Logical Invest
@ AAII Silicon Valley

Intelligent, rule-based Portfolio Strategies

LogicalInvest
Intelligent Portfolio Strategies

April 11, 2015
Alexander Horn

Agenda

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1. Who we are & What we stand for

2. Constructing your ‘all weather’ self-managed portfolio

3. Building a well-balanced crash protection

4. Harvesting the ‘Fear Premium’ and 'Rebalancing losses'

5. Markowitz Meets Logical Invest

Who we are

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Frank Grossmann, Zurich, studied Microtechnics at the Federal Institute of Technology in Lausanne and Business Administration at the Federal Institute of Technology in Zurich. After the Studies in 1989 he founded Labocontrol AG which he sold in 2000. Since then he is a full-time investor and founded Logical Invest in 2013.

Scott Walker, NYC has an MBA & post graduate work in econometrics & finance. He has been developing advanced analytical and forecasting models for decades, applying these tools in successfully for US financial firms, advisory groups, hedge funds, personal clients and his portfolio

Vangelis Maderakis, Athens holds a B.A. in Economics & Theater Arts from Cornell University and an M.F.A. in Motion Picture Producing from the Peter Stark Program at the University of Southern California. He has been involved in quantitative research since 2007 and is well known under his blog pseudonym “SanzProphet.

Alexander Horn, Mexico City holds an MBA from the IPADE Business School and an M.A. in International Business from the University of Paderborn. He has been the CFO in Japan for a major global chemical player. Before he served in executive roles in North America, Europe and Asia within the automotive sector.

What we are

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- General Partnership founded 2014, registration in Switzerland in process
- Offices in Zurich, New York, Athens and Mexico City
- We develop intelligent, rule-based portfolio strategies for private and institutional clients. Our strategies are for DIY investors. We share and educate, but do not handle any funds.
- No registered Investment Advisor in the US, and no intention to become one in the near future
- In process of opening an investment fund in cooperation with a major US money manager. In the near future plans to open ETF and EU certificate to give private investors more options to invest in our strategies.

What we do

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- We use **quantitative based strategies** to manage our own successful investments. What we publish is what we **use ourselves to manage our families' money**. We enjoy researching new methods and adapting them to an ever changing investment market.

- Researching and studying the markets makes us tick and **we enjoy sharing what we have learned**. We want to help others feel safer, reduce their investment expenses and improve their investment returns. We know how hard it is to **build the confidence** to get started and even harder to separate soundly engineered and researched investment strategies from the "miracle-promising, get-rich-now" noise.

- We deploy quantitative strategies that we have **thoroughly researched, traded and stress tested** in different conditions. They all offer superior performance and mechanisms to **protect you during market crashes**. All strategies are based on sound mathematical rules and avoid any emotional decisions in the investment process.

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The Basics – Fishbowl theory (1/4)

- **The Bowl:** Portfolio Purpose, Size & Duration
  - Retirement, Savings, Real Estate, Tuition
  - Realistic Risk/Return expectation,
  - The Trap: Complexity, Cost, Discipline
- **The Fish:** Asset Selection
  - Cross-Asset diversification, crash-protection, hedge
  - Passive approach: ETF vs Mutual Funds
  - Trap: Selection bias, liquidity, spreads, costs,
- **The Water:** Tactical Approach vs Buy&Hold
  - Volatility is good for momentum, need funds to ‘flow’ naturally
  - Risk-on/off and choppy markets are bad – uncontrolled waves
  - Trap: Curve fitting & not ‘adaptive’ to changes in market environment

The Basics – Fishbowl theory (2/4)

- **The Bowl:** Portfolio Purpose, Size & Duration
  - Retirement, Savings, Real Estate, Tuition
    - Long term approach must fit own 'style'
      - – Discipline, Habits, Plan for unexpected
      - – $50k when just starting first job?
      - – $500k mid-career for retirement?
      - – $1,500k in retirement for income?
  - Realistic Risk/Return expectation
    - 5-6% Risk-free? Not anymore, never, ever!
    - Volatility will ~~likely~~ definitely increase
    - All equity markets are correlated, well other assets also
    - 70% of income in retirement, increasing health cost
  - The Trap: Complexity, Cost, Discipline
    - Invest in what you understand, no experiments, no faith: Study, Challenge, Study!
    - Paying just 1-2% to banks, mutual funds, commission eats into retirement. DIY
    - Long-term investing requires a hell of discipline, good anti-stress & sleeping habits

The Basics – Fishbowl theory (3/4)

- **The Fish:** Asset Selection
  - Cross-Asset diversification, crash-protection, hedge
    - AAPL + TSLA only looks good in backtests
    - ‘Blocks’ of assets: Bonds, Equities, Sectors
    - ‘Blocks’ include low-correlated diversifier
    - Hedge only passively though asset classes
    - Stay out of options, futures, CFD’s if you are no expert
  - Passive approach: ETF vs Mutual Funds
    - >1500 ETF in US, most 401k and IRA support
    - 0.5% less fee in ETF adds up over 20 years
    - Immediate liquidity, no lockup times, often no commissions
  - Trap: Selection bias, liquidity, spreads, costs:
    - Your investment strategy must perform across asset classes or asset lists
    - Choose ETF with daily volume >60k, pick best (=cheapest) broker and exchange
    - Trade yourself! Monthly execution is about 15 minutes. Be greedy, but on costs!

The Basics – Fishbowl theory (4/4)

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- **The Water:** Tactical Approach vs Buy & Hold
  - Communism & Elvis may still be alive!
    Buy & Hold is dead!
    - Volatility + sudden corrections from 80% HFT
    - High correlation among assets kills MPT
  - Some Volatility is good and needed, funds need to ‘flow’ and ‘swap’ naturally around
    - Momentum has the strongest effect during ‘average to medium’ volatility, when correlation can play out. Corrections might be hard to take for humans, but not for well designed algorithms
  - Risk-on/off and choppy markets are bad
    - Have realistic expectations when market is choppy, don’t drop the ‘spoon to soon’. Have several strategies in the race, change allocations adaptively between them
  - Trap: Curve fitting & not ‘adaptive’ to changes in market environment
    - Challenge you strategy across asset classes and parameter ranges
    - Backtests starting the ‘29 Great Depression only tell you one thing: What happened 90 years ago. Markets change, and changed a lot since ‘08.

Building Blocks for 'all weather' Portfolio

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Dynamic Meta-Strategy

Example Maximum Sharpe Optimization using Bond Rotation 'Sleep Well', Maximum Yield Rotation, Universal Investment Strategy

Tactical Approach

Max Sharpe | Momentum | Vola Control | Leverage | Mean Rever

Fixed weight Portfolio

Example 30% Bond Rotation 'Sleep Well', 30% Maximum Yield Rotation, 40% Universal Investment Strategy , 30% The BUG

Strategies

Bond Rotation 'Sleep Well' | Global Market Rotation | Global Sector Rotation | Maximum Yield Rotation | Universal Investment Strategy | Permanent Portfolio 'The Bug'

Tactical Approach

Max Sharpe | Momentum | Vola Control | Leverage | Mean Rever

Crash Protection and Hedge

Treasuries | Volatility | Currencies

Base Blocks

Bonds | EM Equities | US Equities | Intl Equities | Sectors | Commodities

Building Blocks for 'all weather' Portfolio – Fixed Weight

Dynamic Meta-Strategy	Example Maximum Sharpe Optimization using Bond Rotation 'Sleep Well', Maximum Yield Rotation, Universal Investment Strategy
Tactical Approach	Max Sharpe · Momentum · Vola Control · Leverage · Mean Rever
Fixed weight Portfolio	Example 30% Bond Rotation 'Sleep Well', 20% Maximum Yield Rotation, 20% Universal Investment Strategy, 30% The BUG
Strategies	Bond Rotation 'Sleep Well' · Global Market Rotation · Global Sector Rotation · Maximum Yield Rotation · Universal Investment Strategy · Permanent Portfolio 'The Bug'
Tactical Approach	Max Sharpe · Momentum · Vola Control · Leverage · Mean Rever
Crash Protection and Hedge	Treasuries · Volatility · Currencies
Base Blocks	Bonds · EM Equities · US Equities · Intl Equities · Sectors · Commodities

Building Blocks for 'all weather' Portfolio – Meta-Strategy

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Dynamic Meta-Strategy

Example Maximum Sharpe Optimization using Bond Rotation 'Sleep Well', Maximum Yield Rotation, Universal Investment Strategy

Tactical Approach

Max Sharpe | Momentum | Vola Control | Leverage | Mean Rever

Fixed weight Portfolio

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Strategies

Bond Rotation 'Sleep Well' | Global Market Rotation | Global Sector Rotation | Maximum Yield Rotation | Universal Investment Strategy | Permanent Portfolio 'The Bug'

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Building a well-balanced crash protection

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- In the majority of our Strategies, Treasuries play the role of automatic “crash guard”:
  - Think of the 5 global markets be a truck speeding down the highway. You are close behind in your car, which has one of these new brake systems which brake automatically to avoid a crash. These braking systems measure the distance to the car in front of you. Such a control system has a gain setting which has to be fine-tuned very well. If the gain is too low, the car will not brake enough. If the gain is too high the car will begin to brake hard and accelerate which will cause oscillation.

- You can tune the ‘gain’ of the treasuries by selecting the duration of the treasuries:
  - Duration acts like a leverage. If you choose a short duration treasury it will take too long to switch and you will suffer losses at a sudden market correction.
  - If the duration or also leverage is too high you will switch too early which results in buy high sell low.

	Name	Effective Duration (Years)	Effective Coupon (%)
SHY	iShares 1-3 Year Treasury Bond	1.94	1.34
IEI	iShares 3-7 Year Treasury Bond	4.56	1.71
TLH	iShares 10-20 Year Treasury Bond	9.68	5.99
TLT	iShares 20+ Year Treasury Bond	17.05	3.55
EDV	Vanguard Extended Duration Treasury	24.92	0

Building a well-balanced crash protection

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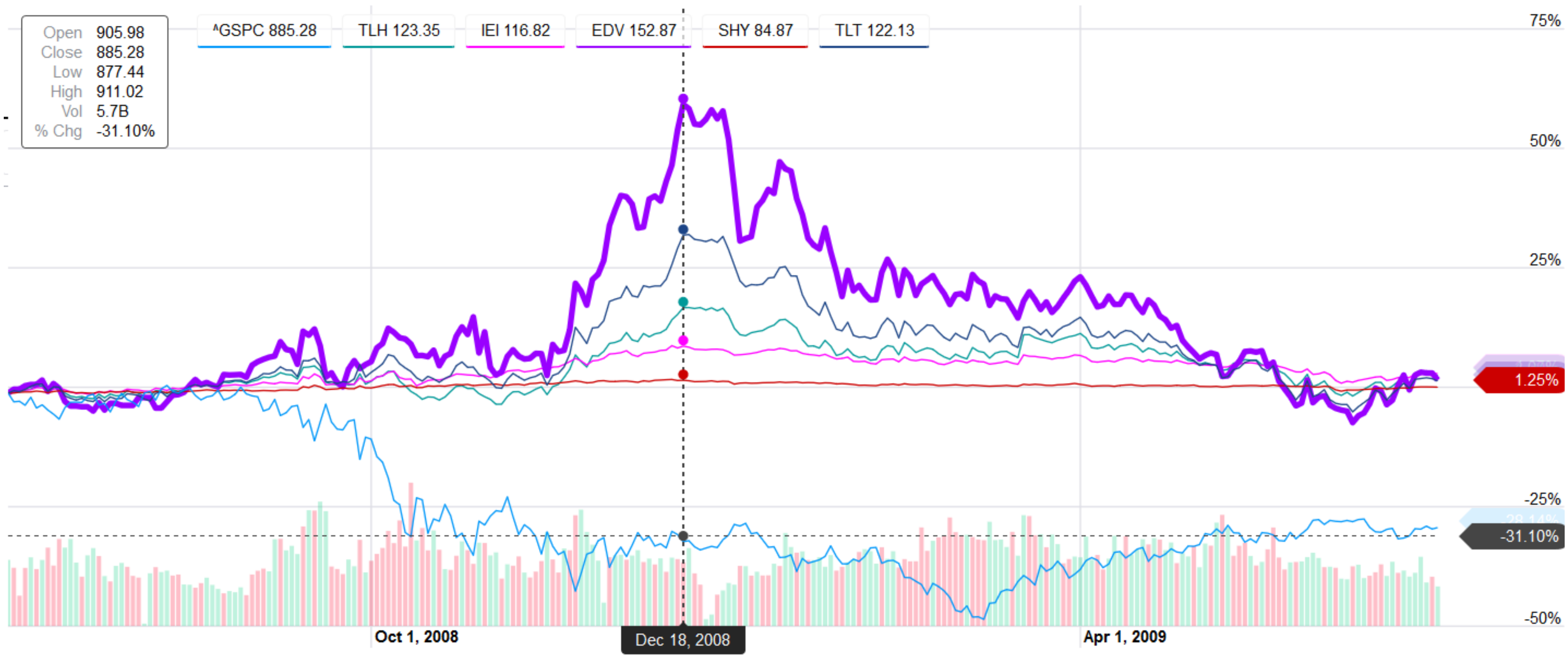
2008 / 2009 Financial Crisis:



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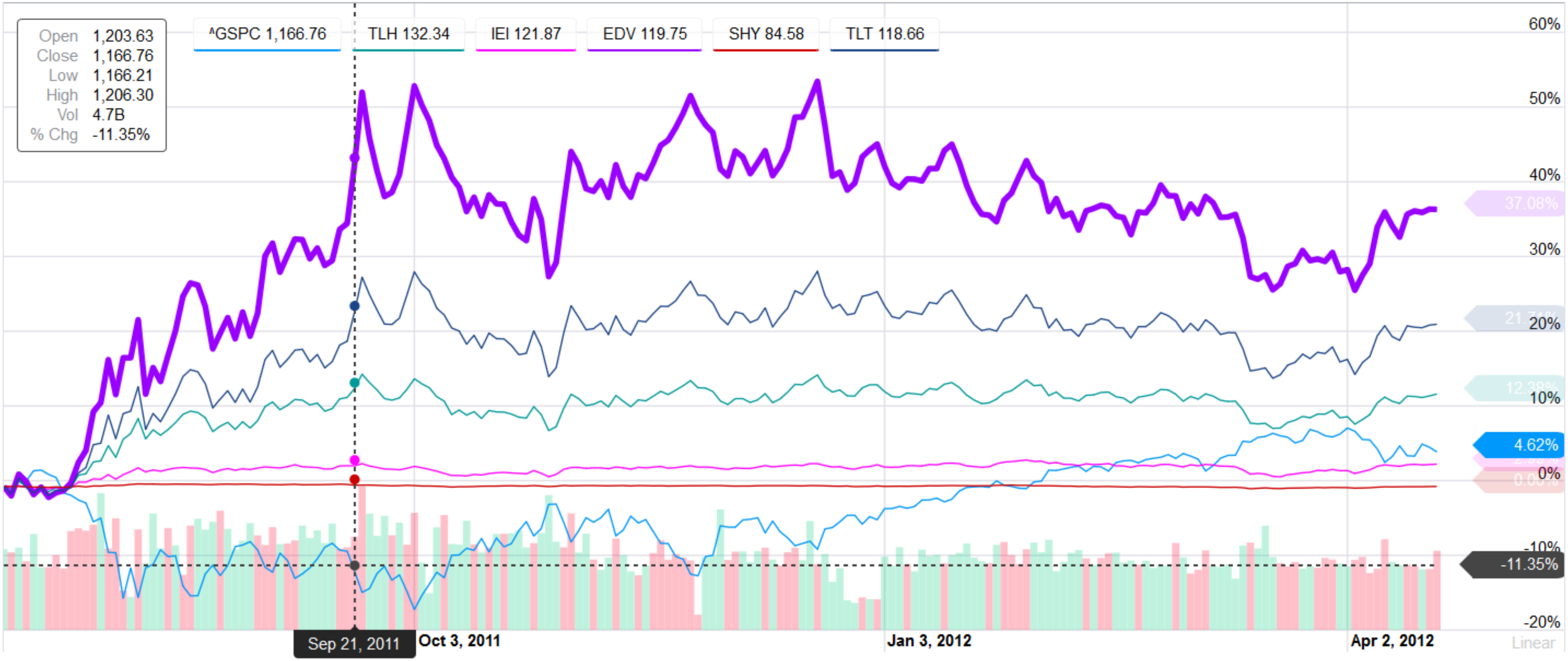
2011 / 2012 European Sovereign Depth Crisis:



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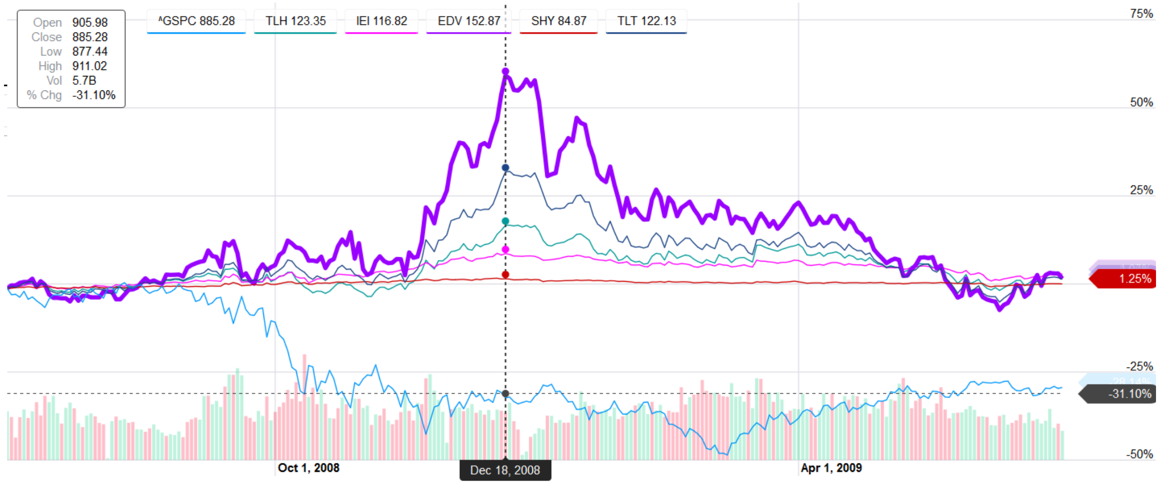
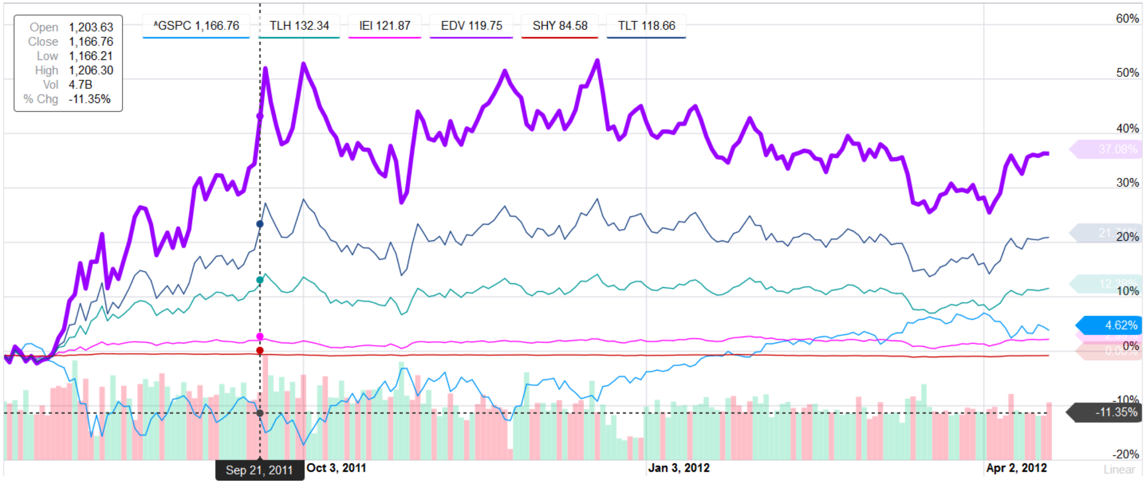
2008 / 2009 Financial Crisis:



2011 / 2012 European Sovereign Depth Crisis:



- EDV has the most robust properties to act as “crash protection”
- TLT has the advantage of higher liquidity, but requires an about 1.5 ‘leverage’

Building a well-balanced crash protection

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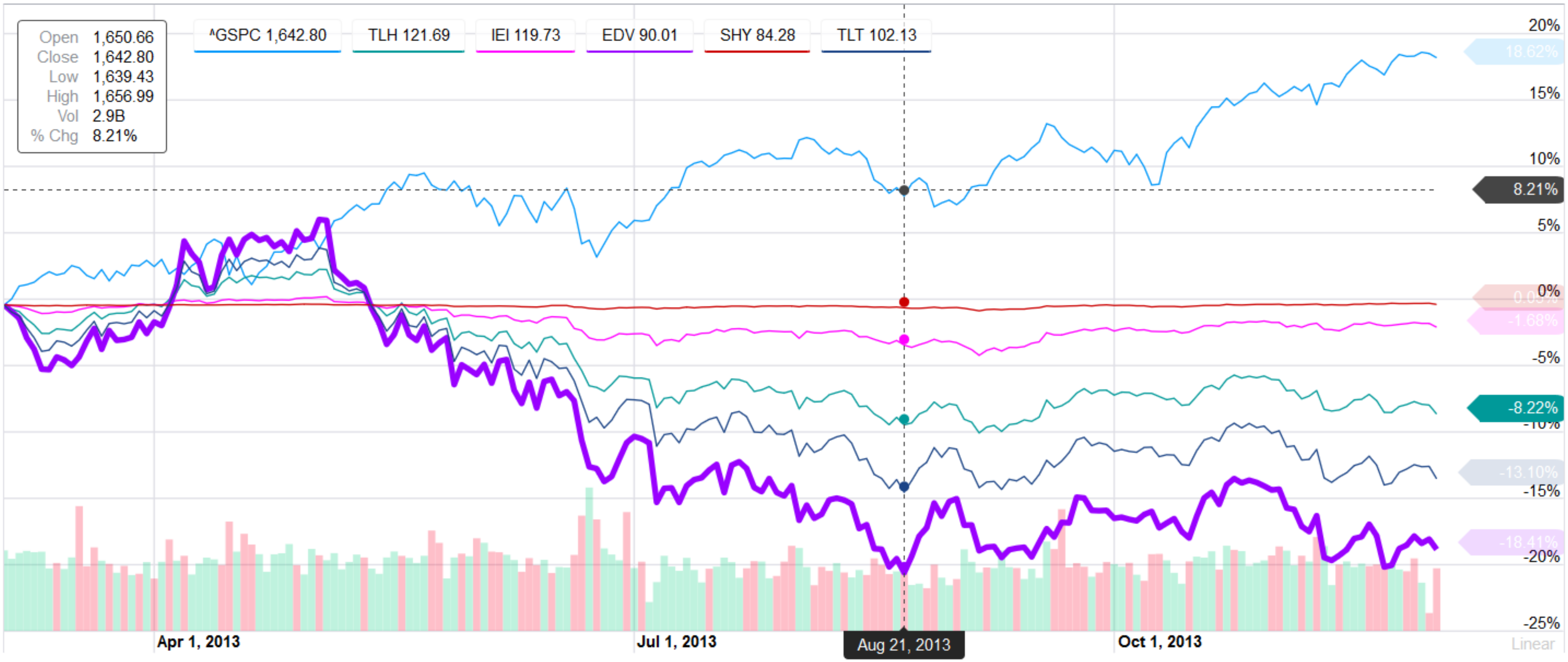
2013 Bernake Statement:



- Using ‘crash protection’ can also fire back, especially in the recent risk-on/off years with stock and bond markets being driven by Central Bank statements and macro events.

Building a well-balanced crash protection

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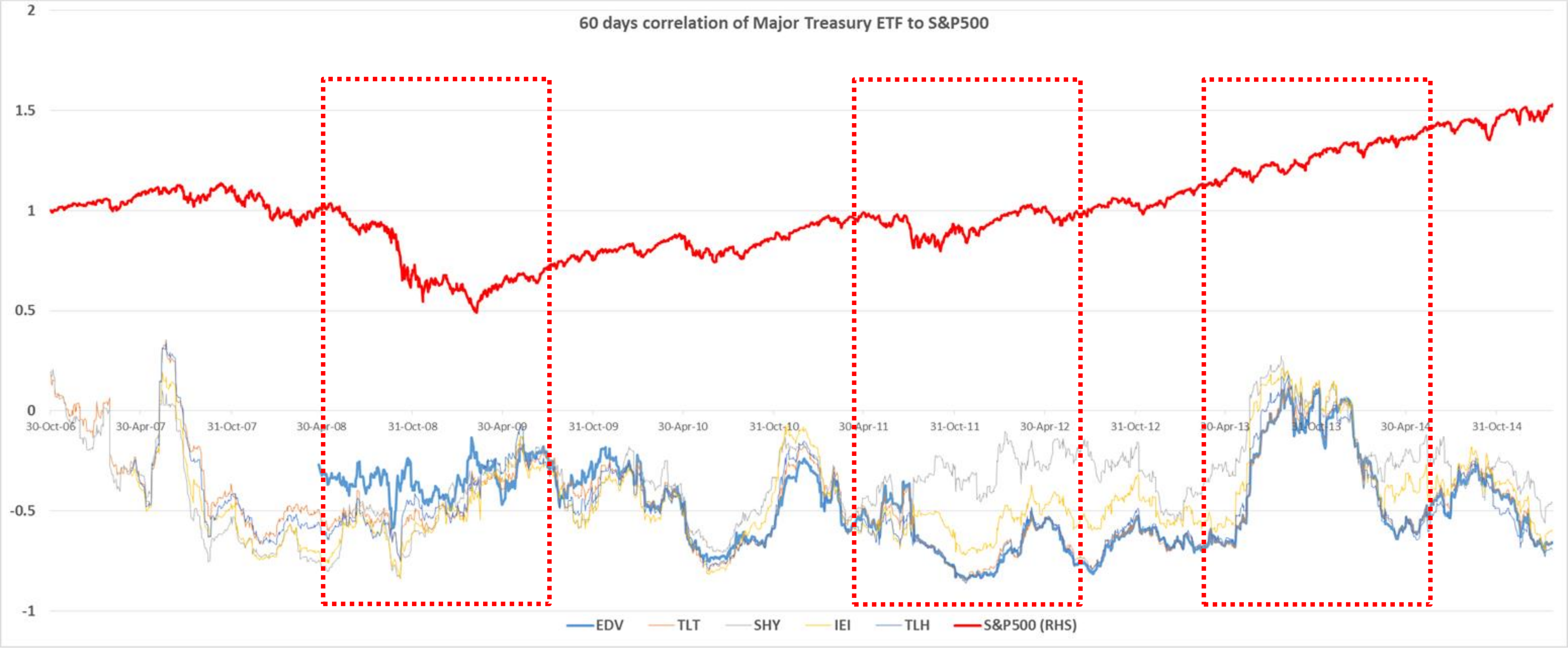
A word on correlation:



- 60 days (main lookback period) correlation of all major treasury ETF to the S&P500 is normally negative, with exception of the bond ‘flash-crash’ following the Bernake statement in May 2013.

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Harvesting Rebalancing Losses by shorting 3x leveraged inverse ETF

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- How do leveraged ETF work? Teaser: Highly geeky stuff ahead!
  - Leverage daily returns using borrowed funds to rebalance their assets daily.
  - Bull leveraged ETF incur in rebalancing losses in declining markets, bear leveraged ETF in upwards markets.

- Example from Investopedia.com (ignoring borrowing cost and management fees):
  - Consider a week in which the index loses 1% every day for four days in a row, and then gains +4.1% on the fifth day, which allows it to recover all of its losses.

Day	Index Open	Index Close	Index Return	ETFOpen	ETF Close	ETF Return
Monday	100.00	99.00	-1.00%	100.00	98.00	-2.00%
Tuesday	99.00	98.01	-1.00%	98.00	96.04	-2.00%
Wednesday	98.01	97.03	-1.00%	96.04	94.12	-2.00%
Thursday	97.03	96.06	-1.00%	94.12	92.24	-2.00%
Friday	96.06	100.00	4.10%	92.24	99.80	8.20%

  - Index back at 100, but 2x leveraged ETF loses 0.2

Harvesting Rebalancing Losses by shorting 3x leveraged inverse ETF

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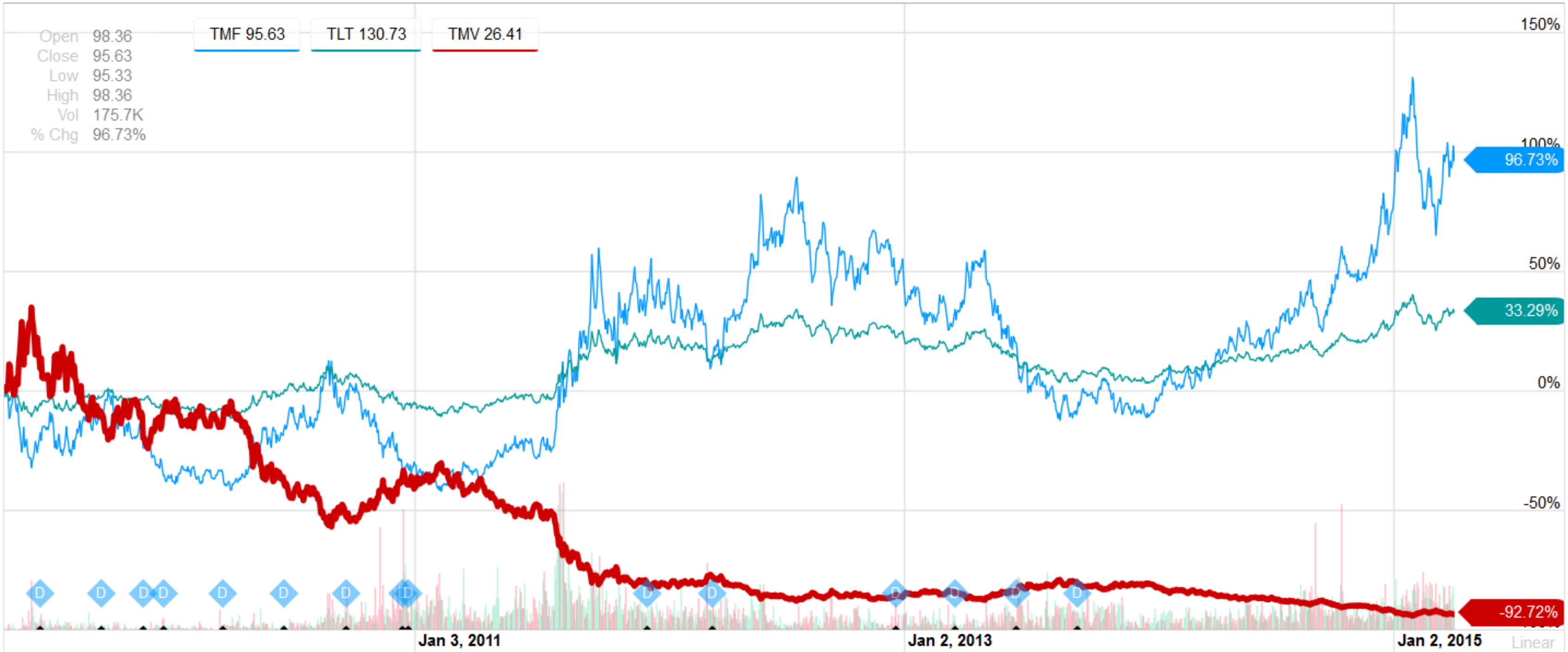
- **The trick**: Shorting ‘inverse/bear’ 3 times leveraged ETF to improve our hedge with ‘money for nothing’ (Dire Straits 1985)
  - Inverse 3x leveraged version of TLT: TMV (Direxion Daily 20+ Yr Trsy Bear 3X)
  - Lost 90% of its value since inception in 2009.



Harvesting Rebalancing Losses by shorting 3x leveraged inverse ETF

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- Very Hypothetical Simulation with constant 2.75% borrowing cost (IB as of 4/5/15)
  - Short 3x bear shows 23% gain over 3x bull ETF (4.4% CAGR)
  - Why hypothetical? Borrowing cost and availability change over time, not always feasible, then TMF
  - Frees up capital bound as short selling (‘money for nothing’) and/or using 3x leverage
  - Just an additional idea to improve overall performance. Needs Study and some practice before doing!

Harvesting Rebalancing Losses by shorting 3x leveraged inverse ETF

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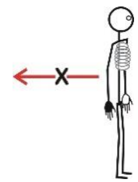
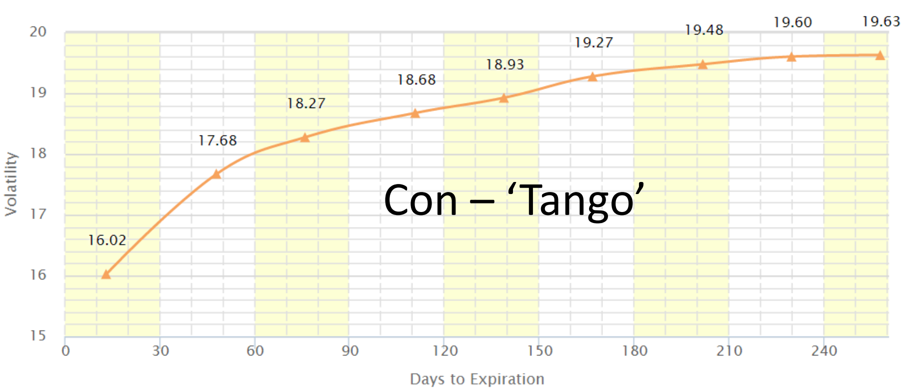
- How to benefit in your own portfolio:
  - We employ this as alternative execution scenario in all our strategies when moving adaptively into EDV or TLT. Example:
    - Bond Rotation 'Sleep Well'
    - Maximum Yield Rotation Strategy
    - Global Market Rotation Strategy
    - Enhanced Permanent Portfolio – The Bug
- Further reading:
  - What is a hedge and why does it makes sense to do it?
  - Risk Management using Timed Hedging
  - TMV hedging and timing
  - Comparison of TMV, TMF or EDV as hedge

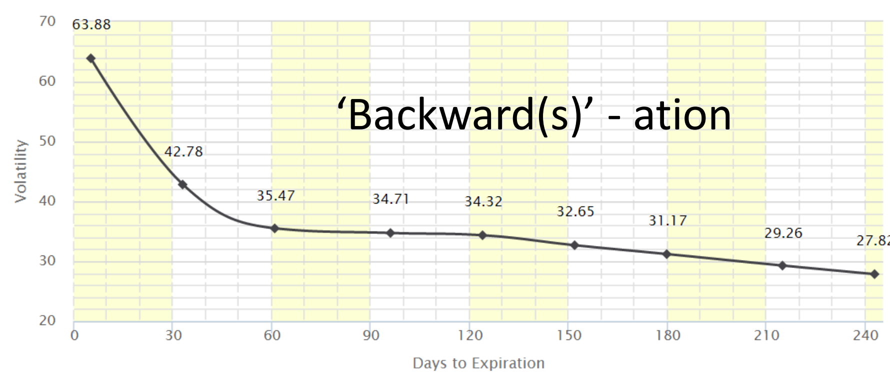
Harvesting the ‘Fear Premium’ by investing in inverse Volatility

- Inverse Volatility, Contango & Backwardation - Teaser: More geeky stuff ahead!
- To memorize quickly, imagine your partners mood (future term curve):
  - Going up? Con - ‘Tango’
  - Going down? ‘Backward(s)’ - ation




<u>Apr 2015</u> VIX futures term curve <u>Oct 2008</u>





Courtesy vixcentral.com

Harvesting the ‘Fear Premium’ by investing in inverse Volatility

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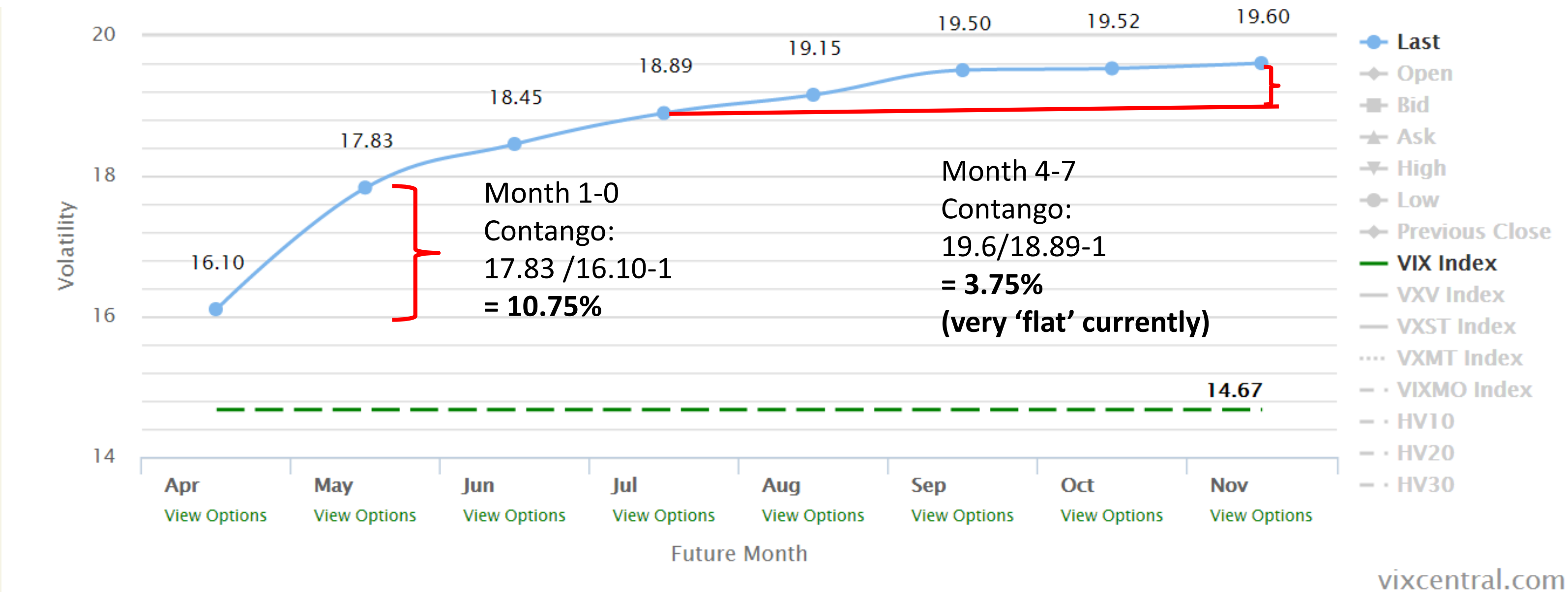
- Determining Contango / Backwardation:
  - ZIV - Inverse mid-term volatility (4-7) - VelocityShares Daily Inverse VIX MT ETN
  - XIV - Inverse front month volatility - VelocityShares Daily Inverse VIX ST ETN



Percent contango (backwardation)	1	10.75%	2	3.48%	3	2.38%	4	1.38%	5	1.83%	6	0.13%	7	0.38%	8
Difference between futures	1	1.73	2	0.62	3	0.44	4	0.26	5	0.35	6	0.02	7	0.08	8

Harvesting the 'Fear Premium' by investing in inverse Volatility

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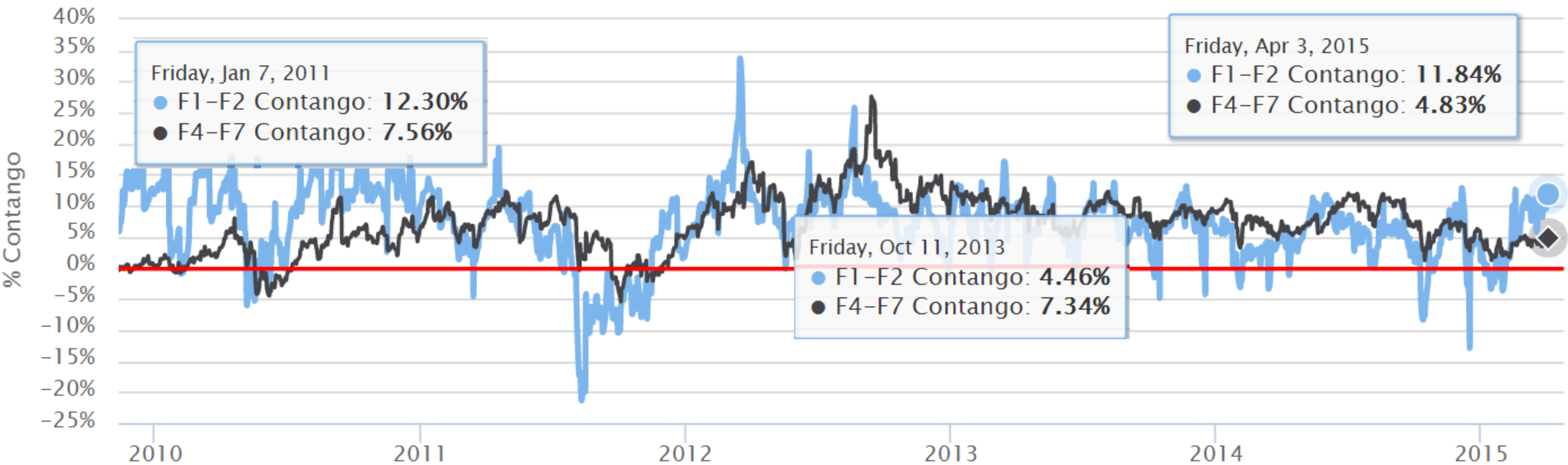
- Contango over time:
  - Expresses 'fear premium' investors are willing to pay to cover their expectation of long term volatility, e.g. in 4 – 7 months in the future
  - Higher in moments of crisis or corrections, lower in 'calm waters'



Harvesting the ‘Fear Premium’ by investing in inverse Volatility

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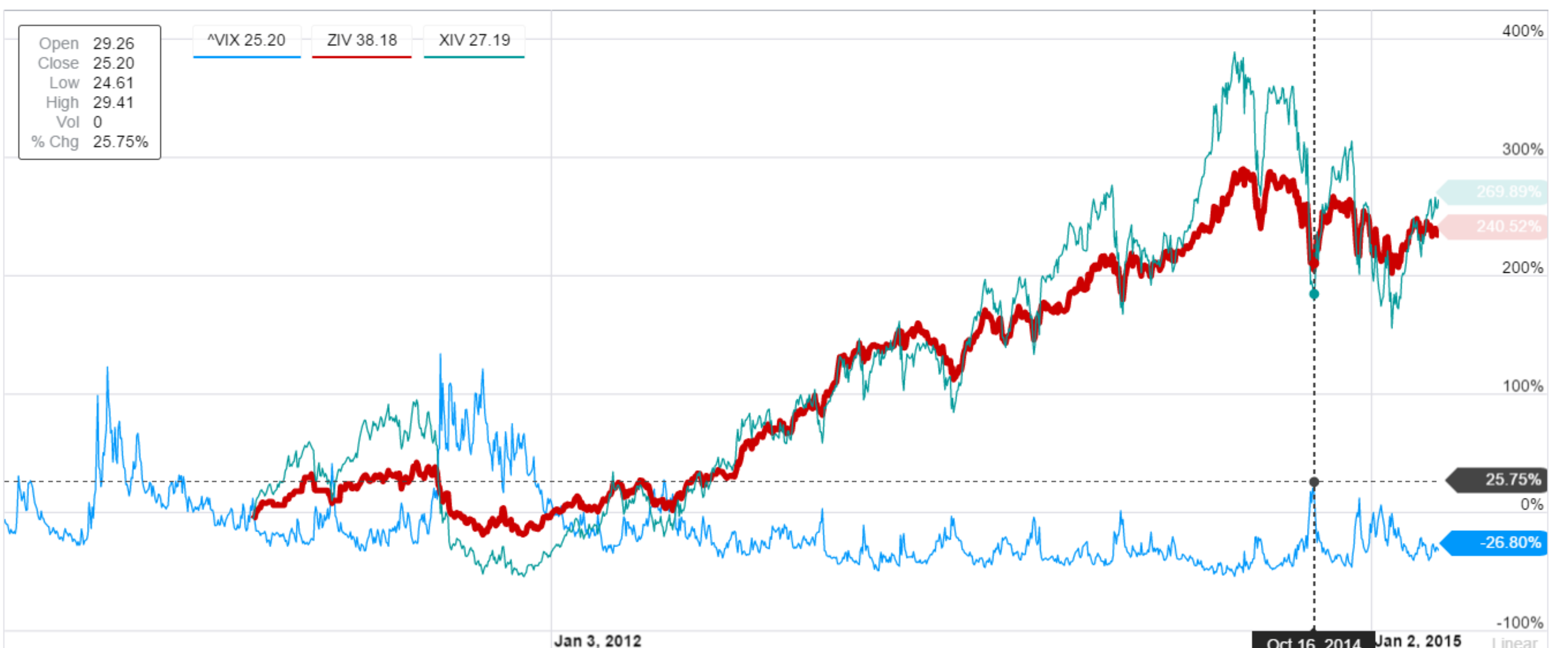
- Inverse Volatility ETF allow us to ‘harvest the fear premium’
  - What is a cost for other people when buying VIX futures or ETF
  - Becomes a profit for us when buying <u>inverse</u> volatility ETF (XIV, ZIV, etc)
  - We prefer ZIV due to the more predictable movements, but still caution:
  - This is trading volatility of volatility = Needs daily or weekly attention!



Harvesting the 'Fear Premium' by investing in inverse Volatility

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- How to benefit in your own portfolio:
  - We employ this in our:
    - Global Market Rotation Strategy - Enhanced
    - Maximum Yield Rotation Strategy
    - .. and sometimes opportunistically in our own accounts
- Further reading:
  - How To Build An ETF Rotation Strategy With More Than 50% Annualized Returns
  - Comparison of VIX volatility and ZIV return
  - Why we invest in ZIV (inverse mid-term volatility) and not in XIV (inverse front month volatility)
  - Strategies For Trading Inverse Volatility
  - A short analysis of the actual ZIV performance after the July 2014 stock market selloff

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Our development cycle

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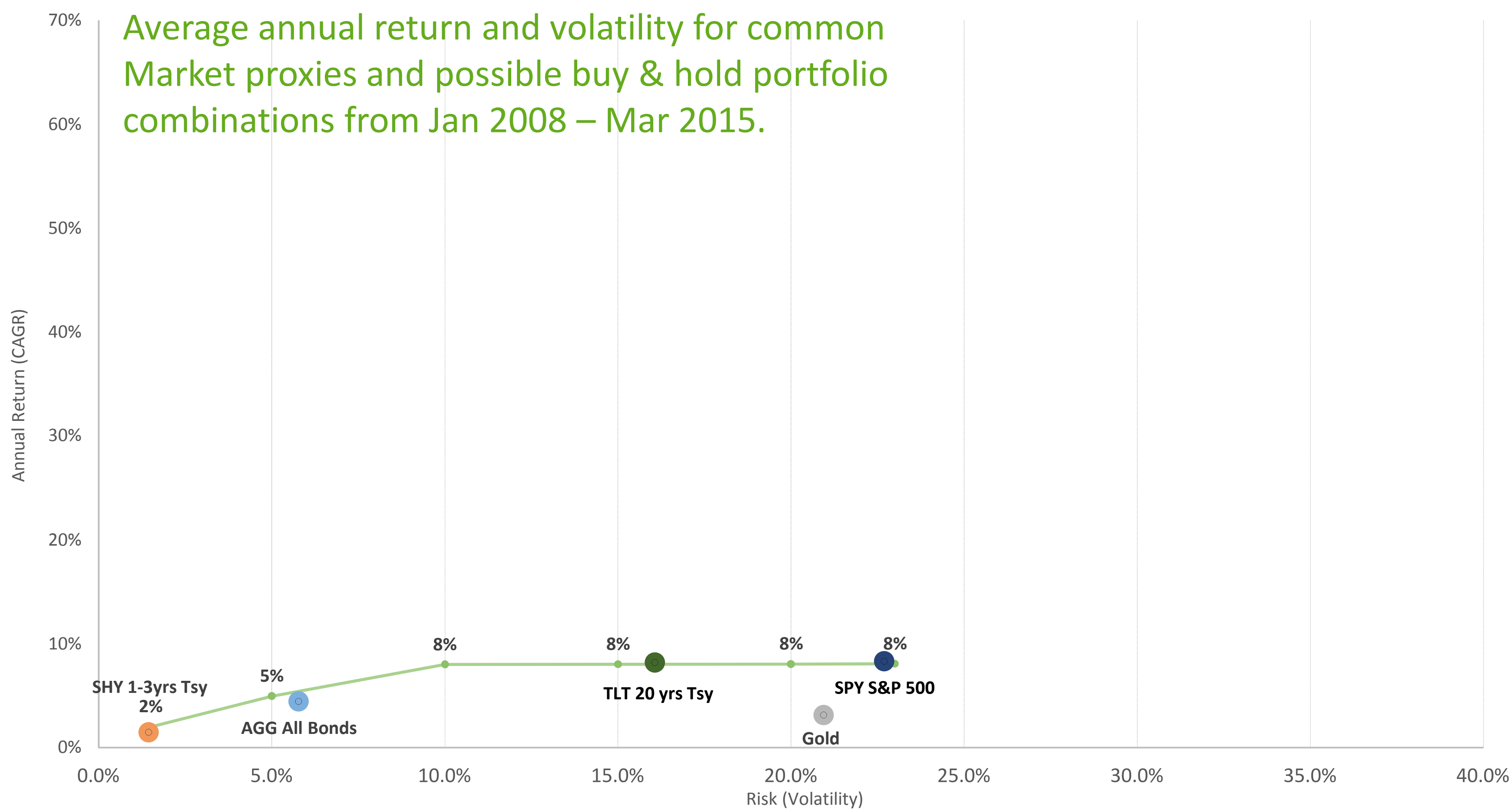
Custom Portfolio Solutions — **2015**

Dynamic & Smart Portfolio Solutions — **2015**

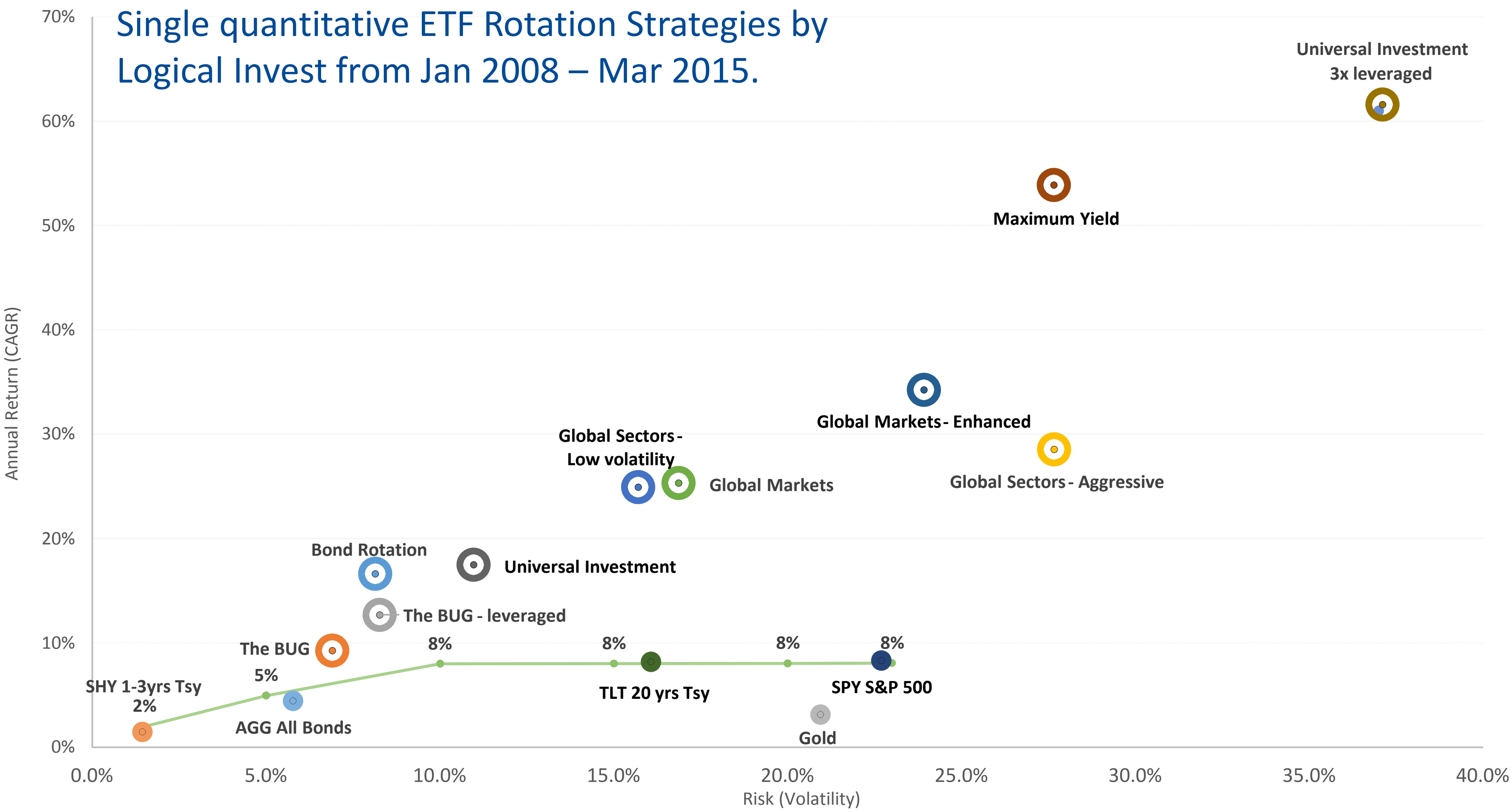
Integrated Portfolio Solutions — **2014**

Create Alpha versus Buy & Hold — **2013**

What the market offers



What we offer - Single Strategies



What we offer - Portfolio Solutions

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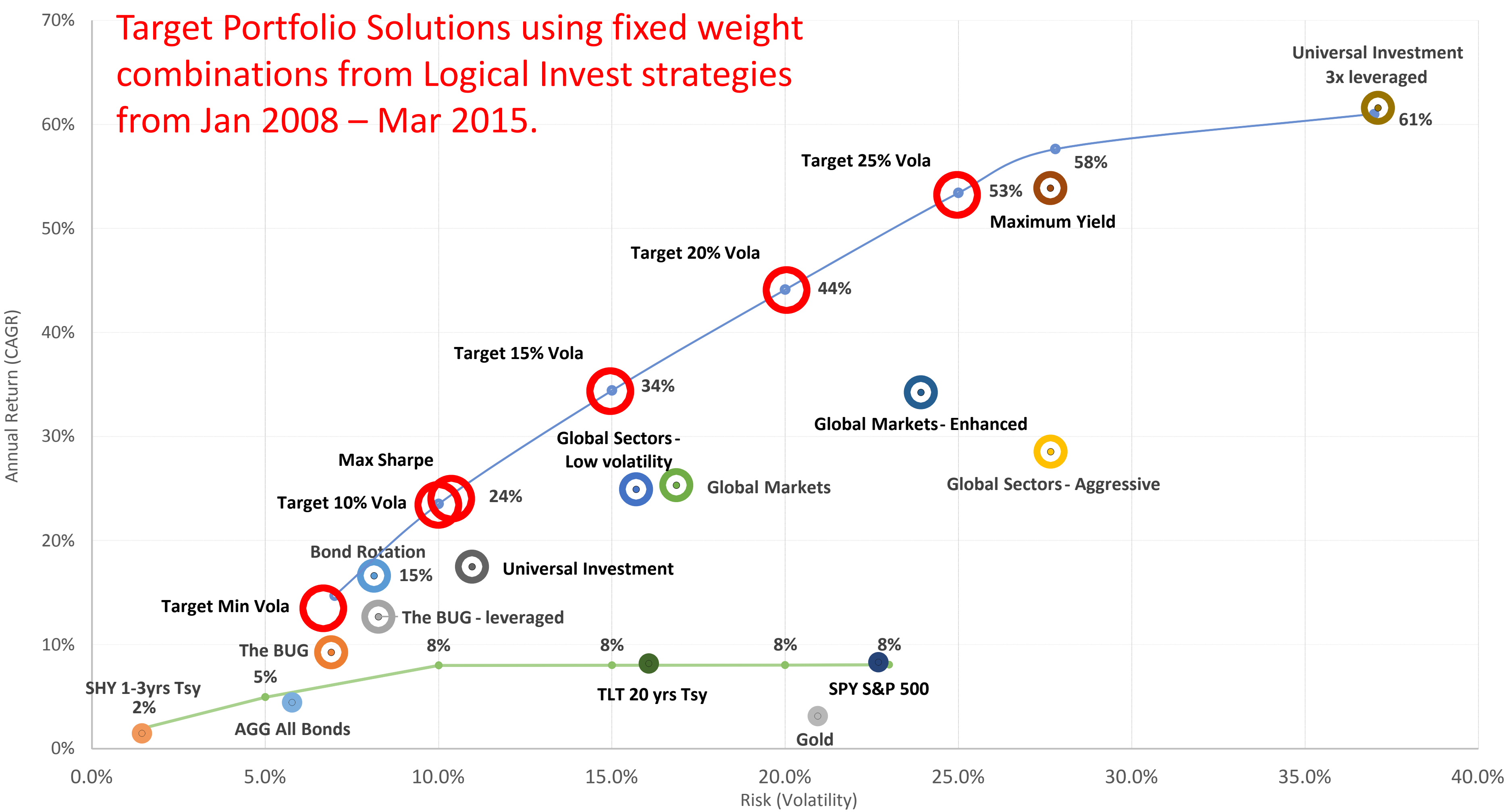

What we offer –
Dynamic Portfolio Solutions

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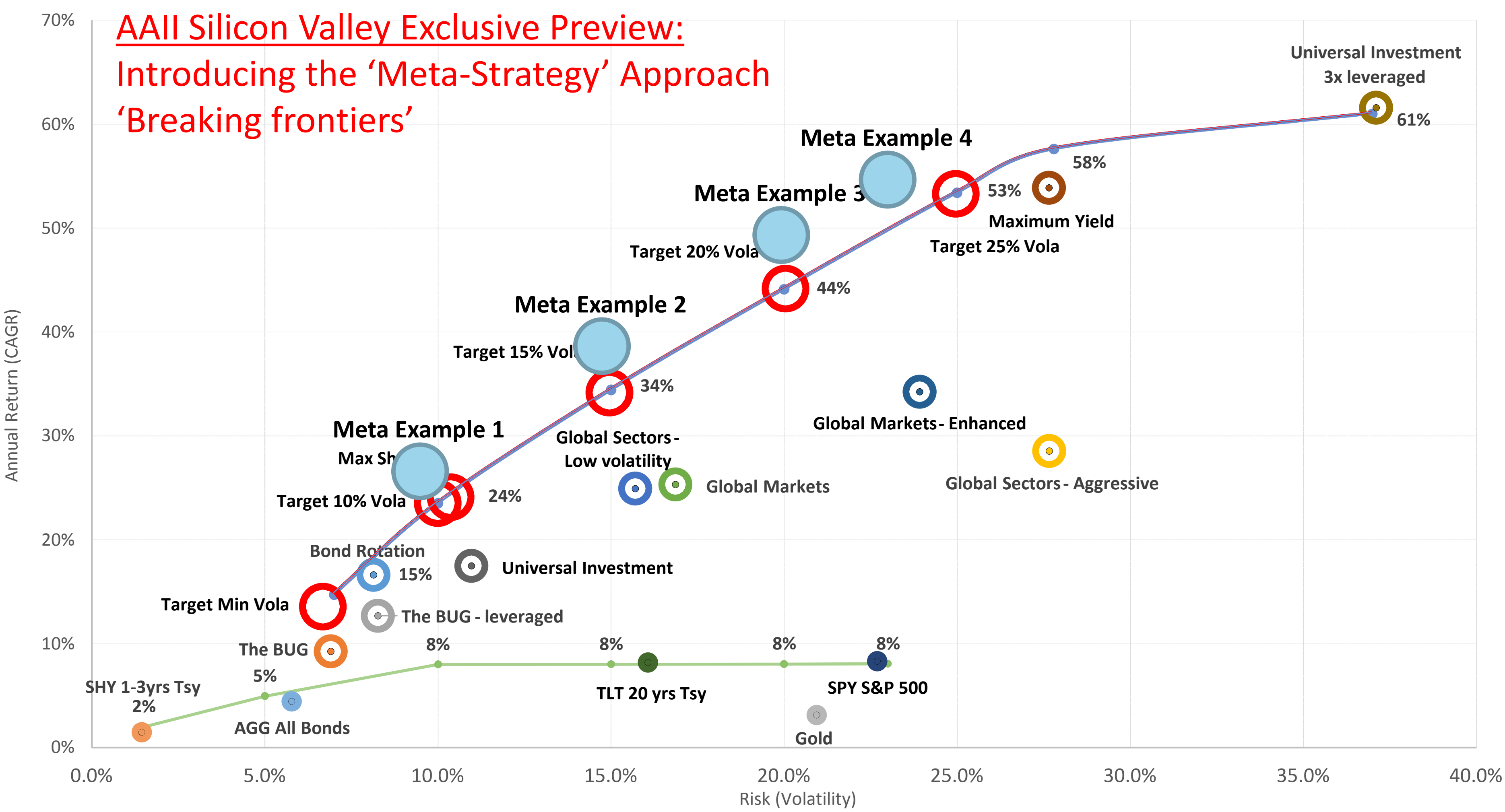

Exclusive AAII SV Preview – Meta Strategy Concept

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- Meta-Strategy or dynamic “Portfolio of Strategies”
  - Dynamically changing allocation weights to individual Strategies
    - Changing market environment → Benefit either Bonds, Equity, Sectors
    - Changing Market regime → Momentum, Reversion to Mean, Sideward market
    - Strategies just ‘stop working’ → Underlying mechanism or assumptions
  - All previously introduced ‘knobs’ now available at Portfolio Level
    - Portfolio style: Momentum, Sharpe optimization, Mean Reversion
    - Rebalancing frequency: Quarterly, Monthly, Bi-Weekly, Weekly
    - Automatic hedging through different vehicles: Bonds, Volatility, Commodities
    - Volatility scaling (1/n): Decreases exposure gradually to match volatility limit
    - Volatility attenuator: Sensitivity to changes in volatility, minimum volatility optimization
    - Min / Max Allocation % to Strategies or Instruments
- The goal: Increased robustness through adaptive allocation

Exclusive AAII SV Preview – Meta Strategy Concept

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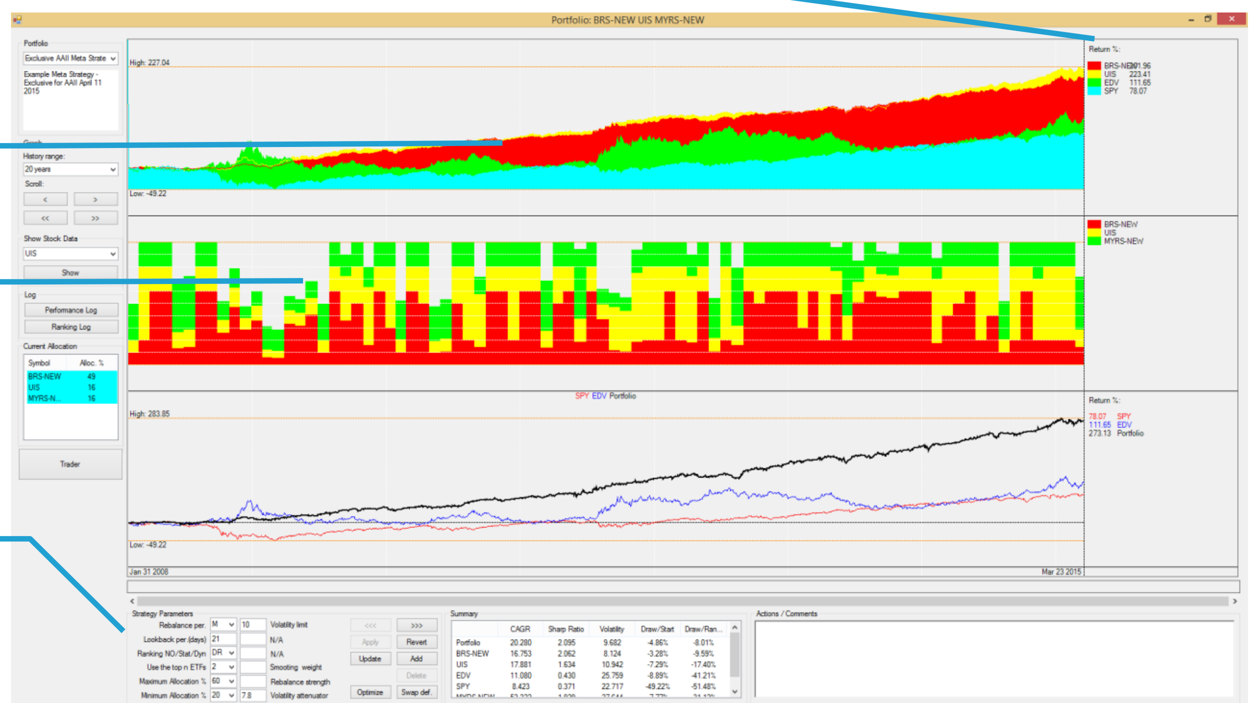
- Our proprietary engine: ‘Quant Trader’:

The Strategies:
-Bond Rotation (BRS)
-Universal Investment (UIS)
-Maximum Yield (MYRS)
-Benchmark S&P 500

The Logic:
-Adaptive Maximum Sharpe

The Crash-Protection:
-10% Volatility Limit – Scale Down (Exposure 50% in 2008)
-Hedge Bonds (BRS) and inverse Volatility (MYRS)

The Tactical Elements:
Monthly Rebalancing
Selection Top2 (from 3)
Min/Max Allocation 20-60%)



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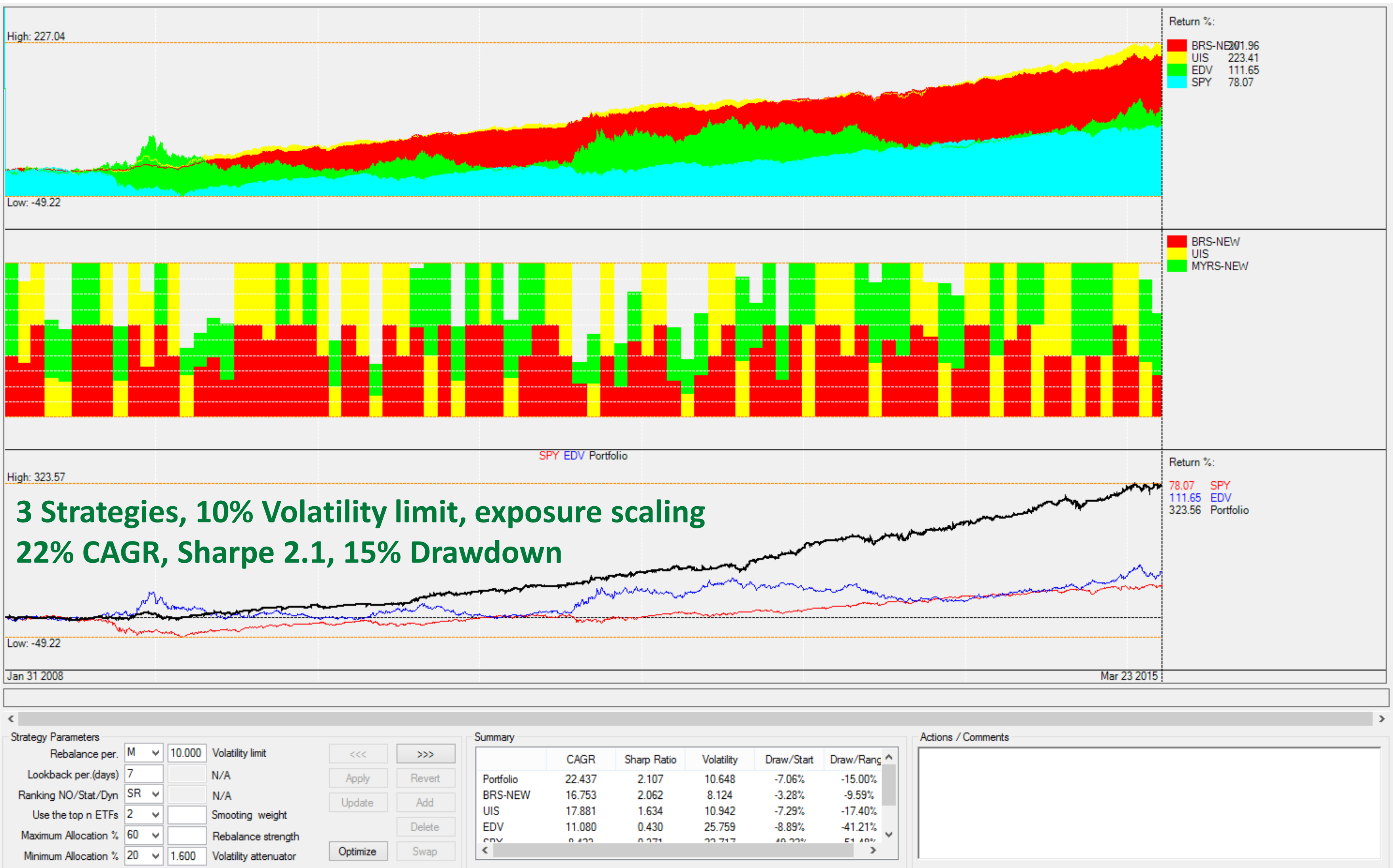
Exclusive AAII SV Preview – Meta Strategy Concept - Examples



Exclusive AAII SV Preview – Meta Strategy Concept - Examples

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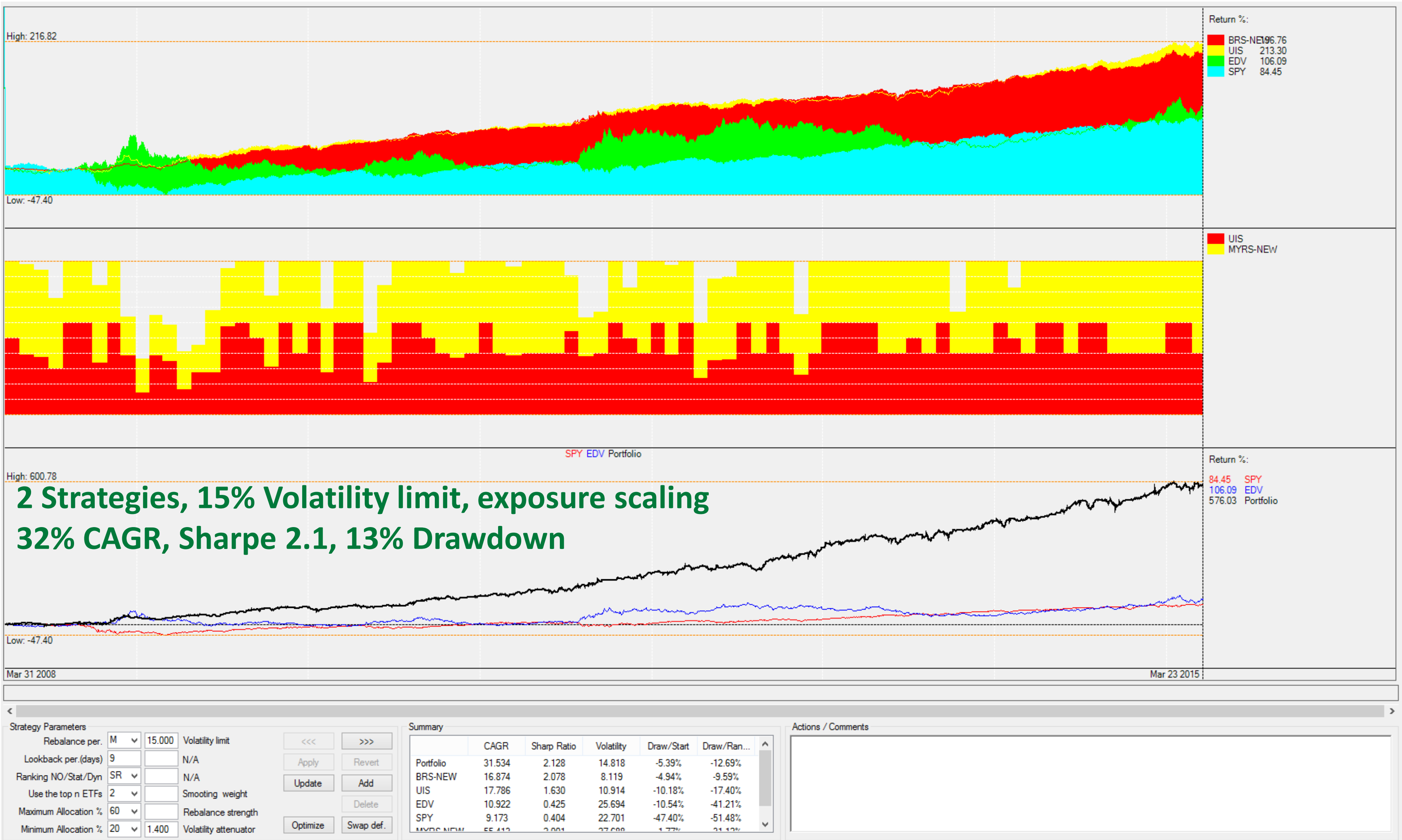

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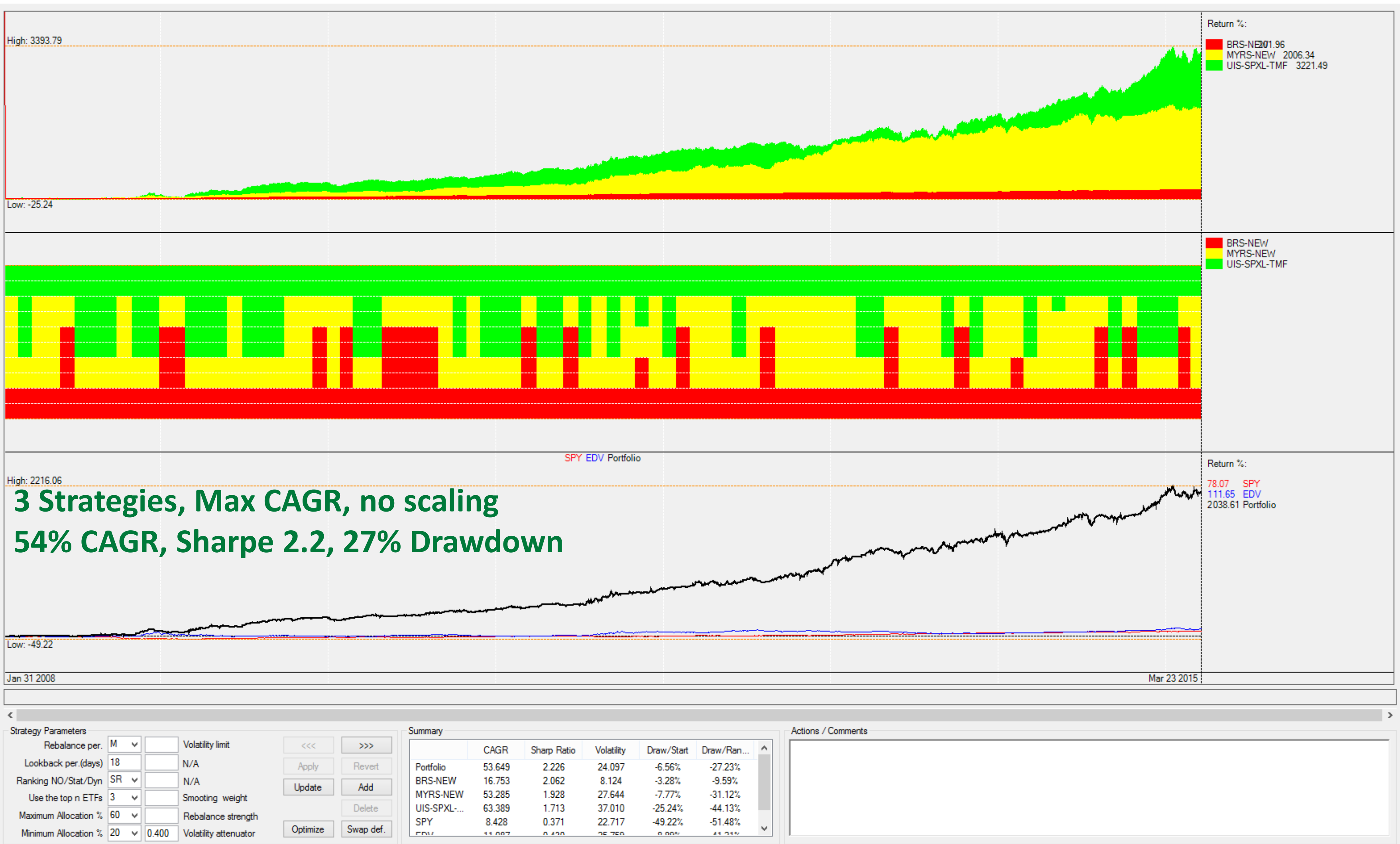

Exclusive AAII SV Preview –
Meta Strategy Concept - Examples

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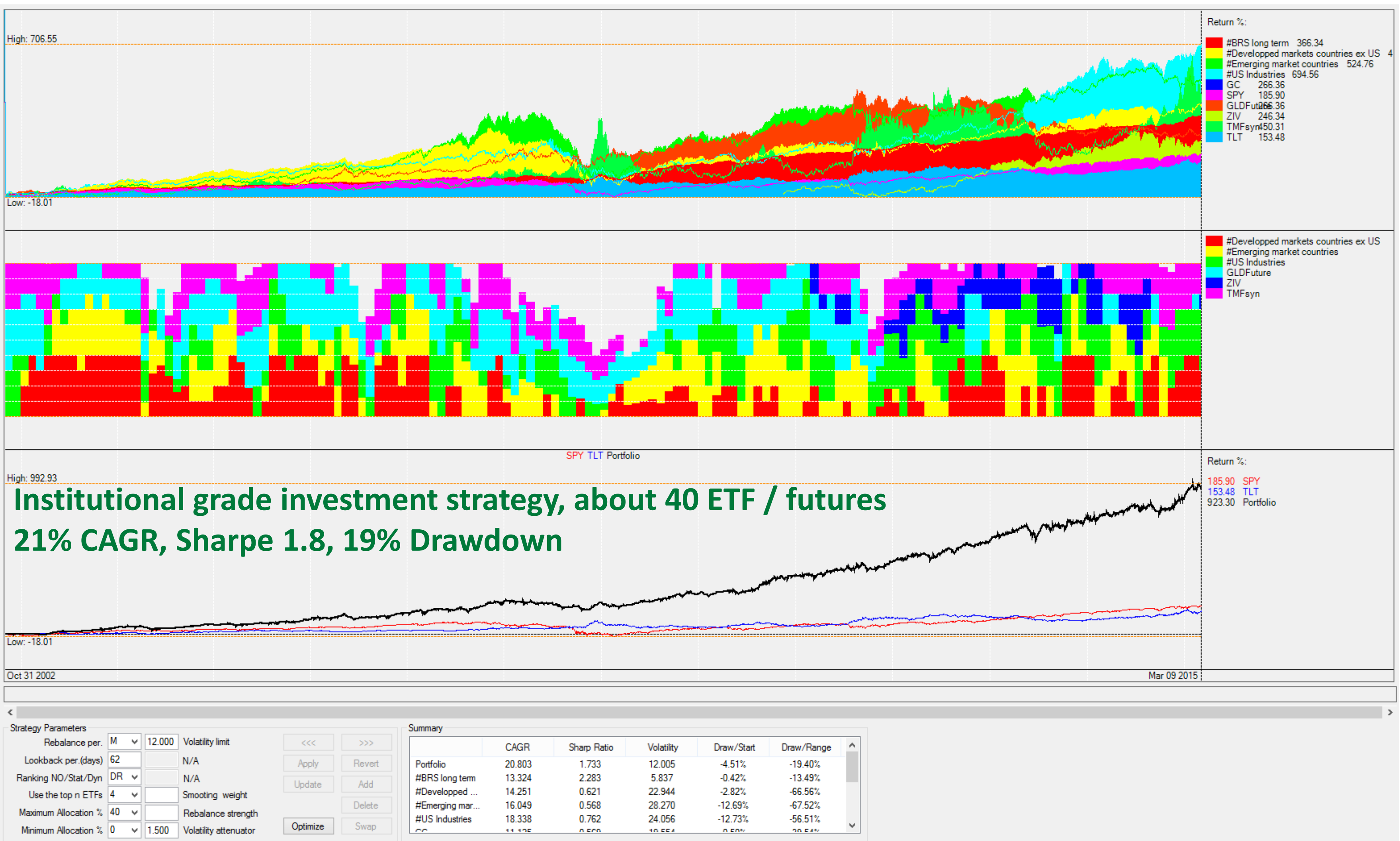

Integrated Portfolio Solution

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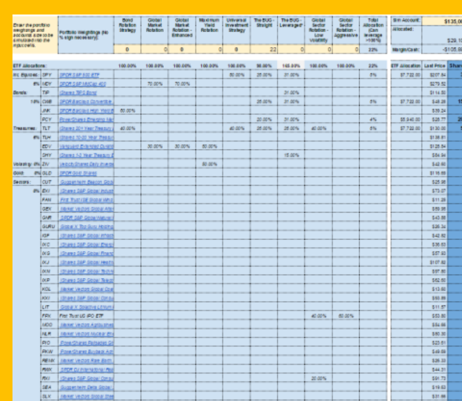
- How to benefit in your own portfolio:
  - Review our strategies, design your Portfolio, get signals
    - Educational Articles + Research Whitepapers
    - Portfolio Builder
    - Consolidated Signals (Free preview)

- Sounds complicated and time consuming? 3 Steps, 15 minutes a month

1) Portfolio (One-time)

2) Signals (5 min)



3) Execution (10 min)

charles SCHWAB

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Q&A:
Now is your turn to speak up..

Alexander Horn
Alexander.Horn@logical-invest.com
Skype: AlexanderHorn672
www.logical-invest.com

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Bond Rotation “Sleep Well”

Annual Return: 14% (new 17%)
Sharpe: 1.4

- Long Term Tsy, High Yield, EM Bonds, Convertibles
- Single digit drawdown, steady performer
- New adaptive version introduced Jan 2015

Bond Rotation Strategy 'Sleep Well'

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Intelligent Portfolio Strategies

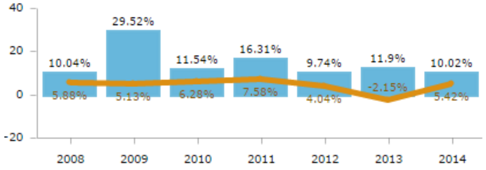
Performance:

Risk Score: ?

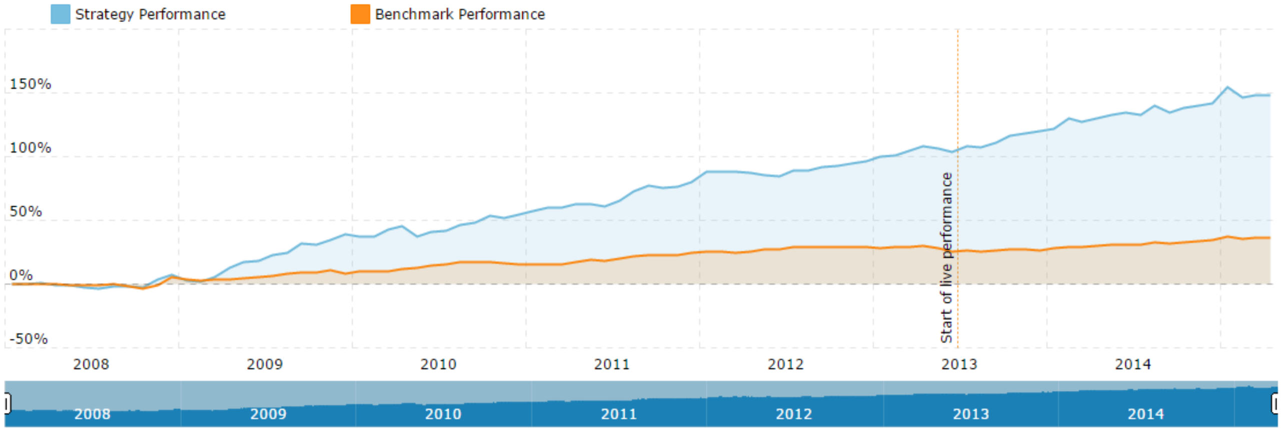
Performance:

	3 Months	12 Months	Since Inception
Return	2.8%	9.3%	152.0%
CAGR	11.0%	9.3%	13.6%
Volatility (ann.)	8.7%	6.1%	7.5%
DrawDown	-6.0%	-6.0%	-9.7%
Sharpe (3%)	0.92	1.04	1.42

Annual Performance vs. AGG - iShares Barclays Aggregate ETF



Strategy Benchmark: AGG - iShares Barclays Aggregate ETF



From: 01-02-2008 to: 05-01-2015

Zoom: 1 month | 3 months | 6 months | 1 year | YTD | MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	TLT	40	0.03	-0.09	154.02	2.35	0	39.29	1.52
3/31/2015	4/4/2015	JNK	60	-0.18	-0.09	154.02	2.35	0	39.29	1.52
2/27/2015	3/31/2015	TLT	50	1.09	0.51	154.26	2.44	0.38	39.29	1.52
2/27/2015	3/31/2015	CWB	50	-0.06	0.51	154.26	2.44	0.38	39.29	1.52
1/31/2015	2/27/2015	TLT	50	-6.14	-3.22	152.96	1.92	-0.9	38.76	1.14
1/31/2015	2/27/2015	PCY	50	-0.31	-3.22	152.96	1.92	-0.9	38.76	1.14
12/31/2014	1/31/2015	TLT	60	9.82	5.32	161.39	5.32	2.06	40.02	2.06
12/31/2014	1/31/2015	CWB	40	-1.43	5.32	161.39	5.32	2.06	40.02	2.06
11/28/2014	12/31/2014	TLH	50	1.42	0.7	148.2	10.01	0.15	37.2	6
11/28/2014	12/31/2014	BOND	50	-0.02	0.7	148.2	10.01	0.15	37.2	6

The BUG – Enhanced Permanent Portfolio

Annual Return: 10% (lev. 14%)
Sharpe: 1.0 (1.3)

- Equity, Bonds, Gold + Tips, Intl. bonds, convertibles
- A conservative strategy with a bond-like risk/return profile meant to reduce risk in all environments, even inflationary. Volatility, trend filtering, momentum and mean reversion criteria result in progressive overweigh-underweight of assets.

Enhanced Permanent Portfolio
‘The BUG’

Logical Invest
Intelligent Portfolio Strategies

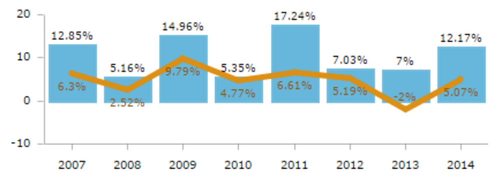
Performance:

Risk Score: ?

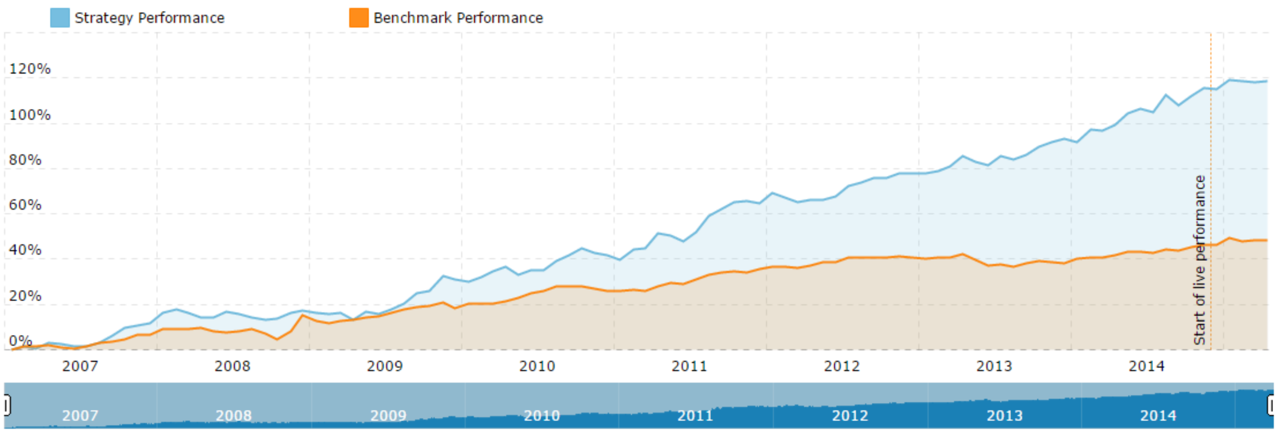
Performance:

	3 Months	12 Months	Since Inception
Return	1.3%	10.7%	123.9%
CAGR	4.9%	10.7%	10.3%
Volatility (ann.)	7.2%	6.2%	6.9%
DrawDown	-2.9%	-3.9%	-5.5%
Sharpe (3%)	0.26	1.23	1.06

Annual Performance vs. AGG - iShares Barclays Aggregate ETF



Strategy Benchmark: AGG - iShares Barclays Aggregate ETF



From: 01-05-2007 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	TLT	26	0.03	0.22	121.49	2.35	0	47.84	2.1
3/31/2015	4/4/2015	SPY	26	0	0.22	121.49	2.35	0	47.84	2.1
3/31/2015	4/4/2015	PCY	20	0.91	0.22	121.49	2.35	0	47.84	2.1
3/31/2015	4/4/2015	CWB	26	0.1	0.22	121.49	2.35	0	47.84	2.1
2/27/2015	3/31/2015	TLT	26	1.09	-0.25	121	2.13	0.38	47.84	2.1
2/27/2015	3/31/2015	SPY	26	-1.57	-0.25	121	2.13	0.38	47.84	2.1
2/27/2015	3/31/2015	CWB	26	-0.06	-0.25	121	2.13	0.38	47.84	2.1
2/27/2015	3/31/2015	PCY	20	-0.56	-0.25	121	2.13	0.38	47.84	2.1
2/2/2015	2/27/2015	TLT	24	-5.78	-0.7	121.56	2.38	-0.89	47.29	1.71
2/2/2015	2/27/2015	SPY	26	4.33	-0.7	121.56	2.38	-0.89	47.29	1.71

Enhanced Permanent Portfolio
‘The BUG’ - leveraged

Logical Invest
Intelligent Portfolio Strategies

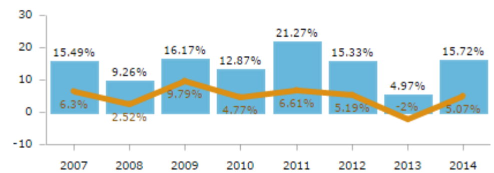
Performance:

Risk Score: ?

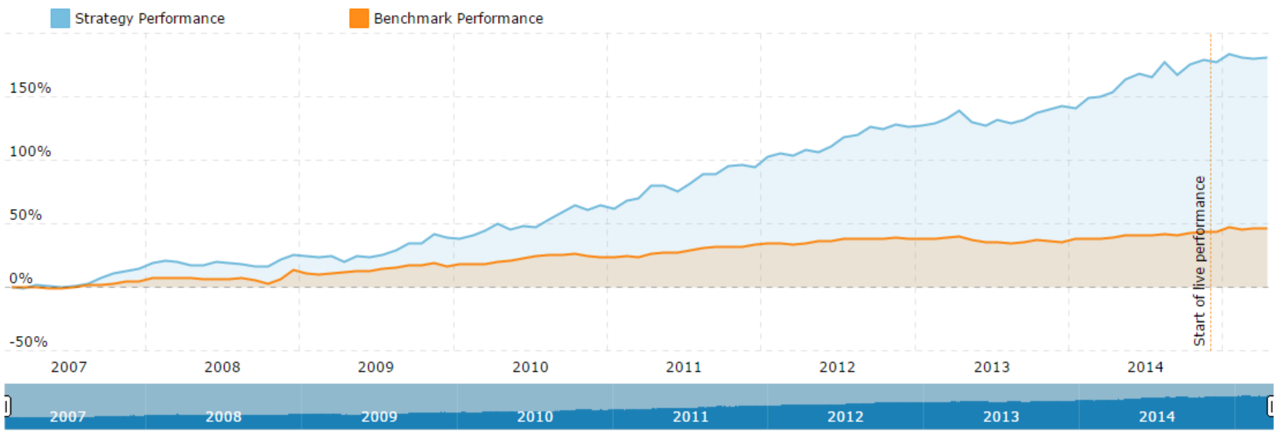
Performance:

	3 Months	12 Months	Since Inception
Return	1.0%	12.5%	186.0%
CAGR	4.0%	12.5%	13.8%
Volatility (ann.)	9.6%	7.9%	8.2%
DrawDown	-4.6%	-4.7%	-6.5%
Sharpe (3%)	0.10	1.20	1.32

Annual Performance vs. AGG - iShares Barclays Aggregate ETF



Strategy Benchmark: AGG - iShares Barclays Aggregate ETF



From: 02-05-2007 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	SPY	31	0	0.45	186.21	1.94	0	48.28	2.1
3/31/2015	4/4/2015	TLT	26	0.03	0.45	186.21	1.94	0	48.28	2.1
3/31/2015	4/4/2015	TIP	31	0.4	0.45	186.21	1.94	0	48.28	2.1
3/31/2015	4/4/2015	SHY	15	-0.01	0.45	186.21	1.94	0	48.28	2.1
3/31/2015	4/4/2015	PCY	31	0.91	0.45	186.21	1.94	0	48.28	2.1
3/31/2015	4/4/2015	CWB	31	0.1	0.45	186.21	1.94	0	48.28	2.1
2/27/2015	3/31/2015	TLT	31	1.09	-0.37	184.93	1.49	0.38	48.28	2.1
2/27/2015	3/31/2015	SPY	26	-1.57	-0.37	184.93	1.49	0.38	48.28	2.1
2/27/2015	3/31/2015	CWB	31	-0.06	-0.37	184.93	1.49	0.38	48.28	2.1
2/27/2015	3/31/2015	PCY	31	-0.56	-0.37	184.93	1.49	0.38	48.28	2.1

Global Sector Rotation

Annual Return: 25% (aggressive 26%)
Sharpe: 1.4 (0.8)

- 27 global sector ETF + Treasuries
- Performs even when general market down
- Excellent diversifier in portfolio, low correlated to market and strategies

Global Sector Rotation Strategy - Low Volatility

LogicalInvest
Intelligent Portfolio Strategies

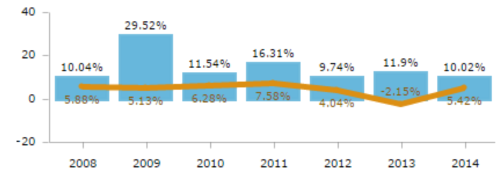
Performance:

Risk Score: ?

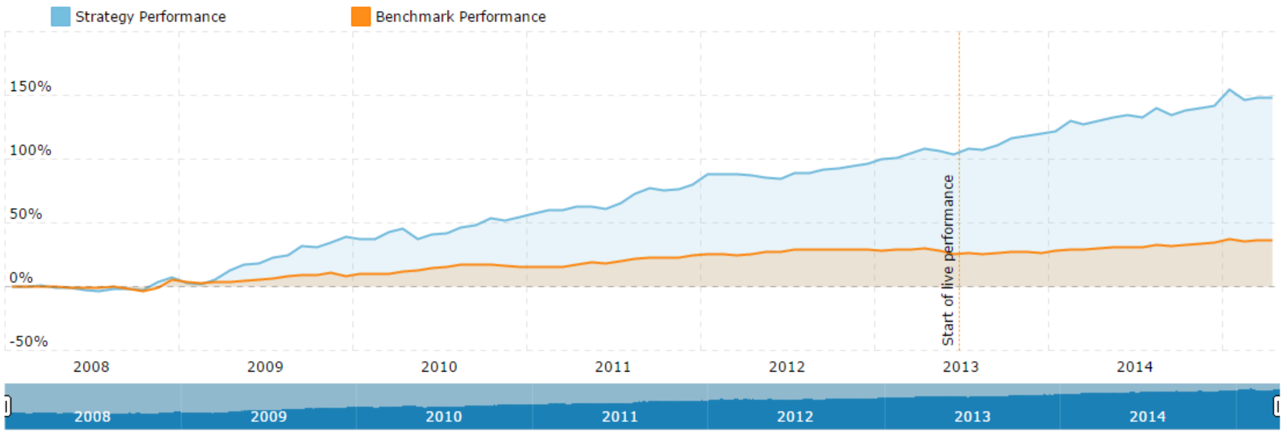
Performance:

	3 Months	12 Months	Since Inception
Return	2.8%	9.3%	152.0%
CAGR	11.0%	9.3%	13.6%
Volatility (ann.)	8.7%	6.1%	7.5%
DrawDown	-6.0%	-6.0%	-9.7%
Sharpe (3%)	0.92	1.04	1.42

Annual Performance vs. AGG - iShares Barclays Aggregate ETF



Strategy Benchmark: AGG - iShares Barclays Aggregate ETF



From: 01-02-2008 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	TLT	40	0.03	-0.09	154.02	2.35	0	39.29	1.52
3/31/2015	4/4/2015	JNK	60	-0.18	-0.09	154.02	2.35	0	39.29	1.52
2/27/2015	3/31/2015	TLT	50	1.09	0.51	154.26	2.44	0.38	39.29	1.52
2/27/2015	3/31/2015	CWB	50	-0.06	0.51	154.26	2.44	0.38	39.29	1.52
1/31/2015	2/27/2015	TLT	50	-6.14	-3.22	152.96	1.92	-0.9	38.76	1.14
1/31/2015	2/27/2015	PCY	50	-0.31	-3.22	152.96	1.92	-0.9	38.76	1.14
12/31/2014	1/31/2015	TLT	60	9.82	5.32	161.39	5.32	2.06	40.02	2.06
12/31/2014	1/31/2015	CWB	40	-1.43	5.32	161.39	5.32	2.06	40.02	2.06
11/28/2014	12/31/2014	TLH	50	1.42	0.7	148.2	10.01	0.15	37.2	6
11/28/2014	12/31/2014	BOND	50	-0.02	0.7	148.2	10.01	0.15	37.2	6

Global Sector Rotation Strategy - Aggressive

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Intelligent Portfolio Strategies

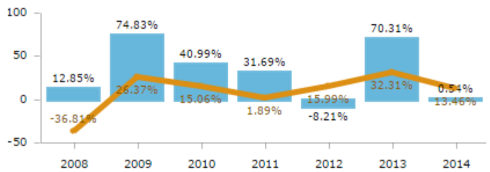
Performance:

Risk Score: ?

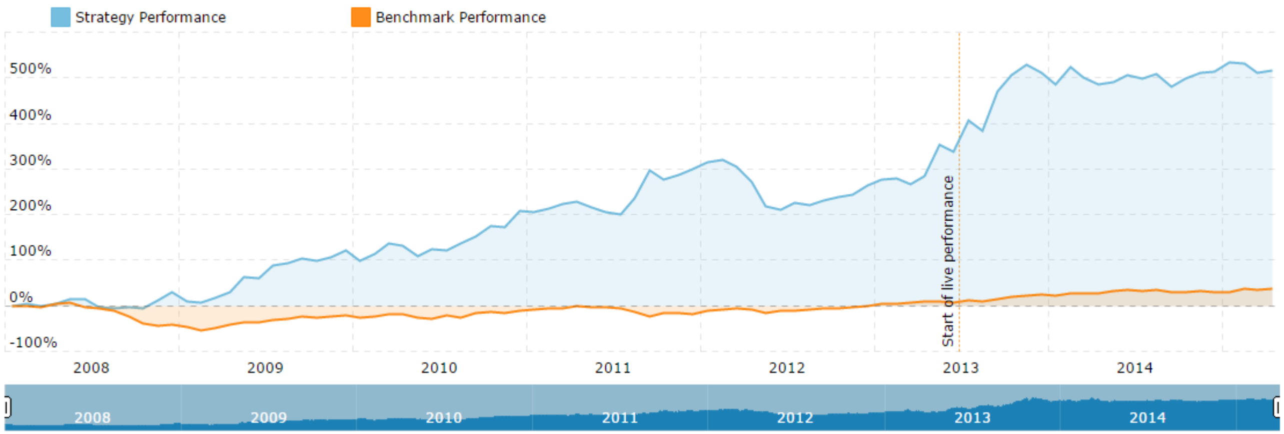
Performance:

	3 Months	12 Months	Since Inception
Return	-0.0%	1.9%	418.7%
CAGR	-0.0%	1.9%	25.5%
Volatility (ann.)	9.9%	11.3%	27.9%
DrawDown	-7.7%	-13.2%	-30.7%
Sharpe (3%)	-0.31	-0.09	0.81

Annual Performance vs. VHGEX - Vanguard Global Equity Inv



Strategy Benchmark: VHGEX - Vanguard Global Equity Inv



From: 01-02-2008 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	FPX	60	-0.59	0.79	418.79	0.35	0.6	24.55	4.36
3/31/2015	4/4/2015	TAN	40	2.86	0.79	418.79	0.35	0.6	24.55	4.36
2/27/2015	3/31/2015	RXI	60	-0.87	-3.3	414.74	-0.43	-0.32	23.81	3.73
2/27/2015	3/31/2015	SOIL	40	-6.95	-3.3	414.74	-0.43	-0.32	23.81	3.73
1/31/2015	2/27/2015	KXI	60	3.42	-0.4	432.31	2.96	5.55	24.21	4.06
1/31/2015	2/27/2015	TLT	40	-6.14	-0.4	432.31	2.96	5.55	24.21	4.06
12/31/2014	1/31/2015	TLT	50	9.82	3.38	434.45	3.38	-1.41	17.67	-1.41
12/31/2014	1/31/2015	PKW	50	-3.06	3.38	434.45	3.38	-1.41	17.67	-1.41
11/28/2014	12/31/2014	IXJ	30	-2.85	0.38	416.98	0.34	-1.55	19.36	4.33
11/28/2014	12/31/2014	IXN	30	-1.44	0.38	416.98	0.34	-1.55	19.36	4.33

Universal Investment Strategy

Annual Return: 14% (3x 44%)
Sharpe: 1.1 (1.2)

- S&P 500, long term treasuries
- Simple concept, complex algorithm
- Base strategy for any account

Universal Investment Strategy

LogicalInvest
Intelligent Portfolio Strategies

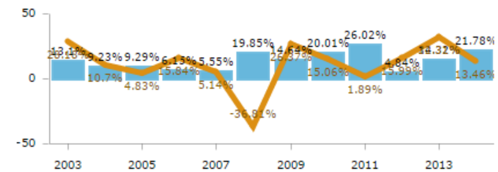
Performance:

Risk Score: ?

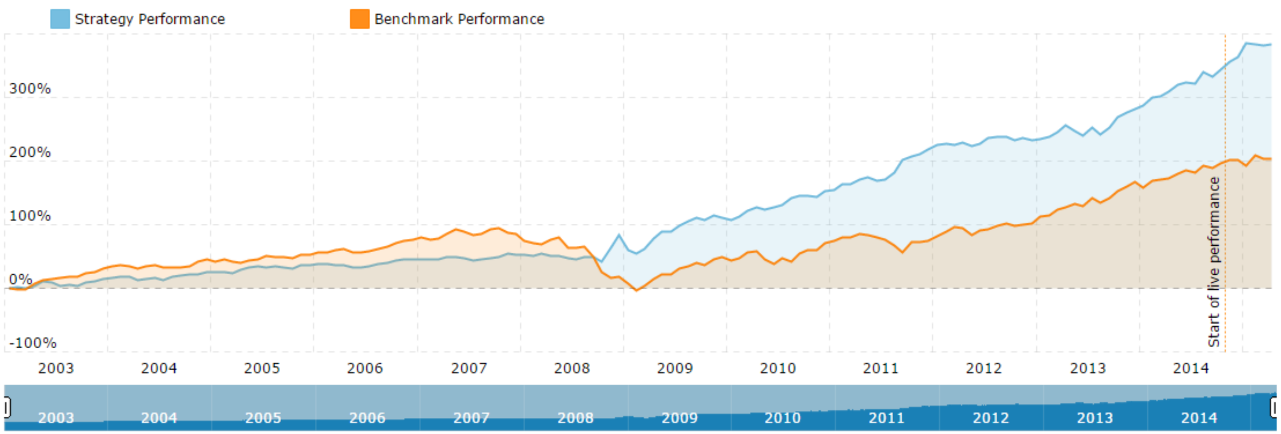
Performance:

	3 Months	12 Months	Since Inception
Return	4.1%	20.5%	381.3%
CAGR	16.6%	20.5%	13.7%
Volatility (ann.)	8.4%	6.8%	10.1%
DrawDown	-3.6%	-3.6%	-17.4%
Sharpe (3%)	1.63	2.55	1.06

Annual Performance vs. SPY - SPDR S&P 500 ETF



Strategy Benchmark: SPY - SPDR S&P 500 ETF



From: 01-02-2003 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	SPY	60	0	0.01	377.21	4.2	0	196.64	0.88
3/31/2015	4/4/2015	TLT	40	0.03	0.01	377.21	4.2	0	196.64	0.88
2/27/2015	3/31/2015	SPY	50	-1.57	-0.24	377.14	4.18	-1.57	196.64	0.88
2/27/2015	3/31/2015	TLT	50	1.09	-0.24	377.14	4.18	-1.57	196.64	0.88
1/31/2015	2/27/2015	SPY	50	5.62	-0.26	378.29	4.43	5.62	201.37	2.49
1/31/2015	2/27/2015	TLT	50	-6.14	-0.26	378.29	4.43	5.62	201.37	2.49
12/31/2014	1/31/2015	SPY	40	-2.97	4.7	379.52	4.7	-2.97	185.33	-2.97
12/31/2014	1/31/2015	TLT	60	9.82	4.7	379.52	4.7	-2.97	185.33	-2.97
11/28/2014	12/31/2014	SPY	50	-0.25	1.5	357.98	21.56	-0.25	194.05	12.96
11/28/2014	12/31/2014	TLT	50	3.25	1.5	357.98	21.56	-0.25	194.05	12.96

3x leveraged
Universal Investment Strategy

LogicalInvest
Intelligent Portfolio Strategies

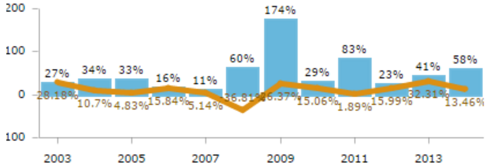
Performance:

Risk Score: ?

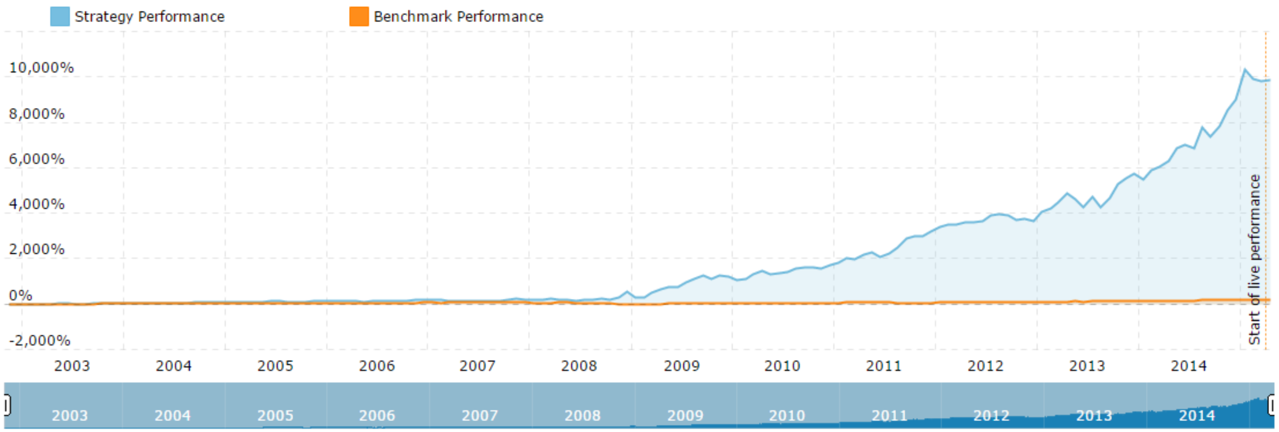
Performance:

	3 Months	12 Months	Since Inception
Return	10.1%	64.7%	9068.1%
CAGR	44.4%	64.7%	44.1%
Volatility (ann.)	25.7%	20.4%	33.0%
DrawDown	-12.7%	-12.7%	-44.1%
Sharpe (3%)	1.61	3.03	1.24

Annual Performance vs. SPY - SPDR S&P 500 ETF



Strategy Benchmark: SPY - SPDR S&P 500 ETF



From: 11-08-2002 to: 05-01-2015

Zoom: 1 month | 3 months | 6 months | 1 year | YTD | MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	SPXL	50	-0.17	0.27	9617.57	15.53	0	189.81	0.41
3/31/2015	4/4/2015	TMF	50	0.71	0.27	9617.57	15.53	0	189.81	0.41
3/5/2015	3/31/2015	SPXL	50	-4.92	2.5	9591.6	15.22	-1.47	189.81	0.4
3/5/2015	3/31/2015	TMF	50	9.92	2.5	9591.6	15.22	-1.47	189.81	0.4
2/5/2015	3/5/2015	SPXL	50	6.07	-4.5	9355.38	12.41	2.11	194.15	1.91
2/5/2015	3/5/2015	TMF	50	-15.06	-4.5	9355.38	12.41	2.11	194.15	1.91
1/7/2015	2/5/2015	SPXL	40	4.84	4.59	9800.73	17.71	1.88	188.08	-0.19
1/7/2015	2/5/2015	TMF	60	4.43	4.59	9800.73	17.71	1.88	188.08	-0.19
12/4/2014	1/7/2015	SPXL	40	-6.7	12.54	9366.08	12.54	-2.04	182.76	-2.04
12/4/2014	1/7/2015	TMF	60	25.37	12.54	9366.08	12.54	-2.04	182.76	-2.04

Global Market Rotation

Annual Return: 36% (Enhanced 40%)
Sharpe: 1.4 (1.4)

- Equities US, Europe, EM, LA, AP + Treasuries
- Core strategy for balanced portfolios
- Enhanced version adds Inverse Volatility

Global Market Rotation Strategy

LogicalInvest
Intelligent Portfolio Strategies

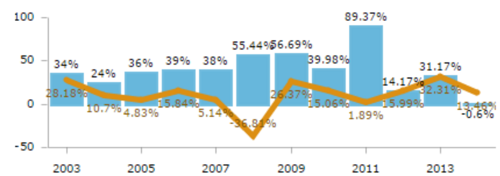
Performance:

Risk Score: ?

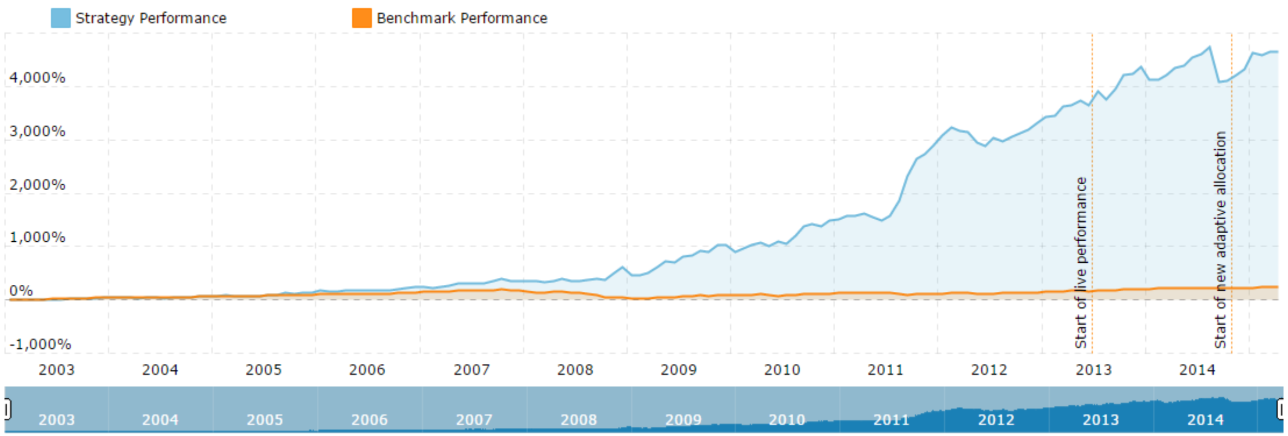
Performance:

	3 Months	12 Months	Since Inception
Return	8.2%	11.2%	4281.3%
CAGR	35.2%	11.2%	36.2%
Volatility (ann.)	10.5%	12.5%	24.4%
DrawDown	-9.6%	-14.6%	-31.1%
Sharpe (3%)	3.08	0.65	1.36

Annual Performance vs. VHGEX - Vanguard Global Equity Inv



Strategy Benchmark: VHGEX - Vanguard Global Equity Inv



From: 01-02-2003 to: 05-01-2015 Zoom: 1 month | 3 months | 6 months | 1 year | YTD | MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	MDY	70	-0.02	0.09	4374	7.45	0.6	235.47	4.36
3/31/2015	4/4/2015	EDV	30	0.33	0.09	4374	7.45	0.6	235.47	4.36
2/27/2015	3/31/2015	MDY	60	1.33	1.38	4370.17	7.36	-0.32	233.47	3.73
2/27/2015	3/31/2015	EDV	40	1.45	1.38	4370.17	7.36	-0.32	233.47	3.73
1/31/2015	2/27/2015	MDY	60	5.03	-0.63	4309.38	5.9	5.55	234.53	4.06
1/31/2015	2/27/2015	EDV	40	-9.12	-0.63	4309.38	5.9	5.55	234.53	4.06
12/31/2014	1/31/2015	EDV	50	14.25	6.57	4337.35	6.57	-1.41	216.93	-1.41
12/31/2014	1/31/2015	MDY	50	-1.1	6.57	4337.35	6.57	-1.41	216.93	-1.41
11/28/2014	12/31/2014	EDV	60	4.17	2.83	4063.64	-1.03	-1.55	221.47	4.33
11/28/2014	12/31/2014	MDY	40	0.83	2.83	4063.64	-1.03	-1.55	221.47	4.33

Global Market Rotation Strategy - Enhanced

LogicalInvest
Intelligent Portfolio Strategies

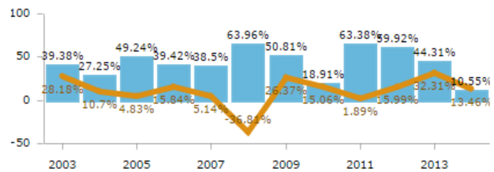
Performance:

Risk Score: ?

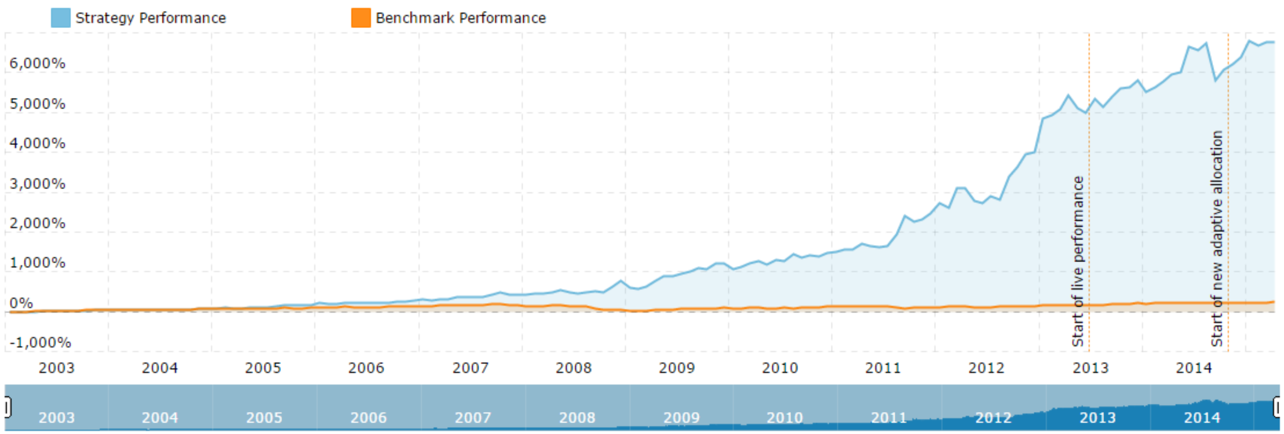
Performance:

	3 Months	12 Months	Since Inception
Return	6.4%	17.7%	6222.6%
CAGR	26.6%	17.7%	40.3%
Volatility (ann.)	10.4%	17.1%	26.5%
DrawDown	-8.1%	-16.2%	-31.1%
Sharpe (3%)	2.27	0.86	1.41

Annual Performance vs. VHGEX - Vanguard Global Equity Inv



Strategy Benchmark: VHGEX - Vanguard Global Equity Inv



From: 01-02-2003 to: 05-01-2015 Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	EDV	30	0.33	0.09	6356.43	5.92	0.6	235.47	4.36
3/31/2015	4/4/2015	MDY	70	-0.02	0.09	6356.43	5.92	0.6	235.47	4.36
2/27/2015	3/31/2015	EDV	40	1.45	1.38	6350.91	5.83	-0.32	233.47	3.73
2/27/2015	3/31/2015	MDY	60	1.33	1.38	6350.91	5.83	-0.32	233.47	3.73
1/31/2015	2/27/2015	EDV	50	-9.12	-2.05	6263.17	4.39	5.55	234.53	4.06
1/31/2015	2/27/2015	MDY	50	5.03	-2.05	6263.17	4.39	5.55	234.53	4.06
12/31/2014	1/31/2015	EDV	50	14.25	6.57	6396.03	6.57	-1.41	216.93	-1.41
12/31/2014	1/31/2015	MDY	50	-1.1	6.57	6396.03	6.57	-1.41	216.93	-1.41
11/28/2014	12/31/2014	EDV	50	4.17	2.5	5995.33	9.74	-1.55	221.47	4.33
11/28/2014	12/31/2014	MDY	50	0.83	2.5	5995.33	9.74	-1.55	221.47	4.33

Maximum Yield Rotation

Annual Return: 53%
Sharpe: 2.0

- Inverse Volatility + Treasuries
- One of our most aggressive strategies with a ‘dream’ Sharpe Ratio
- Blends excellent with Universal + Bond Rotation

Maximum Yield Strategy

LogicalInvest
Intelligent Portfolio Strategies

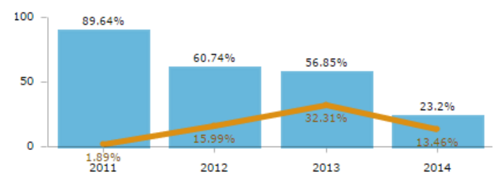
Performance:

Risk Score: ?

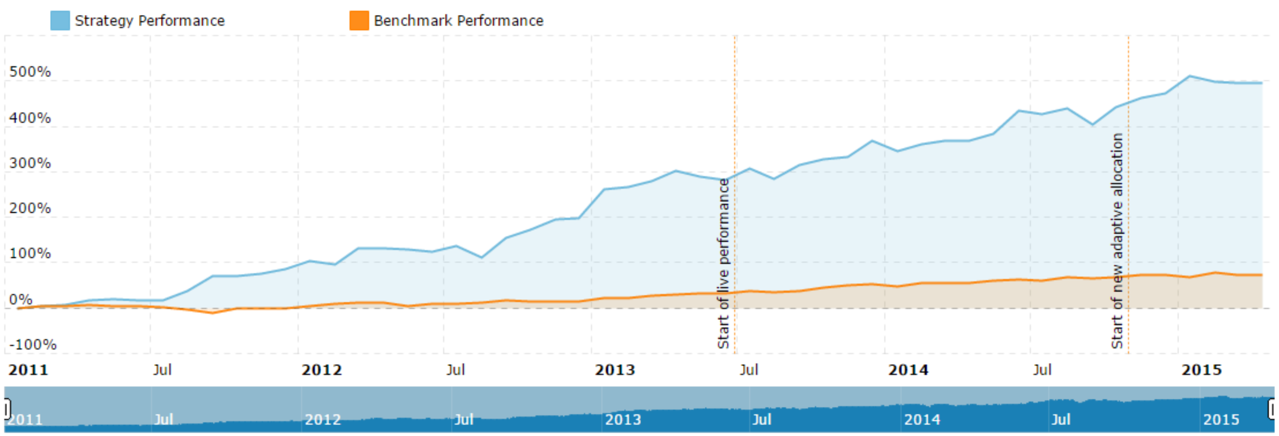
Performance:

	3 Months	12 Months	Since Inception
Return	4.6%	27.5%	499.3%
CAGR	18.6%	27.5%	52.6%
Volatility (ann.)	15.7%	17.7%	24.5%
DrawDown	-7.0%	-12.7%	-14.2%
Sharpe (3%)	0.99	1.38	2.02

Annual Performance vs. SPY - SPDR S&P 500 ETF



Strategy Benchmark: SPY - SPDR S&P 500 ETF



From: 01-03-2011 to: 05-01-2015

Zoom: 1 month 3 months 6 months 1 year YTD MAX

Entry	Exit	Symbol	Allocation	Symbol Ret	Strategy Ret	Accum Strategy Ret	Ann Strategy Ret	Benchmark Ret	Accum Benchmark Ret	Ann Benchmark Ret
3/31/2015	4/4/2015	ZIV	50	-0.48	-0.07	506.66	3.97	0	78.19	0.88
3/31/2015	4/4/2015	EDV	50	0.33	-0.07	506.66	3.97	0	78.19	0.88
3/13/2015	3/31/2015	ZIV	70	0.41	1.67	507.11	4.05	0.74	78.19	0.88
3/13/2015	3/31/2015	EDV	30	4.61	1.67	507.11	4.05	0.74	78.19	0.88
2/27/2015	3/13/2015	ZIV	60	-1.53	-2.13	497.16	2.34	-2.29	76.88	0.14
2/27/2015	3/13/2015	EDV	40	-3.02	-2.13	497.16	2.34	-2.29	76.88	0.14
2/13/2015	2/27/2015	ZIV	50	4.36	2.9	510.13	4.56	0.42	81.03	2.49
2/13/2015	2/27/2015	EDV	50	1.43	2.9	510.13	4.56	0.42	81.03	2.49
1/31/2015	2/13/2015	ZIV	30	7.77	-4.95	492.96	1.62	5.18	80.28	2.06
1/31/2015	2/13/2015	EDV	70	-10.4	-4.95	492.96	1.62	5.18	80.28	2.06