Don't Kill the Golden Goose! Saving Pension Plans

M. Barton Waring and Laurence B. Siegel

We could be seeing the beginning of the end of the most valuable and well-conceived employee benefit program ever devised—the final-pay defined-benefit (DB) pension plan. If these plans really do disappear, that would be a tragedy for employees and for society, and we'd argue that it would also represent a loss to employers of one of their most because they expose the cash flow statement to wildly fluctuating demands for supporting contributions. Many sponsors, both corporate and public, do not see these risks as being manageable. Moreover, sponsors sense that these plans are more costly than can be justified. These concerns have been repeated often enough to take on the appearance of truth. For many executives, it seems to be a





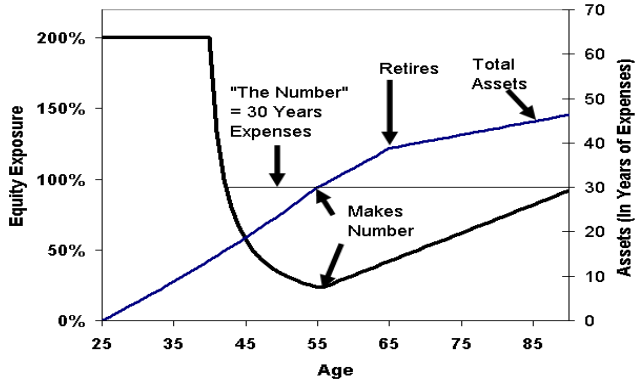
How Pension Plans Should Defease DB Liabilities

- With fixed income assets:
- Defease nominal obligations with high-quality bonds whose maturities match obligations
- Ditto for real obligations, with TIPS
- The "60/40-8% returns" assumption disaster

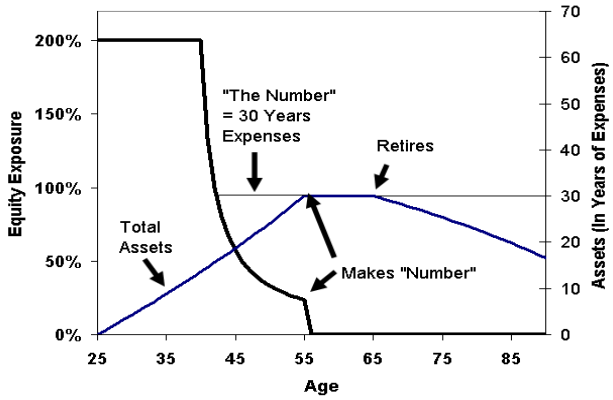
How Individuals Should Defease their Very Real Obligations

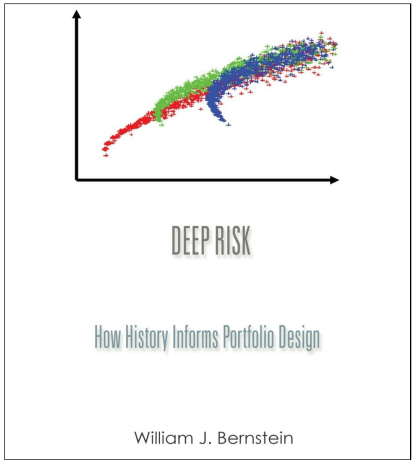
- Defer Social Security until age 70, with an implicit 8% real increase in payout between ages 62 and 70
- TIPS ladder (not mutual fund)
- Immediate Fixed annuity?
- Variable annuity?

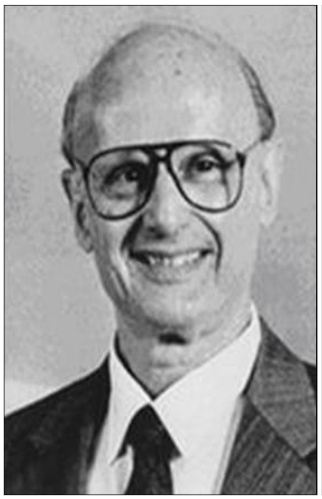
Less Conservative



Combined Approach







PORTFOLIO SELECTION*

HARRY MARKOWITZ
The Rand Corporation

THE PROCESS OF SELECTING a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities. The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio. This paper is concerned with the second stage. We first consider the rule that the investor does (or should) maximize discounted expected, or anticipated, returns. This rule is rejected both as a hypothesis to explain, and as a maximum to guide investment behavior. We next consider the rule that the investor does (or should) consider expected return a desirable thing *and* variance of return an undesirable thing. This rule has many sound points, both as a maxim for, and hypothesis about, investment behavior. We illustrate geometrically relations between beliefs and choice of portfolio according to the "expected returns—variance of returns" rule.

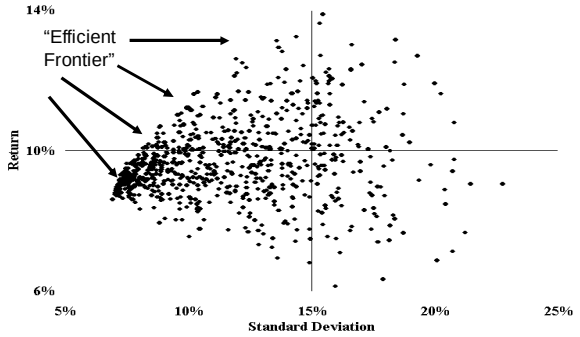
One type of rule concerning choice of portfolio is that the investor does (or should) maximize the discounted (or capitalized) value of future returns.[1] Since the future is not known with certainty, it must be "expected" or "anticipated" returns which we discount. Variations of this type of rule can be suggested. Following Hicks, we could let "anticipated" returns include an allowance for risk.[2] Or, we could let the rate at which we capitalize the returns from particular securities vary with risk.

The hypothesis (or maxim) that the investor does (or should) maximize discounted return must be rejected. If we ignore market imperfections the foregoing rule never implies that there is a diversified portfolio which is preferable to all non-diversified portfolios. Diversification is both observed and sensible; a rule of behavior which does not imply the superiority of diversification must be rejected both as a hypothesis and as a maxim.

* This paper is based on work done by the author while at the Cowles Commission for Research in Economics and with the financial assistance of the Social Science Research Council. It will be reprinted as Cowles Commission Paper, New Series, No. 60.

1. See, for example, J. B. Williams, *The Theory of Investment Value* (Cambridge, Mass.: Harvard University Press, 1938), pp. 55–75.
2. J. R. Hicks, *Value and Capital* (New York: Oxford University Press, 1939), p. 126.

Mean Variance Space:
US Large and Small, European, Japan, Pac. Rim., Gold Stocks, 5-Year Treasuries
1990-1996 With Annual Rebalancing



Standard Deviation

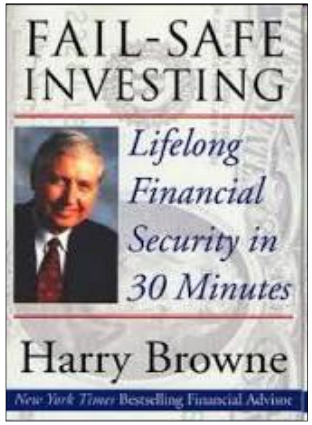
$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

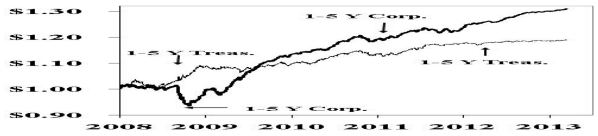
What Else is Risk?

- Hemivariance, etc.
- "Ilmanen Risk": Bad returns in bad times
- "Extra-spreadsheet risk" Bad things in the real world: hyperinflation, war, revolution, economic depressions, financial panics

A “Riskless Asset”

- 10% . . . 10% . . . .10% . . . .10% . . . 10%
- 10% . . . 10% . . . .10% . . . .10% . . . 10%. . . -50%





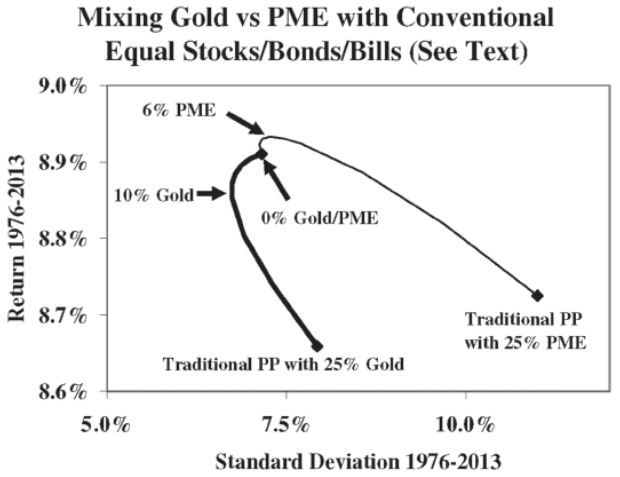
“Ilmanen Risk”: Bad Returns in Bad Times

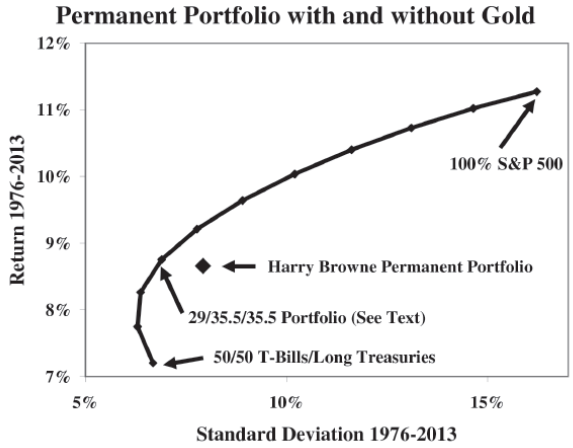
Harry Browne’s 4 Scenarios

- Inflation → Gold
- Deflation → Long Treasuries
- Tight Money → T-bills
- Prosperity → Stocks

“The Permanent Portfolio”

- 25% Gold
- 25% Long Treasuries
- 25% T-bills
- 25% Stocks





Insurance Thought Experiment

- You can insure fully against flood, fire, earthquake, and tornado for $1000 each.
- Your insurance budget is $1000.
- You are allowed partial insurance.
- Your house is in a flood plain.

How to Insure against Events

- How probable is the event?
- How severe is the event?
- How much does it cost to insure?

Deep Risk: Permanent Loss of Capital (Real Loss over > 30 Years)

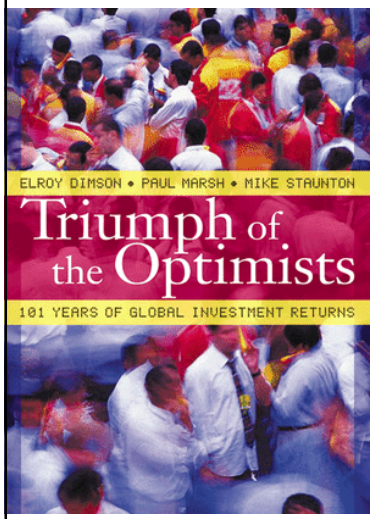
- Severe, Prolonged Inflation
- Severe, Prolonged Deflation
- Confiscation
- Devastation

Financial Risk: The Big Picture

- Catastrophic Loss of Human Capital: death, disability, devastating legal judgment, incarceration.
- Loss of Investment Discipline: overestimation of risk tolerance leading to sales after market decline caused by **Shallow Risk (Temporary capital loss)**.
- **Deep Risk: Permanent real capital loss caused by market declines themselves.**

Severe Prolonged Inflation

- Examples: Weimar Germany, post-WW II Hungary, recent Zimbabwe, pervasive in Latin American financial history
- Common in financial history!
- Solution: Wide diversification among global stocks, tilt towards value stocks, commodities stocks, inflation-protected Treasuries (TIPS) and annuities, Social Security payments, fixed-rate mortgages.



Severe Prolonged Deflation

- Examples: Rare: ?Recent Japan, Ireland, Hong Kong
- Very uncommon
- Solution: Long Treasuries, Cash, and, surprisingly, Gold.

Gold and Inflation: Dimson/Marsh/Staunton

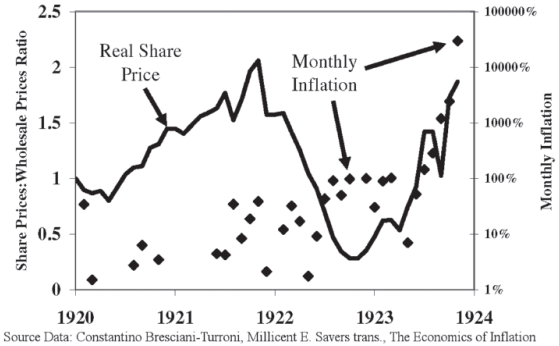
- 19 countries x 112 years = 2,168 country-years
- 5% country-years with highest inflation, gold returned -0.8%
- 5% country-years with lowest inflation (i.e., deflation), gold returned +12.2% (inflation-adjusted).
- Brazil 1980s-1990s, horrible inflation, gold bullion loses almost 70% of real value.

Confiscation

- Examples: Post-revolutionary Russia, China, Cuba, recent Argentina.
- Modest confiscation in the form of future higher taxes seems likely.
- Solution: Foreign assets, adequate means of escape. For U.S. citizens, foreign real estate and gold deposits most likely to keep you out of jail.

Devastation

German Real Stock Prices and Inflation 1920-1923



Source Data: Constantino Bresciani-Turroni, Millicent E. Savers trans., The Economics of Inflation (Northampton, UK: John Dickens Co., 1937), 256–273, tables XXX–XXXII.

Stocks and Acute Inflation

	CPI	PME	Oils	Base Metals	CRSP 1-10
1973	8.78%	68.31%	10.04%	33.62%	-18.06%
1974	12.20%	-19.98%	-26.05%	-23.42%	-27.04%
1975	7.01%	-4.53%	23.64%	38.42%	38.75%
1977	6.77%	13.94%	-1.93%	-24.70%	-4.26%
1978	9.03%	0.33%	8.53%	12.95%	7.49%
1979	13.32%	128.35%	59.41%	72.96%	22.62%
1980	12.41%	67.97%	68.69%	44.63%	32.81%
1981	8.94%	-34.51%	-20.75%	-6.54%	-3.65%
1990	6.10%	-19.14%	-1.44%	-12.19%	-5.96%
Average	9.40%	22.31%	13.35%	15.08%	4.75%
Ann'd*	9.37%	12.92%	9.43%	10.58%	2.60%
Real Ann'd*	N/A	3.25%	0.05%	1.11%	-6.19%

* Computed as if the above annual returns had occurred consecutively.
Data source: Ken French Data Library, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

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Global Stock Markets in the Twentieth Century

PHILIPPE JORION and WILLIAM N. GOETZMANN*

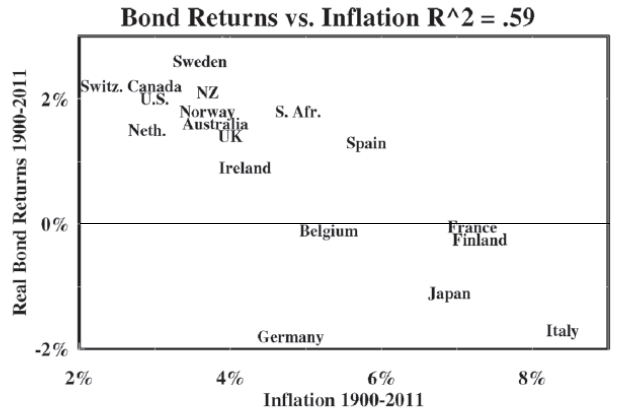
ABSTRACT

Long-term estimates of expected return on equities are typically derived from U.S. data only. There are reasons to suspect that these estimates are subject to survivorship, as the United States is arguably the most successful capitalist system in the world. We collect a database of capital appreciation indexes for 39 markets going back to the 1920s. For 1921 to 1996, U.S. equities had the highest real return of all countries, at 4.3 percent, versus a median of 0.8 percent for other countries. The high equity premium obtained for U.S. equities appears to be the exception rather than the rule.

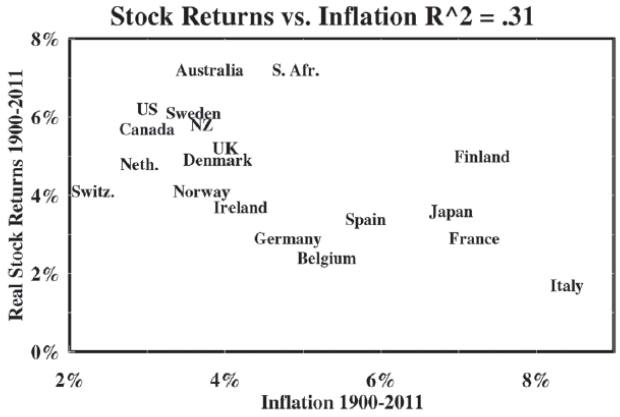
Stocks and Severe Chronic Inflation

Nation	Period	Ann'd Inflation (Wholesale)	Wholesale Price Factor Rise	Ann'd Real Price-Only Equity Returns
Brazil	1961-1996	147.52%	137,000,000,000,000	-0.17%
Argentina*	1947-1996*	96.92%	591,000,000,000	-4.80%
Peru	1941-1996*	52.68%	19,500,00,000	-4.85%
Israel	1957-1996	33.02%	90,506	+3.03%
Chile	1927-1971	33.16%	508,000,000	+2.99%
Mexico	1935-1996	17.34%	15,400	+2.30%
Columbia	1927-1996	15.09%	4,600	-4.85%
Venezuela	1938-1996	11.95%	4,000	-2.04%
Philippines	1954-1996	9.96%	57	-3.65%
Italy	1929-1996	9.94%	629	+0.15%
Pakistan	1960-1996	8.57%	19	-1.77%
France	1921-1996	8.28%	422	+0.75%
Japan	1921-1996*	8.21%	402	-0.81%
Finland	1931-1996	7.99%	148	2.07%
India	1940-1996	7.60%	60	-2.33%
Portugal*	1931-1996	7.51%	119	-0.58

Source: Jorion and Goetzman, JoF, 2002.



Data Source: DMS 2012 Yearbook, see text and footnotes.



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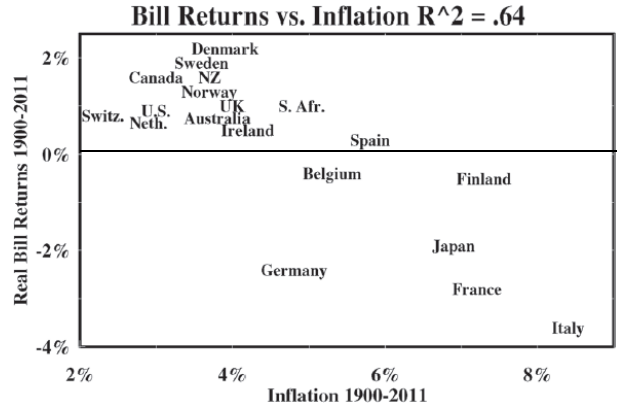
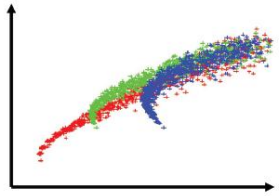


Data Source: DMS 2012 Yearbook, see text and footnotes.

	Probability	Consequence Severity	Cost of Insuring
Inflation	+ + +	+	+
Deflation	+	+ +	+ + +
Confiscation	+ +	+ +	+ +
Devastation	+	+ + +	+++

The Problem: Part I

- 1) F/I Real ER = -2% to 0%. Only possible way to a positive real return is to stay short and pray, or go long and pray even harder.
- 2) Real Stock ER = 2.1% Div.+ 1.3% Div. Growth = 3.5%
- 3) 60/40 Portfolio Real ER ≈ 1.7%



SKATING WHERE THE PUCK WAS

The Correlation Game in a Flat World

WILLIAM J. BERNSTEIN

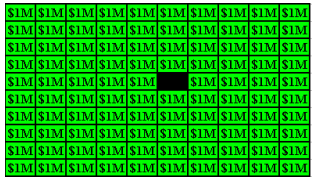
The "Solutions"

- Hedge Funds
- Commodities
- Private Equity
- Private Real Estate

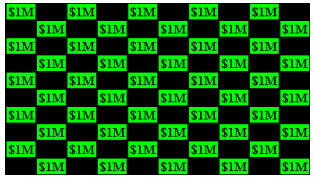
When Bad Things Happen to Hedge Funds: HFR Global Hedge Funds, 1998-2013 Three Factor Analysis

Period	alpha	MRK	SmB	HmL
1/98-8/13	0.14%	0.21	0.10	0.01
1/98-3/03	0.72%	0.15	0.13	0.01
4/03-6/08	-0.05%	0.28	0.10	0.08
7/08-8/13	-0.39%	0.36	-0.13	-0.18

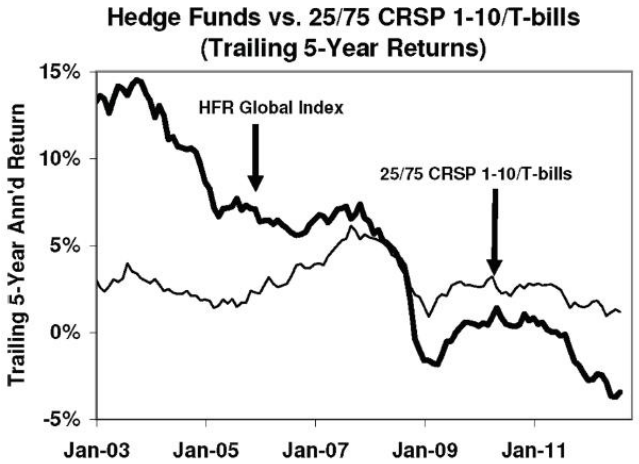
The Early Birds Get the Worm:
$100M Alpha, $1M Costs per Hedge Fund



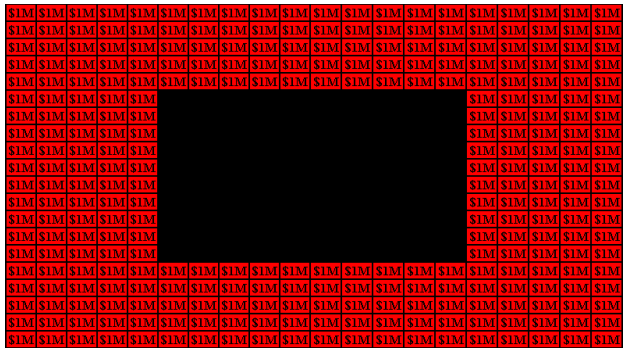
$99M Potential Alpha for First Fund



50 Funds: $1M Potential Alpha for Each



Crowding Reverses Alpha:
400 Funds Chasing$100M Alpha, $1M Costs per Hedge Fund = -$300M Alpha

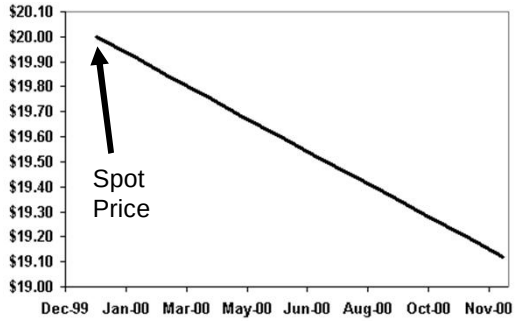


Commodities Investing, the Fairy Tale Circa 1992:

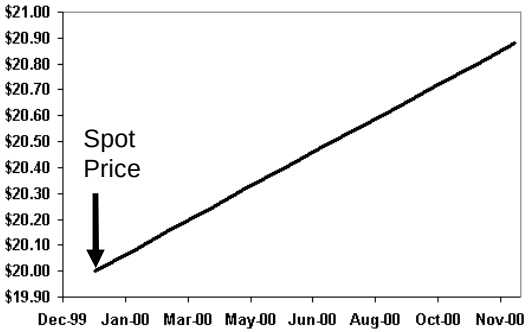
1972–1990 Markowitz Inputs

	Return	SD	GSCI	S&P 500	Long Gov't
GSCI	16.26%	23.52%	1.00		
S&P 500	10.99%	17.50%	-0.37	1.00	
Long Gov't	8.49%	12.38%	-0.28	0.40	1.00

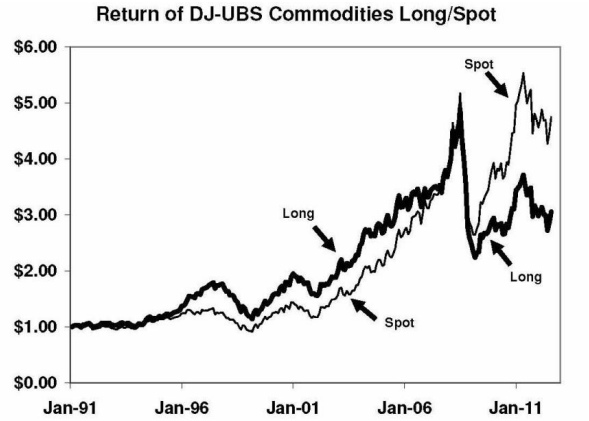
Sellers seeking protection against deflation predominate: ***Keynesian backwardation*** (positive roll)



Buyers seeking protection against inflation predominate: ***contango*** (negative roll)

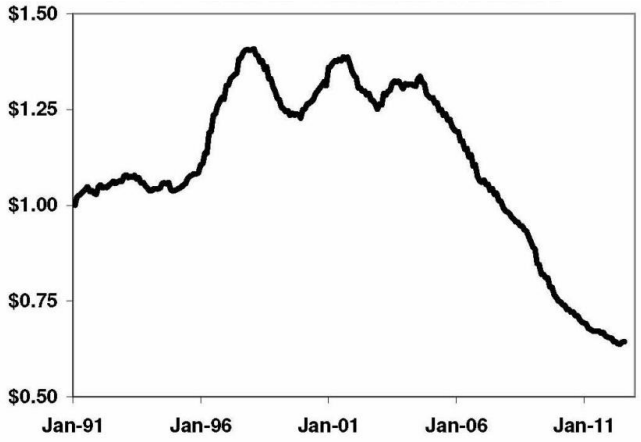


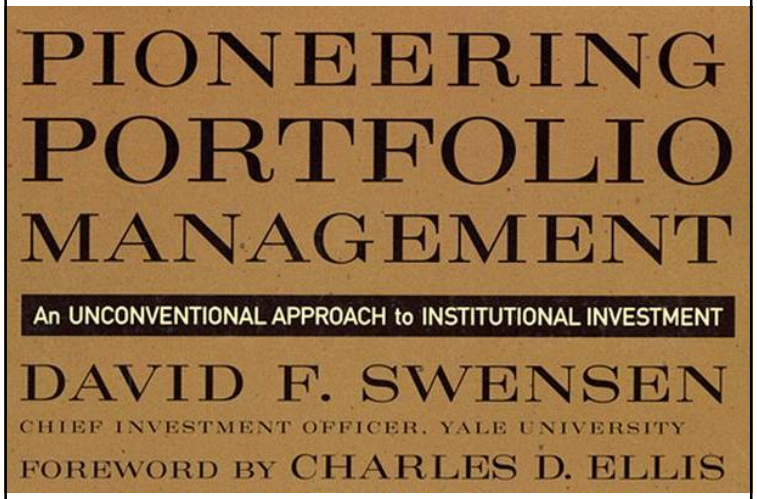
Commodities Futures



Commodities Roll Return

= Spot Price – Futures Price





The "Yale Model"

- Half conventional assets (~60/40 global stocks and bonds)
- Half "alternatives": commodities futures, hedge funds (particularly "absolute return" strategies), private equity, and private real estate.
- 1987-2007: 15.6% ann'd return vs. 10.8% for S&P 500.
- 2007-2012: 1.23% versus 3.69% for a standard 60/40 portfolio.
- FY 2009 lost 24.6%, about the same as a 100% stock portfolio, -12% for a standard 60/40.

Baruch's Aphorism: Something that everyone knows isn't worth knowing.

Rekenthaler's Rule: If the bozos know about it, it doesn't work any more.

Bernstein's Corollary: If everyone owns it, you shouldn't.

2011: 823 University Endowments

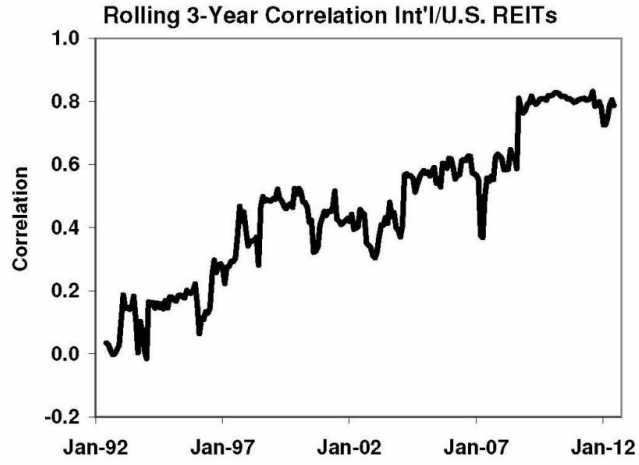
- Averaged 53% of their funds in the "alternatives" pioneered by Swensen.
- Results: Nudged out by a simple 60/40 mix of S&P 500/Barclay's/Lehman Aggregate Bond mix and even by the Vanguard Balanced Index Fund over past 3 and 5 years.

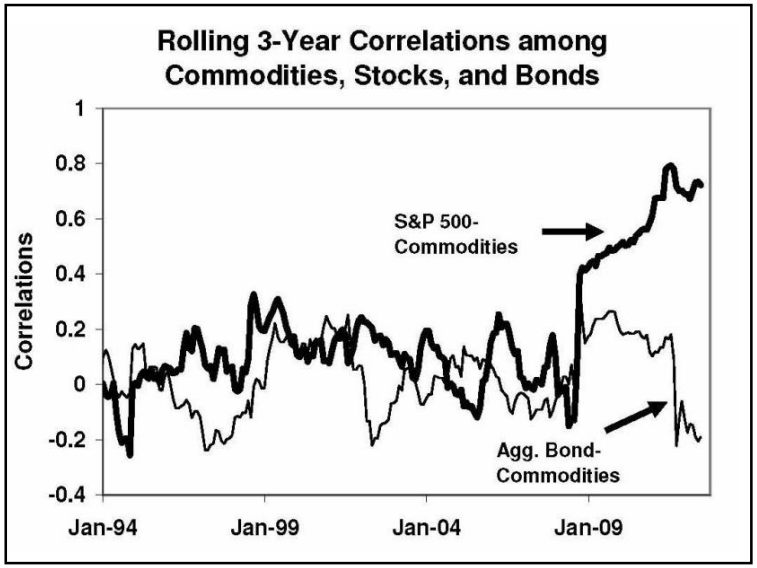
- Source: National Association of College and University Business Officers

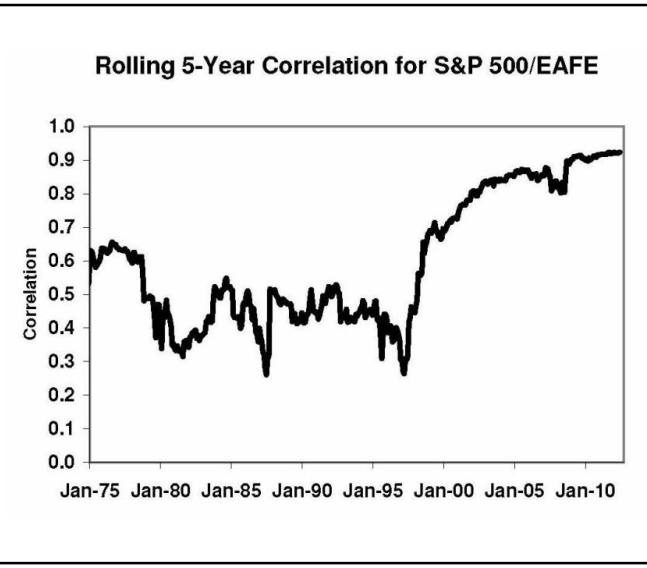
Typical "Wealth Management" Portfolio as of 2012

High-Quality Multinational Growth Stocks	10%
Emerging Market Equities	20%
Hedge Funds (as revised)	20%
Private Equity	10%
Real Estate	10%
Gold	5%
Agricultural commodities and natural resources	5%
High Yield Securities	15%
Cash	5%

Financial Crises and Securitization Screw Up Everything







How to avoid Rekenthaler's Rule/Baruch Warning:

- Be early.
- Be far sighted.
- Be patient.

Far-Sighted

Returns of Various Stock and Bond Asset Classes 1999–2008

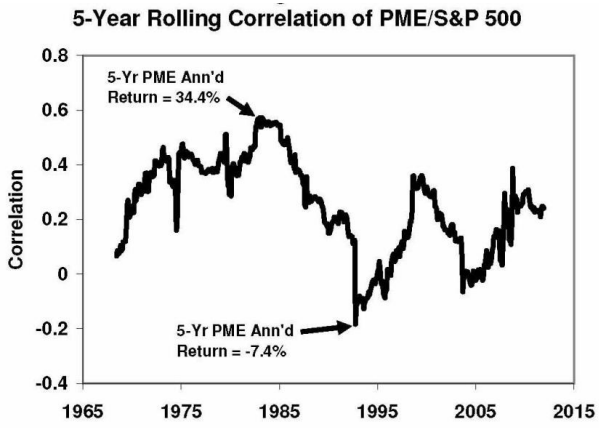
Asset Class	Sept. 2000–Sept. 2002	Nov. 2007–Nov. 2008	Jan. 1999-Dec. 2008
S&P 500	-44.73%	-40.68%	-12.99%
U.S. Large Value Stocks	-10.10%	-46.05%	+23.71%
U.S. Microcap Stocks	-17.58%	-45.18%	+86.63%
U.S. Small Value Stocks	+0.69%	-45.83%	+102.63%
Real Estate Investment Trusts	+26.28%	-54.77%	+107.14%
Int'l. Large Cap Stocks	-40.94%	-48.46%	+13.23%
Int'l. Large Value Stocks	-25.87%	-54.12%	+59.02%
Int'l. Small Cap Stocks	-17.20%	-53.52%	+97.34%
Int'l. Small Value Stocks	-5.68%	-52.42%	+148.23%
Emerging Markets Large Cap Stocks	-32.61%	-56.13%	+147.67%
Emerging Markets Value Stocks	-26.79%	-62.01%	+251.38%
Emerging Markets Small Cap Stocks	-27.59%	-62.91%	+196.43%
Lehman 1-10 Year Treasury Bonds	+22.76%	+12.36%	+73.64%
Lehman 1-10 Year Corporate Bonds	+22.80%	-5.45%	+60.41%
Treasury Bills	+7.36%	+2.22%	+37.39%

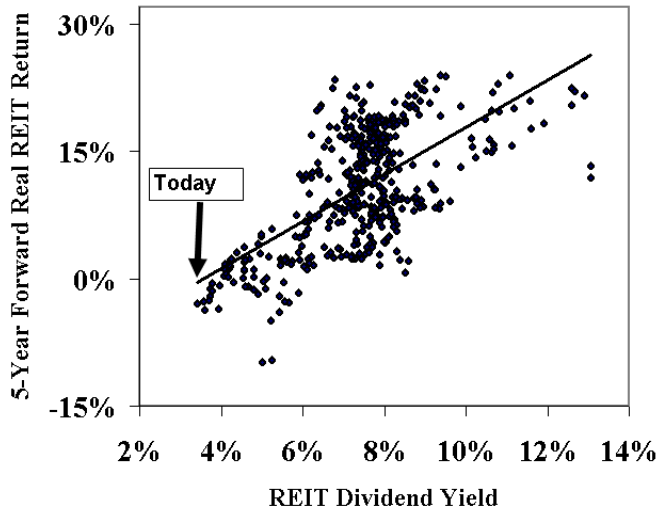
Source: Dimensional Fund Advisors, Barclays/Lehman Brothers

Early

- David Swensen
- John Templeton

Patient. Asset Classes can go in and out of fashion: Precious Metals Stocks



Liquidity Trumps Alt-ness

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