

# *alt.investments*

## Sixth Eubank Conference on Real World Markets:

RISK AND OPPORTUNITY - THE WAY FORWARD

John A. Dobelman

Department of Statistics

April 25, 2016



- *alt.investments*
  - *alt.investments.stock*
  - *alt.investments.cash*
  - *alt.investments.bonds*
  - *alt.investments.futures*

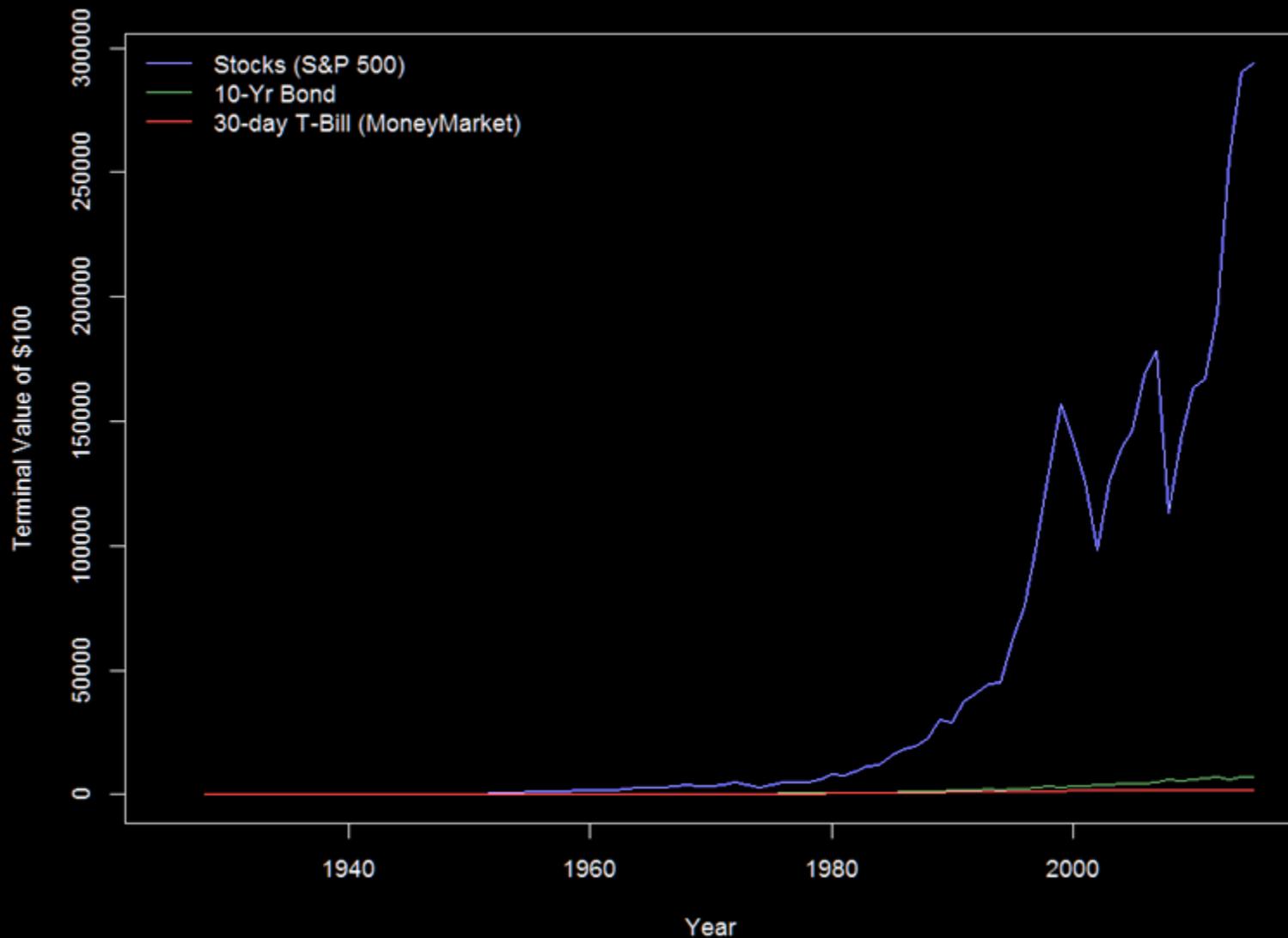
### Geometric Average Annual Returns

Year	Stocks	T-Bills	T-Bonds
1928-2015	9.5%	3.4%	5.0%
1966-2015	9.6%	4.9%	6.7%
2006-2015	7.2%	1.1%	4.7%

## Comparative Terminal Values, 1928-2015



## Comparative Terminal Values, 1928-2015

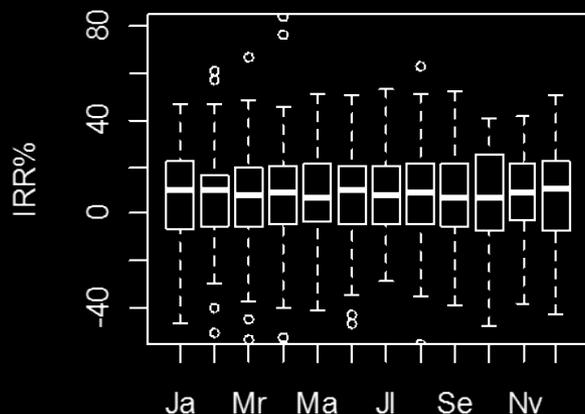


- Recall the First Eubank conference (March 23-24, 2009) was held at the very bottom of investor sentiment and pessimism during the 2008-2009 meltdown
- Recall the Third Eubank Conference October 17-18, 2011:  
Real World Markets - Investing During Troubled Times

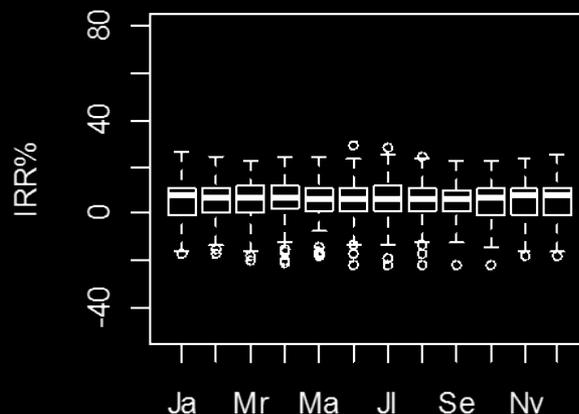


(As of Third Eubank Conference)

### 1-Year, SPX Ex-Div



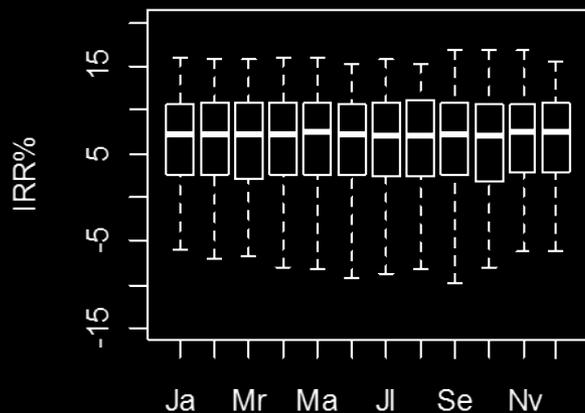
### 5-Year, SPX Ex-Div



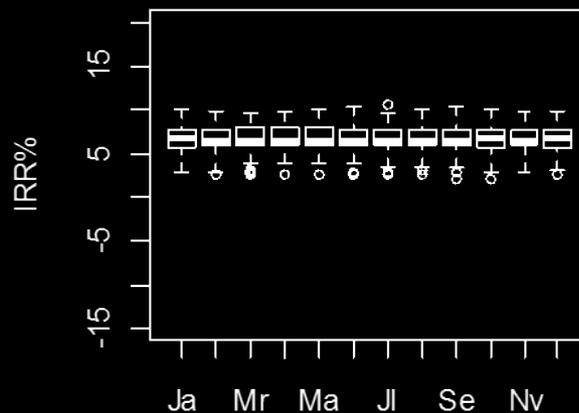
10/17/01  
1,077.09

10/10/11  
1,194.89

### 10-Year, SPX Ex-Div

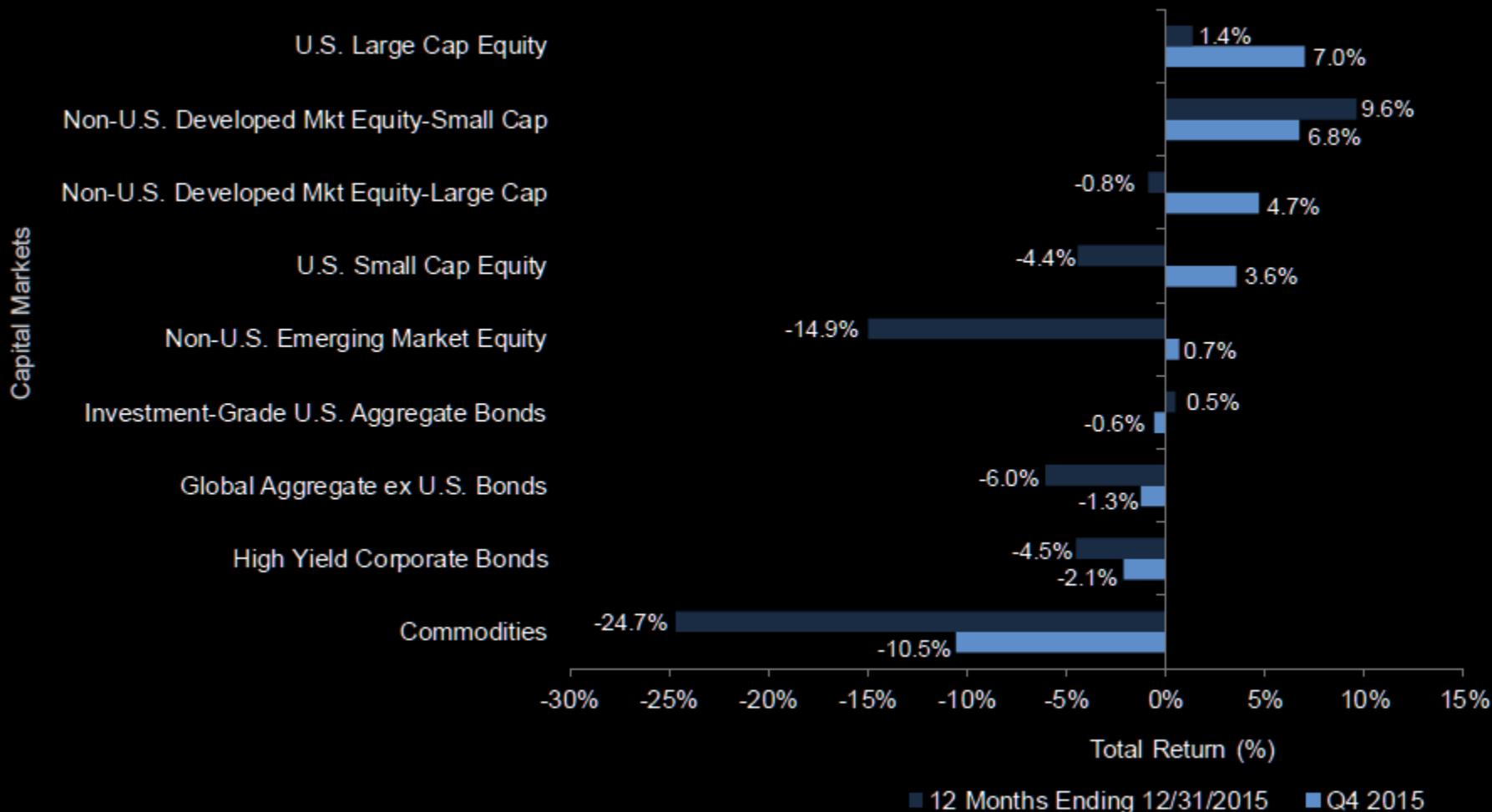


### 30-Year, SPX Ex-Div



$R_T = 10.9\%$   
10 Yr: 1.04%

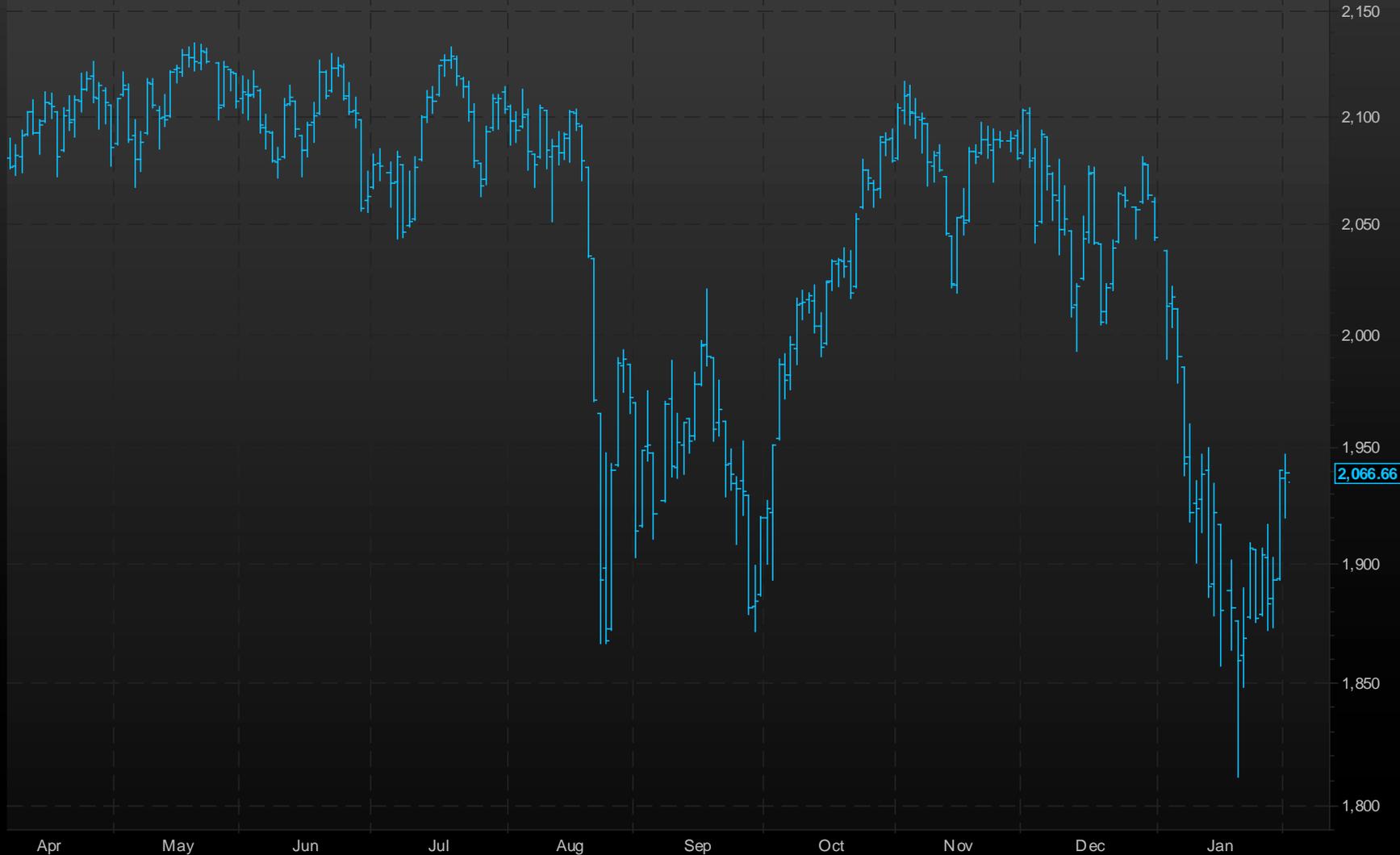
Source: Morningstar Direct, as of December 31, 2015



## S&P 500 (Operating Basis) (SPX-SPX)

2066.66 0.00 0.00% 07:00:30 AM USD

04/07/2015 - 02/01/2016



- USA Today (January 9, 2016)

*Stocks close out week with worst start to year ever*



S&P 500 (Operating Basis) (SPX-SPX)

2066.66 0.00 0.00% 07:00:30 AM USD

04/07/2015 - 04/07/2016



S&P 500 (Operating Basis) (SPX-SPX)

2066.66 0.00 0.00% 07:00:30 AM USD

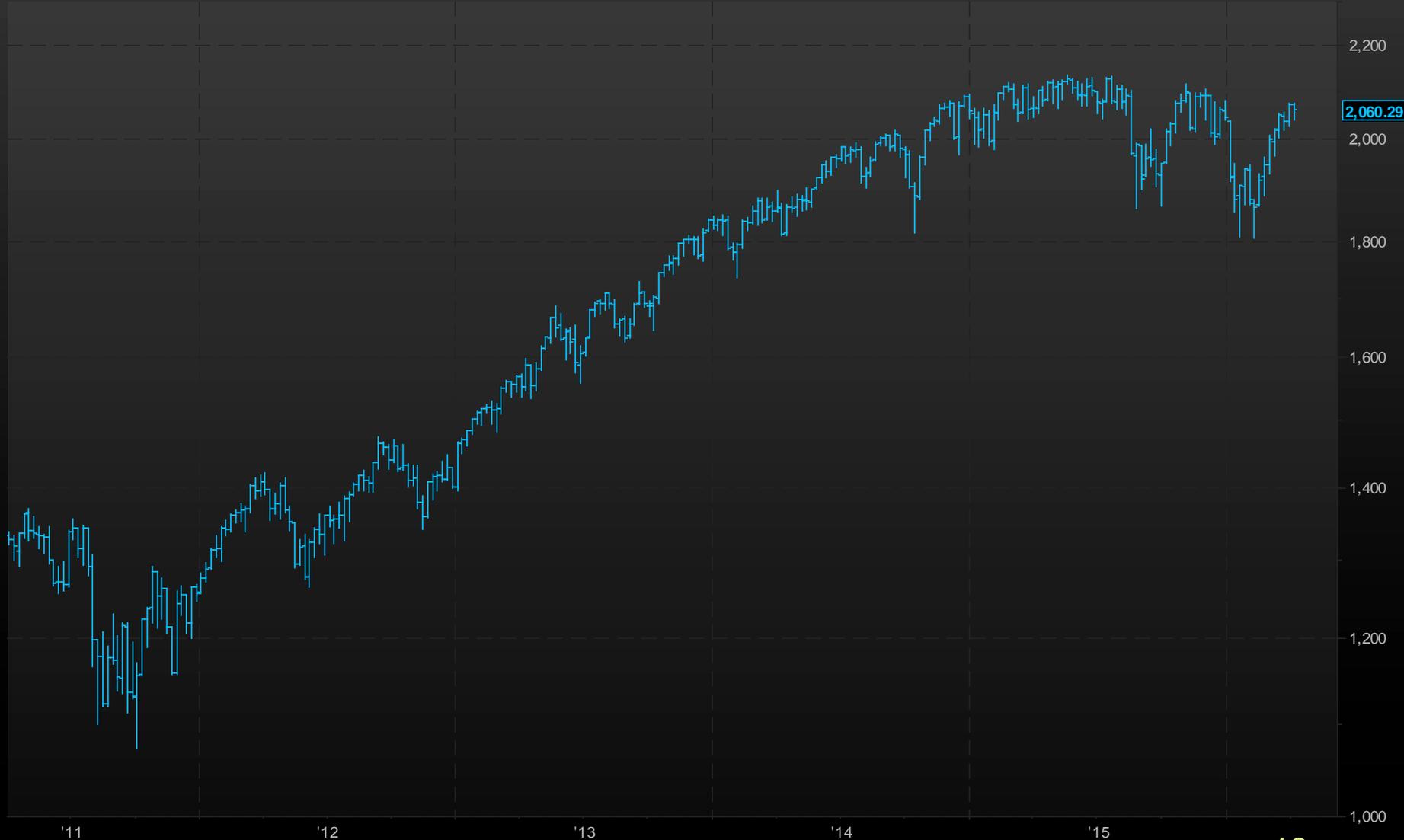
04/07/2014 - 04/07/2016



S&P 500 (Operating Basis) (SPX-SPX)

2060.29 -6.37 -0.31% 07:30:15 AM USD

04/08/2011 - 04/07/2016



S&P 500 (Operating Basis) (SPX-SPX)  
2056.92 -9.74 -0.47% 07:31:05 AM USD

04/07/2006 - 04/07/2016



**CAPITAL MARKETS SNAPSHOT**

<b>EQUITY</b>	<b>AS OF 3/31/2016*</b>	<b>1Q16 RETURN**</b>	<b>12-MONTH RETURN**</b>
Dow Jones Industrial Average	17,685.09	2.20%	2.08%
S&P 500 Index	2,059.74	1.35%	1.78%
NASDAQ Composite Index	4,869.85	-2.43%	0.55%
MSCI EAFE Index	1,652.04	-3.01%	-8.27%
<b>RATES</b>	<b>AS OF 3/31/2016</b>	<b>AS OF 12/31/2015</b>	<b>AS OF 3/31/2015</b>
Fed Funds Target Range	0.25 - 0.50	0.25 - 0.50	0.00 - 0.25
3-Month LIBOR	0.63	0.60	0.27
2-Year Treasury	0.76	1.06	0.56
10-Year Treasury	1.83	2.27	1.94
30-Year Mortgage	3.83	4.01	3.69
Prime Rate	3.50	3.50	3.25
<b>COMMODITIES</b>	<b>AS OF 3/31/2016</b>	<b>1Q16 RETURN</b>	<b>12-MONTH RETURN</b>
Gold	\$1,237.00	16.70%	4.21%
Crude Oil	\$38.34	3.51%	-19.45%

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Emerging Market 26.0%	Emerging Market 34.5%	Emerging Market 32.6%	Emerging Market 39.8%	Fixed Income 5.2%	Emerging Market 79.0%	Small Cap Growth 29.1%	Fixed Income 7.8%	Emerging Market 18.6%	Small Cap Growth 43.3%	Large Cap Growth 14.9%
Small Cap Value 22.2%	Intl. Equity 13.5%	Intl. Equity 26.3%	Intl. Equity 11.2%	HFRI Fund Weighted -19.0%	Small Cap Growth 34.5%	Small Cap 26.9%	Large Cap Growth 4.7%	Small Cap Value 18.1%	Small Cap 38.8%	Large Cap 13.7%
Intl. Equity 20.2%	HFRI Fund Weighted 9.3%	Small Cap Value 23.5%	HFRI Fund Weighted 10.0%	Small Cap Value -28.9%	Intl. Equity 31.8%	Small Cap Value 24.5%	Large Cap 2.1%	Large Cap Value 17.7%	Small Cap Value 34.5%	Large Cap Value 12.4%
Small Cap 18.3%	Large Cap Value 5.8%	Large Cap Value 20.8%	Large Cap Growth 9.1%	Small Cap -33.8%	Large Cap Growth 31.6%	Emerging Market 19.2%	Large Cap Value -0.5%	Intl. Equity 17.3%	Large Cap Growth 32.8%	Fixed Income 6.0%
Large Cap Value 15.7%	Large Cap 4.9%	Small Cap 18.4%	Small Cap Growth 7.0%	Large Cap Growth -34.9%	Small Cap 27.2%	Large Cap Value 15.1%	Small Cap Growth -2.9%	Small Cap 16.3%	Large Cap 32.4%	Small Cap Growth 5.6%
Small Cap Growth 14.3%	Small Cap Value 4.7%	Large Cap 15.8%	Fixed Income 7.0%	Large Cap -37.0%	Large Cap 26.5%	Large Cap 15.1%	Small Cap -4.2%	Large Cap 16.0%	Large Cap Value 32.0%	Small Cap 4.9%
Large Cap 10.9%	Small Cap 4.6%	Small Cap Growth 13.3%	Large Cap 5.5%	Small Cap Growth -38.5%	Large Cap Value 21.2%	Large Cap Growth 15.1%	Small Cap Value -5.5%	Large Cap Growth 14.6%	Intl. Equity 22.8%	Small Cap Value 4.2%
HFRI Fund Weighted 9.0%	Small Cap Growth 4.2%	HFRI Fund Weighted 12.9%	Large Cap Value 2.0%	Large Cap Value -39.2%	Small Cap Value 20.6%	Intl. Equity 7.8%	HFRI Fund Weighted -4.6%	Small Cap Growth 14.6%	HFRI Fund Weighted 9.0%	HFRI Fund Weighted 3.4%

By **Szu Ping Chan**

4 APRIL 2016 • 2:55PM

**J**itters over the health of the Chinese economy could trigger a bloodbath on financial markets if a hard landing materialises, the International Monetary Fund has warned.

<http://www.telegraph.co.uk/business>

## Nevsky Fund Performance - Fourth Quarter 2015

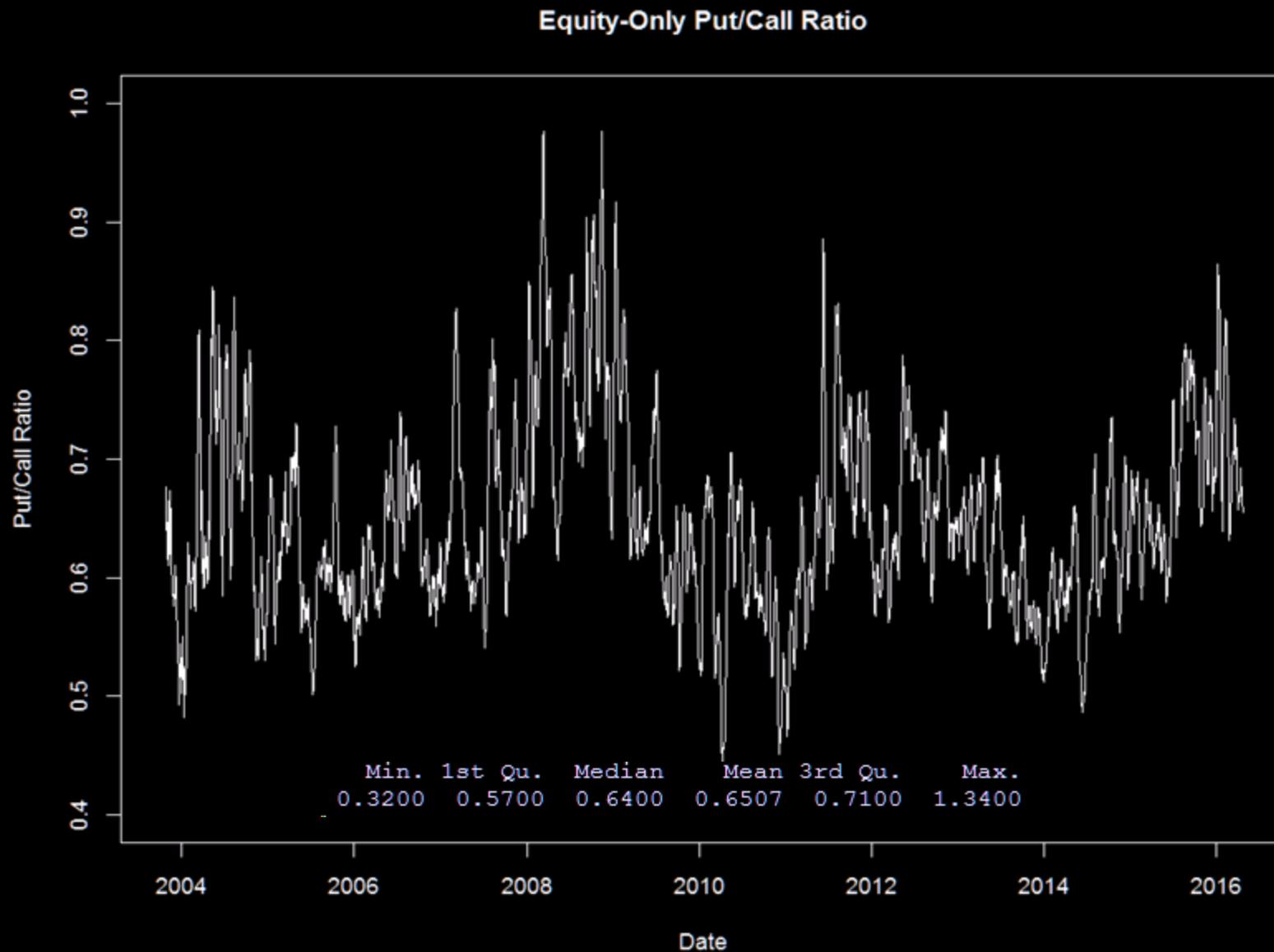
Since Inception (30.09.2000)	Annualised Return (%)	Annualised Volatility (%)	Sharpe Ratio
Nevsky	+18.4	+13.7	1.34
MSCI Global Emerging Markets Index*	+7.4	+22.9	0.32
MSCI Global Developed Markets*	+3.5	+15.8	0.22

Nevsky (% change in \$) since Inception to Fourth Quarter 2015: +1,212.6

In summary, various factors now mean that it is more difficult than ever before for us to accurately forecast macroeconomic and corporate variables. It is therefore time to accept that what we have done has worked brilliantly for twenty years but does not work anymore and move on. We are confident our process will eventually work again – for the laws of economics will never be repealed – but for now they are suspended and may be for some time; an indefinite period involving indeterminate levels of risk during which we think it would be wrong for us to be the stewards of your money.

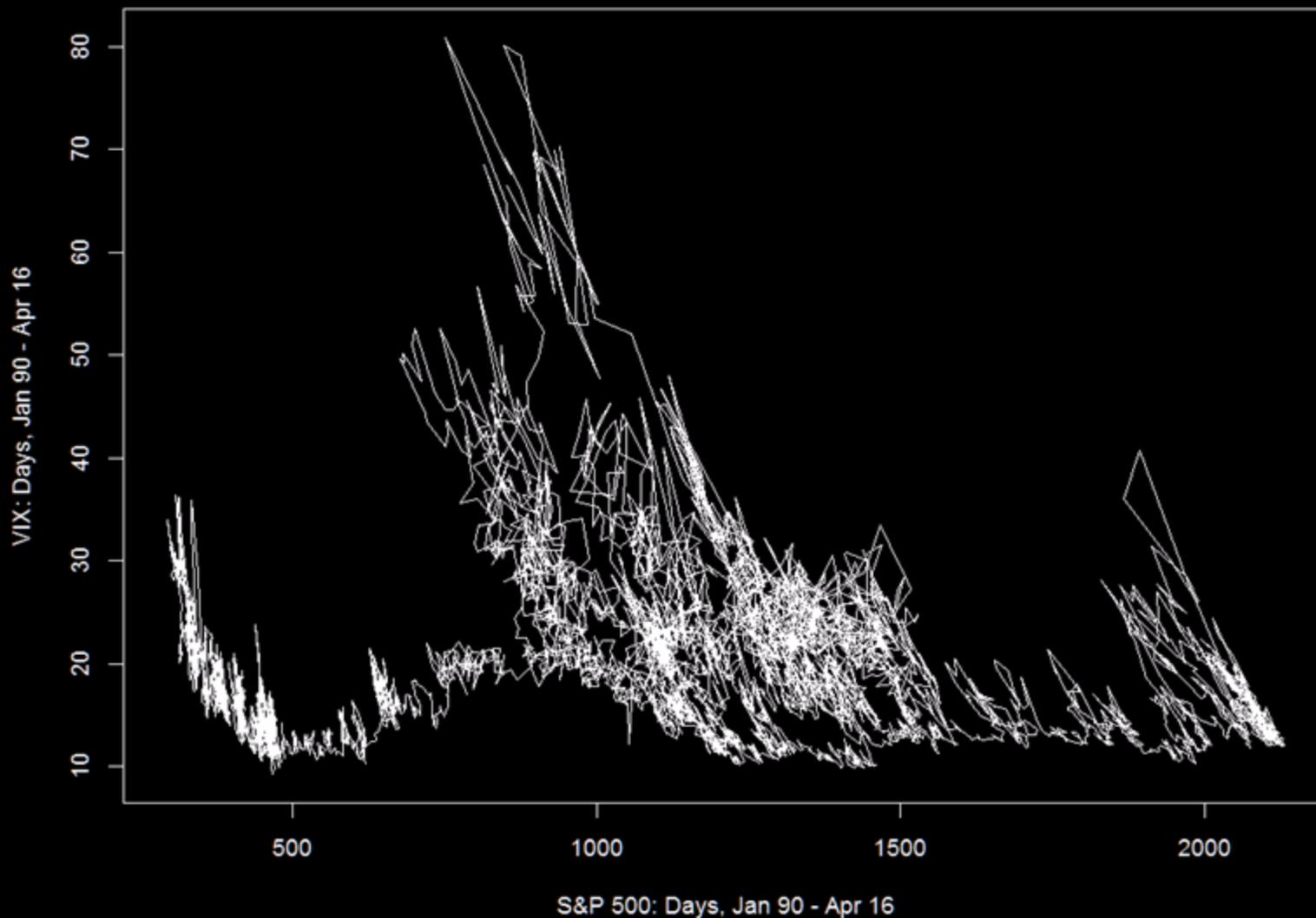
- First-Quarter Earnings Are Now Expected to Really Suck :Declines not seen since the Financial Crisis.
- Jobs Report Blues — Paul Craig Roberts
- Intelligence Insider: How To Protect Your Assets From Critical Infrastructure Failure:'Power Grid, Banking System, Cyber Financial Warfare'
- 'Trained to shoot': 3k armed marshals in civilian clothing to patrol French trains
- AMERICAS COLLAPSE, MARTIAL LAW ,POLICE STATE AND HOW THE NWO PLAN TO KILL US ! END TIME WARNING FOR AMERICA
- Mossack Fonseca: The Nazi, CIA And Nevada Connections... And Why It's Now Rothschild's Turn:
- DESCENDING INTO A GUERRILLA WAR: THE SIDES ARE BEING DRAWN FOR THE COMING CIVIL WAR
- Gold Rush by Russia Makes Up for Billions Lost in Currency Rout

[http://www.zerohedge.com/\(etc\)](http://www.zerohedge.com/(etc))

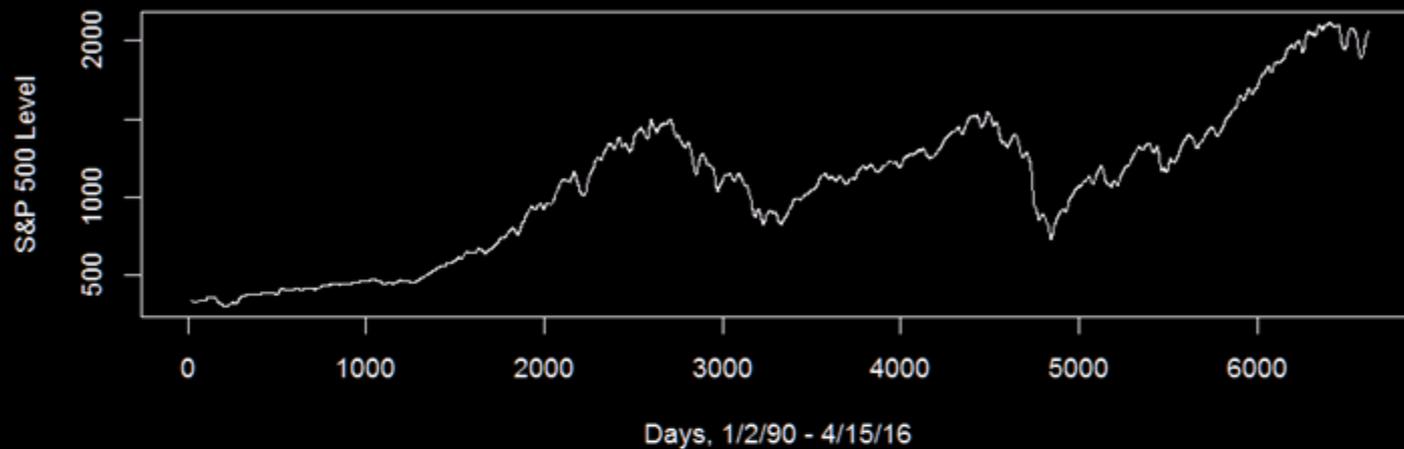




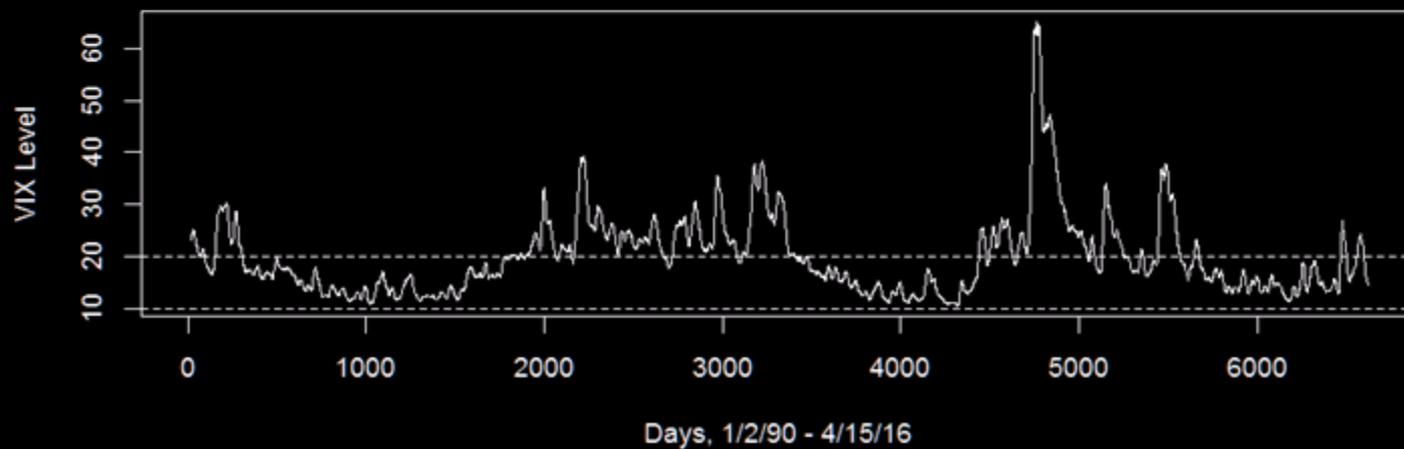
VIX vs. S&P 500 in Time



**S&P 500, 1/90 - 4/16**



**VIX, 1/90 - 4/16**







- Stable markets -  $[t, t+\Delta t)$

Children

Grandchildren

Great grandchildren

}  $\Delta t$

- Catastrophe -  $[t, T]$

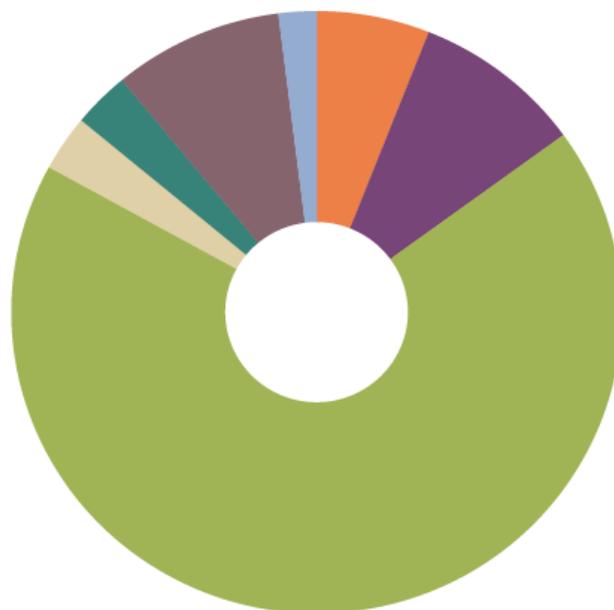
Global financial chaos and destruction

Mahdi

Yom YHWH

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Large Cap Growth 42.2%	Emerging Market 66.4%	Small Cap Value 22.8%	Small Cap Value 14.0%	Fixed Income 10.3%	Emerging Market 56.3%	Emerging Market 26.0%	Emerging Market 34.5%	Emerging Market 32.6%	Emerging Market 39.8%	Fixed Income 5.2%	Emerging Market 79.0%	Small Cap Growth 29.1%
	Large Cap 28.6%	Small Cap Growth 43.1%	Fixed Income 11.6%	Fixed Income 8.4%	HFRI Fund Weighted -1.5%	Small Cap Growth 48.5%	Small Cap Value 22.2%	Intl. Equity 13.5%	Intl. Equity 26.3%	Intl. Equity 11.2%	HFRI Fund Weighted -19.0%	Small Cap Growth 34.5%	Small Cap 26.9%
	Intl. Equity 20.0%	HFRI Fund Weighted 31.3%	Large Cap Value 6.1%	HFRI Fund Weighted 4.6%	Emerging Market -6.0%	Small Cap 47.3%	Intl. Equity 20.2%	HFRI Fund Weighted 9.3%	Small Cap Value 23.5%	HFRI Fund Weighted 10.0%	Small Cap Value -28.9%	Intl. Equity 31.8%	Small Cap Value 24.5%
	Large Cap Value 14.7%	Large Cap Growth 28.2%	HFRI Fund Weighted 5.0%	Small Cap 2.5%	Small Cap Value -11.4%	Small Cap Value 46.0%	Small Cap 18.3%	Large Cap Value 5.8%	Large Cap Value 20.8%	Large Cap Growth 9.1%	Small Cap -33.8%	Large Cap Growth 31.6%	Emerging Market 19.2%
	Fixed Income 8.7%	Intl. Equity 27.0%	Small Cap -3.0%	Emerging Market -2.4%	Intl. Equity -15.9%	Intl. Equity 38.6%	Large Cap Value 15.7%	Large Cap 4.9%	Small Cap 18.4%	Small Cap Growth 7.0%	Large Cap Growth -34.9%	Small Cap 27.2%	Large Cap Value 15.1%
	HFRI Fund Weighted 2.6%	Small Cap 21.3%	Large Cap -9.1%	Small Cap Growth -9.2%	Small Cap -20.5%	Large Cap Value 31.8%	Small Cap Growth 14.3%	Small Cap Value 4.7%	Large Cap 15.8%	Fixed Income 7.0%	Large Cap -37.0%	Large Cap 26.5%	Large Cap 15.1%

## ALLOCATION BREAKDOWN (%)



Multi-Sector Fix. Inc. Strategies	6.00%
Global Fix. Inc. Strategies	9.00%
Alternative Strategies	68.00%
Commodities	3.00%
Real Estate	3.00%
World Allocation Strategies	9.00%
Cash	2.00%

Returns through 12/31/2015, \$50,000 minimum investment.

## PERFORMANCE REVIEW

	Trailing 1-Yr.	3-Yr.	5-Yr.	10 Yr. or Since Inception <sup>1</sup>	Inception Date	Std Dev/ 5-Yr.
Portfolio (Gross)	-2.82	2.46	2.10	3.67	7/1/2010	5.59
Portfolio (Net)	-3.85	1.38	0.98	2.49	7/1/2010	5.59
INDEX	Trailing 1-Yr.	3-Yr.	5-Yr.	10 Yr. or Since Inception <sup>1</sup>	Inception Date	Std Dev/ 5-Yr.
S&P 500 Index	1.38	15.13	12.57	15.68	7/1/2010	12.78
MSCI EAFE Index	-0.81	5.01	3.60	7.42	7/1/2010	14.71
HFRI: Fund of Funds Composite Index	-0.36	3.92	2.08	3.15	7/1/2010	4.50
Citigroup 3 Month Treasury Bill Index	0.03	0.04	0.05	0.06	7/1/2010	0.02
Composite Yield	2.25					

- Private Equity
  - LBOs, mezzanine, M&A funds, int'l pvt equity
- Marketable alternative strategies
  - Hedge funds, abs. return, mkt neutral, long/short, 130/30, event-driven, derivatives
- Venture Capital
- Real Estate
- Energy and natural resources
- Commodities and managed futures
- Distressed debt

- Other tangible assets
  - All of the above
  - Collectibles such as art, wine, antiques, coins, or stamps
  - Real estate or forestry
  - Oil production facilities
- Alternative investment assets are held by:
  - Institutional investors
  - Accredited, high-net-worth individuals

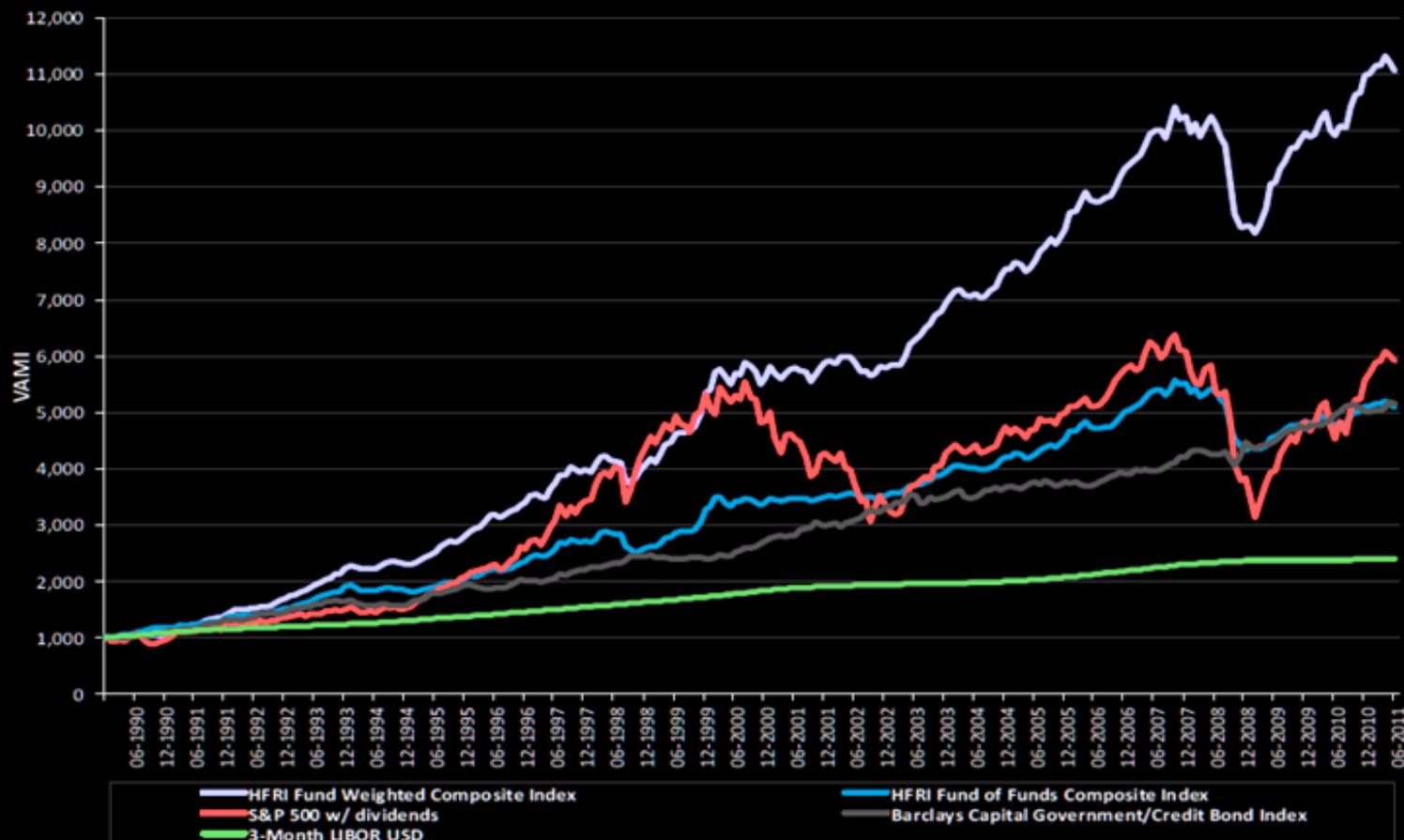
## ETFs Tracking Other Hedge Fund

ETFdb staff has allocated each ETF in the ETF database, as well as each index, to a single 'best-fit' ETFdb Category. Other ETFs in the Hedge Fund ETFdb Category are presented in the following table.

\* Assets in thousands of U.S. Dollars. Assets and Average Volume as of

Symbol	Name	Price	Change	Assets*	Avg Vol	YTD	Overall Rating
QAI	IQ Hedge Multi-Strategy Tracker ETF	\$28.95	0.00%	\$1,058,838	264,324	1.7%	
WDTI	WisdomTree Managed Futures Strategy Fund	\$42.40	0.43%	\$190,170	32,567	1.5%	
MNA	IQ Merger Arbitrage ETF	\$28.27	0.04%	\$127,215	30,592	0.7%	
ALFA	AlphaClone Alternative Alpha ETF	\$33.66	0.18%	\$87,412	30,833	-10.2%	
RLY	SPDR SSGA Multi-Asset Real Return ETF	\$23.43	0.09%	\$75,008	26,900	5.6%	
HDG	Hedge Replication ETF	\$41.99	-0.17%	\$40,979	8,119	-0.2%	
DIVY	Realty Shares DIVS ETF	\$23.23	0.30%	\$36,091	15,632	-0.4%	
CPI	IQ Real Return ETF	\$26.78	0.22%	\$26,730	4,165	0.9%	
ALTS	Morningstar Alternatives Solution ETF	\$37.85	-0.21%	\$23,622	12,990	-1.4%	
QMN	IQ Hedge Market Neutral Tracker ETF	\$25.33	0.08%	\$15,192	8,245	1.6%	

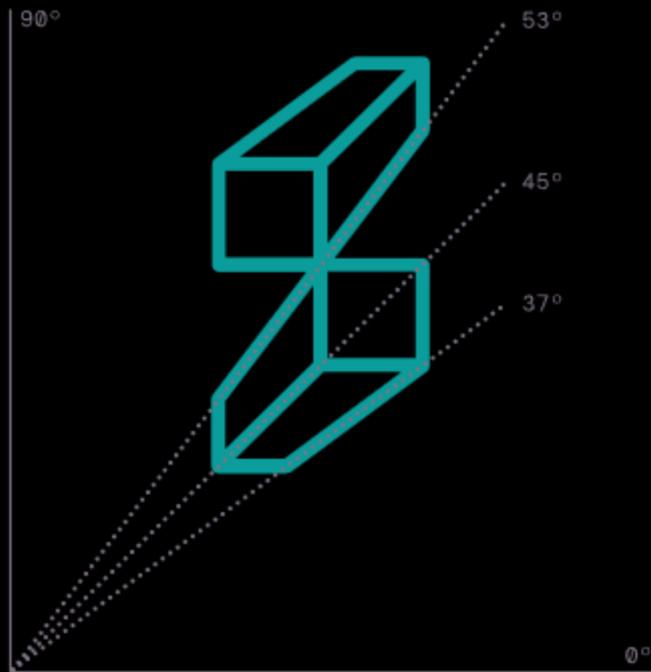
Index	12-Month		3-Year Annualized		5-Year Annualized		10-Year Annualized		Since 1990	
	Net Return	StD	Net Return	StD	Net Return	StD	Net Return	StD	Net Return	StD
HFRI FWC Index	11.47	5.16	3.04	8.52	4.79	7.42	6.69	6.35	11.82	7.00
HFRI FOF Index	6.52	4.09	(1.86)	7.17	1.51	6.60	3.87	5.34	7.85	5.88
S&P 500 w/ dividends	30.68	13.75	3.34	21.19	2.95	17.86	2.72	15.81	8.61	15.06
Barclays Govt/Crdt Agg Bond	3.89	3.56	6.55	5.59	6.78	4.77	6.19	5.01	7.91	4.97
3-Month LIBOR	0.30	0.02	0.84	0.28	2.40	0.62	2.43	0.51	4.14	0.63





SOURCE: Bloomberg

Annualized ( $\mu, \sigma$ ), January 1990 to February 2016



- » MLPs and Energy
- » Real Estate and Infrastructure
- » Quantitative Strategies
- » Equities
- » Credit Strategies
- » Broadmark Asset Management LLC (sub-advisor)
- » Pacific Investment Management Company LLC (PIMCO) (sub-advisor)
- » Pictet Asset Management Limited. (PAM LTD) (sub-advisor)

- Institutional, Investor, Class C and Advisor

**Fund Name Effective May 1, 2016**

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Salient Commodity Long/Short Strategy Fund

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Salient Tactical Muni Strategy Fund

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Salient US Dividend Signal Fund

---

Salient EM Corporate Debt Fund

---

Salient EM Dividend Signal Fund

---

Salient Frontier Strategy Fund

---

Salient EM Infrastructure Fund

---

Salient Adaptive Balanced Fund

---

Salient High Yield Fund

---

Salient Adaptive Income Fund

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Salient International Dividend Signal Fund

---

Salient International Real Estate Fund

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Salient International Small Cap Fund

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Salient Investment Grade Fund

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Salient Real Estate Fund

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Salient Tactical Real Estate Fund

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Salient Select Income Fund

---

Salient Select Opportunity Fund

---

Salient Tactical Growth Fund

---

Salient Adaptive US Equity Fund

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- Publicly traded private equity funds [sic]
  - PowerShares Global Listed Private Equity Portfolio (PSP)
  - ProShares Global Listed Private Equity ETF
  - ETRACS Wells Fargo MLP Ex-Energy ETN



- Why not try Berkshire Hathaway!



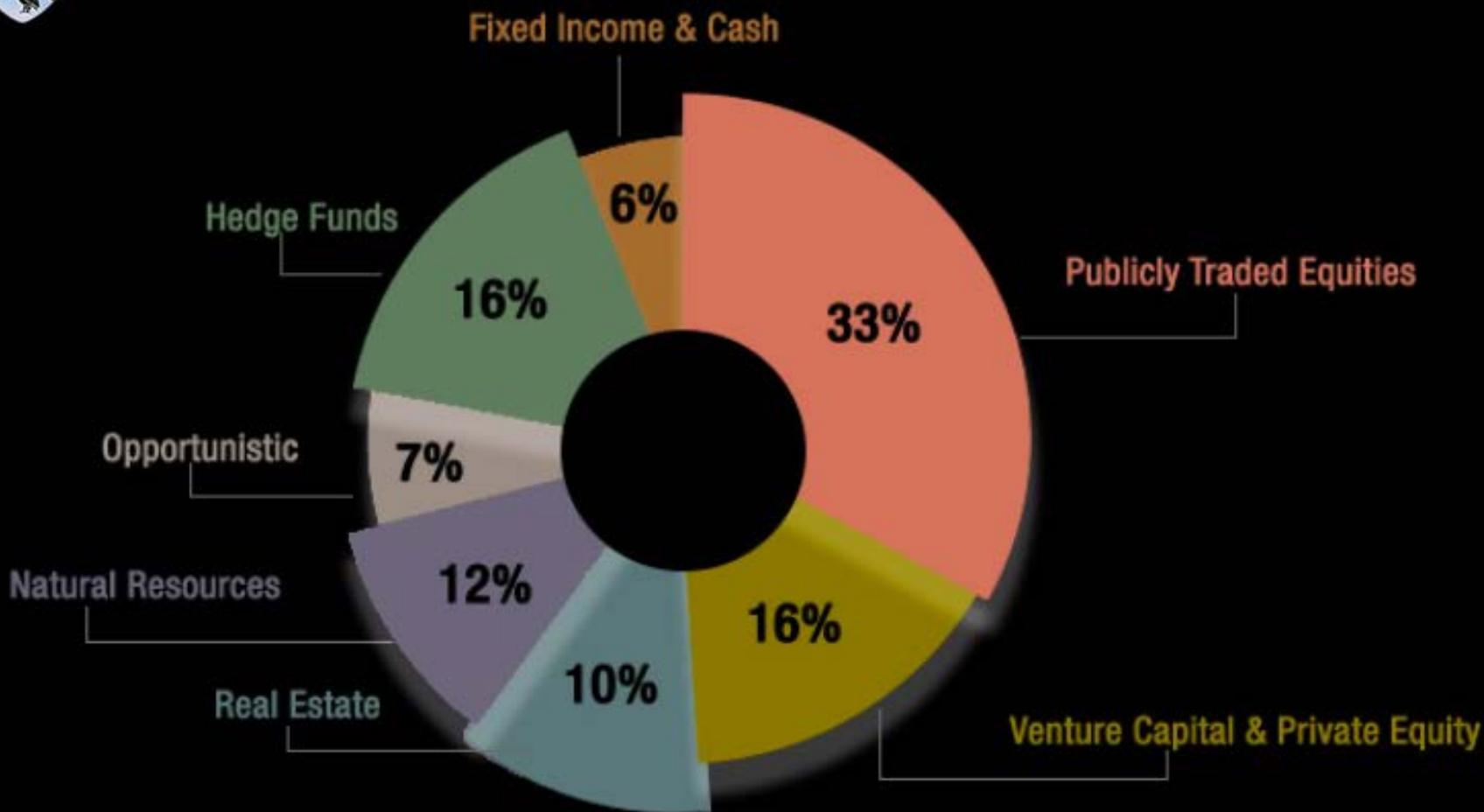
**BRKA Closing Price**  
As of Last Trading Day of Year

Year	Price	Year	Price
1980	433	1998	70,000
1981	565	1999	56,100
1982	783	2000	71,000
1983	1,325	2001	75,600
1984	1,288	2002	72,750
1985	2,470	2003	84,250
1986	2,820	2004	87,900
1987	2,950	2005	88,620
1988	4,700	2006	109,990
1989	8,675	2007	141,600
1990	6,675	2008	96,600
1991	9,050	2009	99,200
1992	11,750	2010	120,450
1993	16,325	2011	114,755
1994	20,400	2012	134,060
1995	32,100	2013	177,900
1996	34,100	2014	226,000
1997	46,000	2015	197,800

3/31/86 – 12/29/00: 44.4% CAGR



Rank	Institution	State/ Province	2015 Endowment Funds (\$000s)	2014 Endowment Funds (\$000)	*Change in Market Value (%)
1	Harvard University	MA	36,448,817	35,883,891	1.6
2	Yale University	CT	25,572,100	23,894,800	7.0
3	The University of Texas System	TX	24,083,150	25,425,922	-5.3
4	Princeton University	NJ	22,723,473	20,995,18	8.2
5	Stanford University	CA	22,222,957	21,446,006	3.6
6	Massachusetts Institute of Technology	MA	13,474,743	12,425,131	8.4
7	The Texas A&M University System and Foundations <sup>1</sup>	TX	10,477,102	11,103,880	-5.6
8	Northwestern University	IL	10,193,037	9,778,112	4.2
9	University of Pennsylvania	PA	10,133,569	9,582,335	5.8
10	University of Michigan	MI	9,952,113	9,731,460	2.3
11	Columbia University	NY	9,639,065	9,223,047	4.5
12	University of Notre Dame	IN	8,566,952	8,039,756	6.6
13	University of California	CA	7,997,099	7,384,410	8.3
14	The University of Chicago	IL	7,549,710	7,545,544	0.1
15	Duke University	NC	7,296,545	7,036,776	3.7
16	Washington University in St. Louis	MO	6,818,748	6,643,379	2.6
17	Emory University	GA	6,684,305	6,681,479	0.0
18	University of Virginia	VA	6,180,515	5,945,952	3.9
19	Cornell University	NY	6,037,546	5,889,948	2.5
20	Rice University	TX	5,557,479	5,527,693	0.5
21	University of Southern California	CA	4,709,511	4,593,014	2.5
22	Dartmouth College	NH	4,663,491	4,468,219	4.4
23	Vanderbilt University	TN	4,133,542	4,086,040	1.2
24	The Pennsylvania State University	PA	3,635,730	3,445,965	5.5



Detailed Asset Allocations<sup>†</sup> for Fiscal Year 2013

<i>numbers in percent (%)</i>	Total Institutions	Over \$1 Billion	\$501 Million-\$1 Billion	\$101-\$500 Million	\$51-\$100 Million	\$25-\$50 Million	Under \$25 Million
	835	82	70	261	166	125	131
Domestic equities	16	13	20	27	33	36	43
Fixed income	10	8	11	15	20	22	26
International equities	18	17	19	19	20	17	14
Alternative strategies	53	59	45	34	23	20	11
<i>Private equity (LBOs, mezzanine, M&amp;A funds and international private equity)</i>	12	15	8	6	2	2	1
<i>Marketable alternative strategies (hedge funds, absolute return, market neutral, long/short, 130/30, event-driven and derivatives)</i>	20	20	21	17	10	10	6
<i>Venture capital</i>	4	5	3	2	1	1	0
<i>Private equity and real estate (non-campus)</i>	7	8	4	3	3	2	1
<i>Energy and natural resources</i>	5	6	4	3	1	1	1
<i>Commodities and managed futures</i>	2	2	1	1	2	2	1
<i>Distressed debt</i>	2	2	2	1	1	0	0
<i>Alternatives not broken out</i>	1	1	2	1	3	2	1
Short-term securities/cash/other	3	3	5	5	4	5	6
<i>Short-term securities/cash</i>	2	2	3	3	2	3	4
<i>Other</i>	1	1	2	2	2	2	2

## 2014 NACUBO-COMMONFUND STUDY OF ENDOWMENTS

## Average Return by Asset Class for Fiscal Year 2014

<i>numbers in percent (%)</i>	Total Institutions	Over \$1 Billion	\$501 Million - \$1 Billion	\$101-\$500 Million	\$51-\$100 Million	\$25-\$50 Million	Under \$25 Million
	832	91	77	262	168	125	109
Average FY2014 total return	15.5	16.5	15.8	15.5	15.2	15.2	15.5
Domestic equities	22.8	23.9	24.4	22.6	22.7	21.5	22.0
Fixed income	5.1	4.8	4.2	5.2	5.4	5.3	5.1
International equities	19.2	19.6	18.9	19.2	19.5	19.3	18.0
Alternative strategies	12.7	17.5	14.6	12.8	11.5	9.4	11.8
<i>Private equity (LBOs, mezzanine, M&amp;A funds and international private equity)</i>	16.5	20.9	19.1	15.0	13.9	15.6	2.1
<i>Marketable alternative strategies (hedge funds, absolute return, market neutral, long/short, 130/30, event-driven and derivatives)</i>	9.9	11.4	10.7	9.8	9.1	9.4	8.6
<i>Venture capital</i>	23.3	32.4	24.2	18.8	19.4	7.2	13.0
<i>Private equity real estate (non-campus)</i>	12.6	17.2	13.2	10.4	12.3	13.0	0.0
<i>Energy and natural resources</i>	15.3	15.7	17.9	13.6	16.3	14.2	17.7
<i>Commodities and managed futures</i>	7.9	6.7	10.2	9.1	6.9	2.1	13.9
<i>Distressed debt</i>	13.2	14.9	17.5	12.4	9.6	11.9	0.0
Short-term securities/cash/other	1.9	2.7	1.8	2.1	1.5	0.9	2.4
Short-term securities/cash	0.2	0.1	0.3	0.2	0.1	0.3	0.2
Other	10.2	12.8	10.8	9.2	9.9	10.6	11.7

## US Endowment Returns

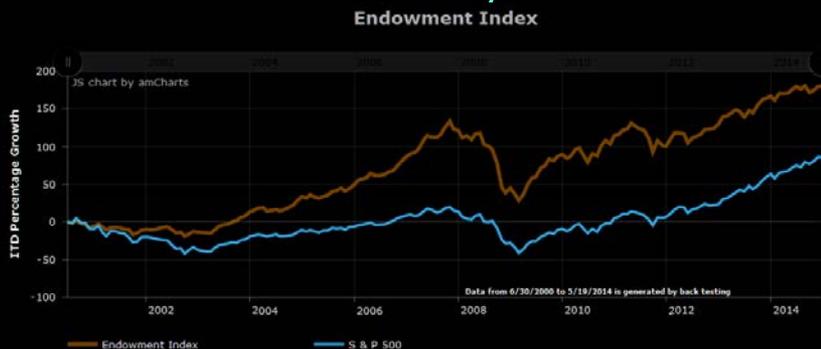
FY Returns 7/1/xx-6/30/xx, Net of Fees

Year	S&P 500	Endowment Return (%)	10-Year Average
2004	16.9	15.1	9.9
2005	7.7	9.3	9.3
2006	8.3	10.7	8.8
2007	21.4	17.2	8.6
2008	-15.3	-3.0	6.5
2009	-26.2	-18.7	4.0
2010	13.6	11.9	3.4
2011	30.7	19.2	5.6
2012	5.5	-0.3	6.2
2013	20.5	11.7	7.1
2014	24.5	15.5	7.1
2015	7.4	2.4	6.3
<b>CAGR</b>	<b>8.3</b>	<b>7.0</b>	<b>6.3</b>

Source: NACUBO-Commonfund Study of  
Endowments (NCES), 2004-2015



- Be an institution
  - Foundation/Endowment/Family Office
  - 401(K) Plan Sponsor/Adviser
  - Investment Adviser
- Construct your own Endowment Index using ETF's (Similar to ^ENDOW)
  - 19 sub-indexes (ETF)
  - Represents over 30,000 securities



## Endowment Index 2016 Target Asset Allocation (%)

<b>Asset Class</b>	<b>2015</b>	<b>2016</b>
Global Equity	36%	35%
Global Fixed Income	9%	9%
Private Equity/VC	17%	17%
Hedge Strategies	18%	20%
Real Assets	13%	15%
Other	7%	4%

- Other viable alternative investments
  - Real estate (residential, commercial, industrial/office, hotels, self-storage, 10% CAGR since 1900)
  - Water (44% 2009-2014)
  - Carbon Emissions (Quite volatile '05-'16)
  - Gold (-4.2% 2011-2016) [Entry dependent]
  - Art (4% 2006-2016)
  - Wine (14% 7-yr CAGR)
  - Oil wells [Entry dependent]



- Philip Ernst, James Thompson, and Yinsen Miao, "Tukey's Transformational Ladder for Portfolio Management", To appear in *J. Port. Mgt.* Submitted on 19 Mar 2016, <http://arxiv.org/pdf/1603.06050v1>
- McMahon, Ethan K. and Dobelman, John A., A Market for Water: Constructing a Custom Weighted Water Index, The Rice University, Statistics Department TR2014-02 (1/2014).
- James Yuan and Alex Sokolyk, "Successfully Mining Greed and Fear: An Analysis", Rice University 6th Eubank Conference, 2016.
- Fernandez, Pablo and Carelli, The Market Portfolio is NOT Efficient: Evidences, Consequences and Easy to Avoid Errors (March 16, 2016). Available at <http://dx.doi.org/10.2139/ssrn.2741083>

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