

How to Create a Low Volatility Portfolio

San Diego Chapter AAll – Risk Management SIG

Presented by Rob Bernstein, President RGB Capital Group LLC

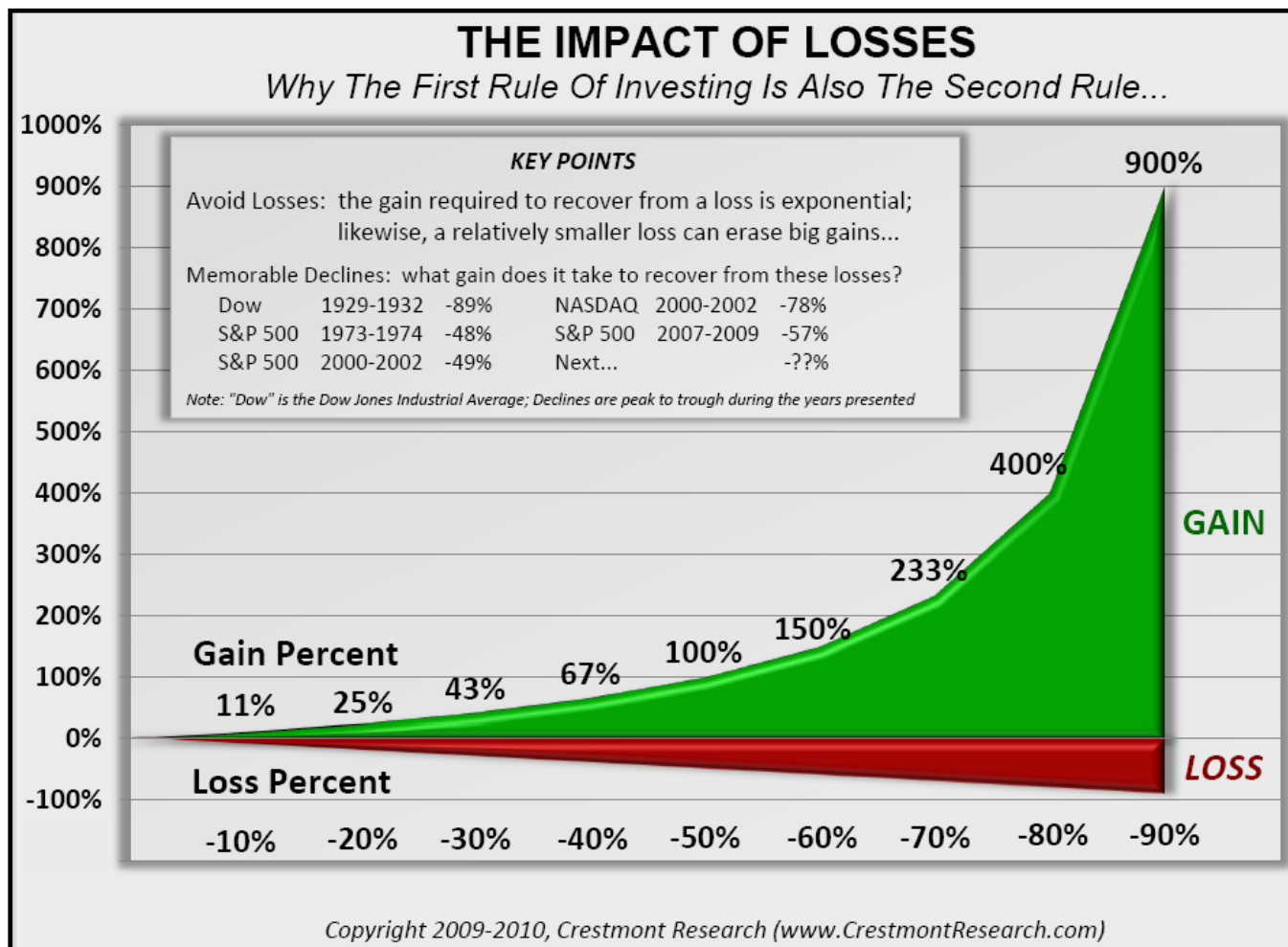
September 26, 2020

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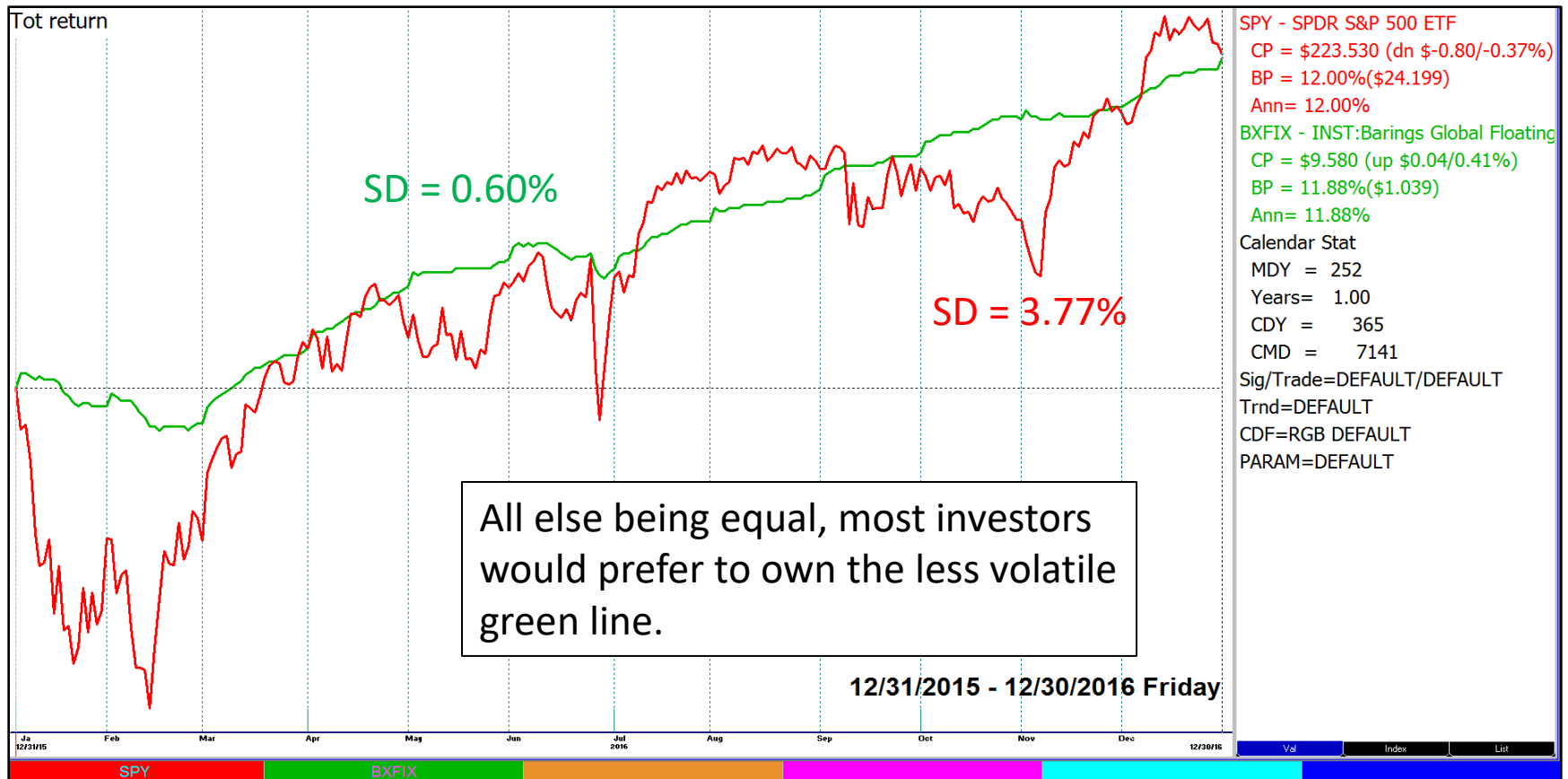
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Why Is Managing Risk Important?



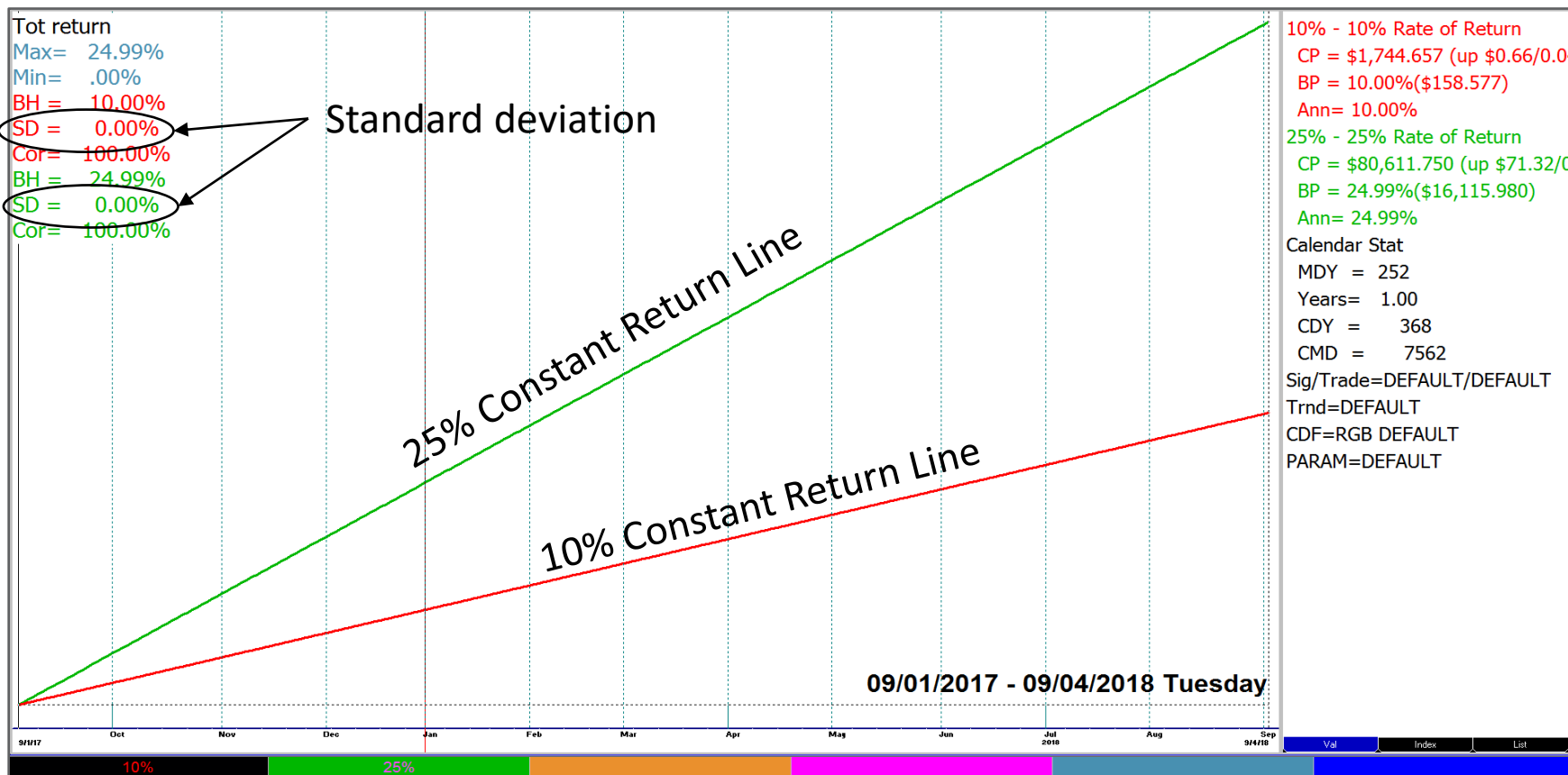
The exponential impact of portfolio losses has a direct impact on the ability to create wealth.

What is Risk?



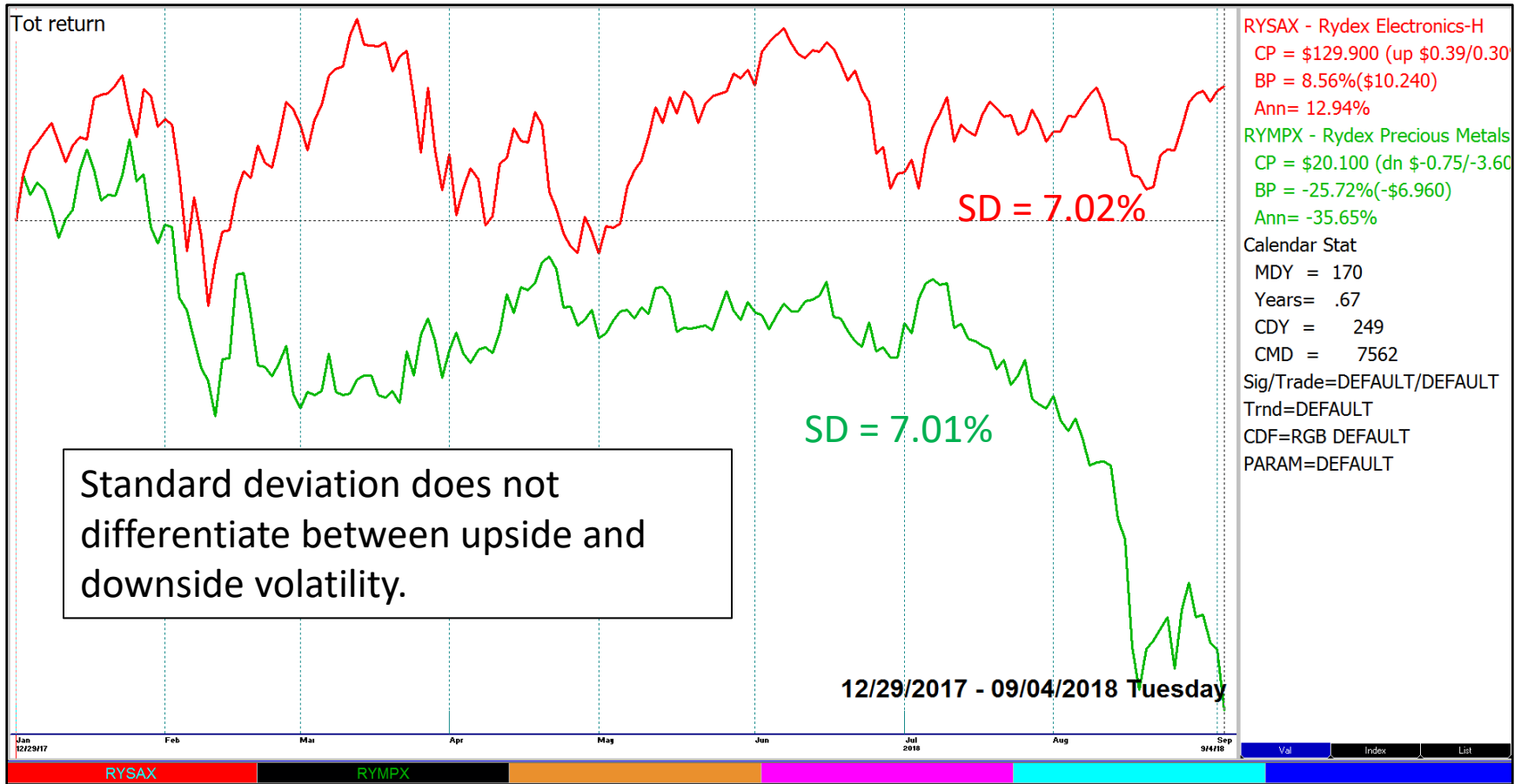
- Assuming two investment choices that were expected to provide the same return but one has a fraction of the expected risk, which investment would you select?
- Standard deviation (SD) is a common measure of volatility; volatility implies risk.

Limitations of Standard Deviation



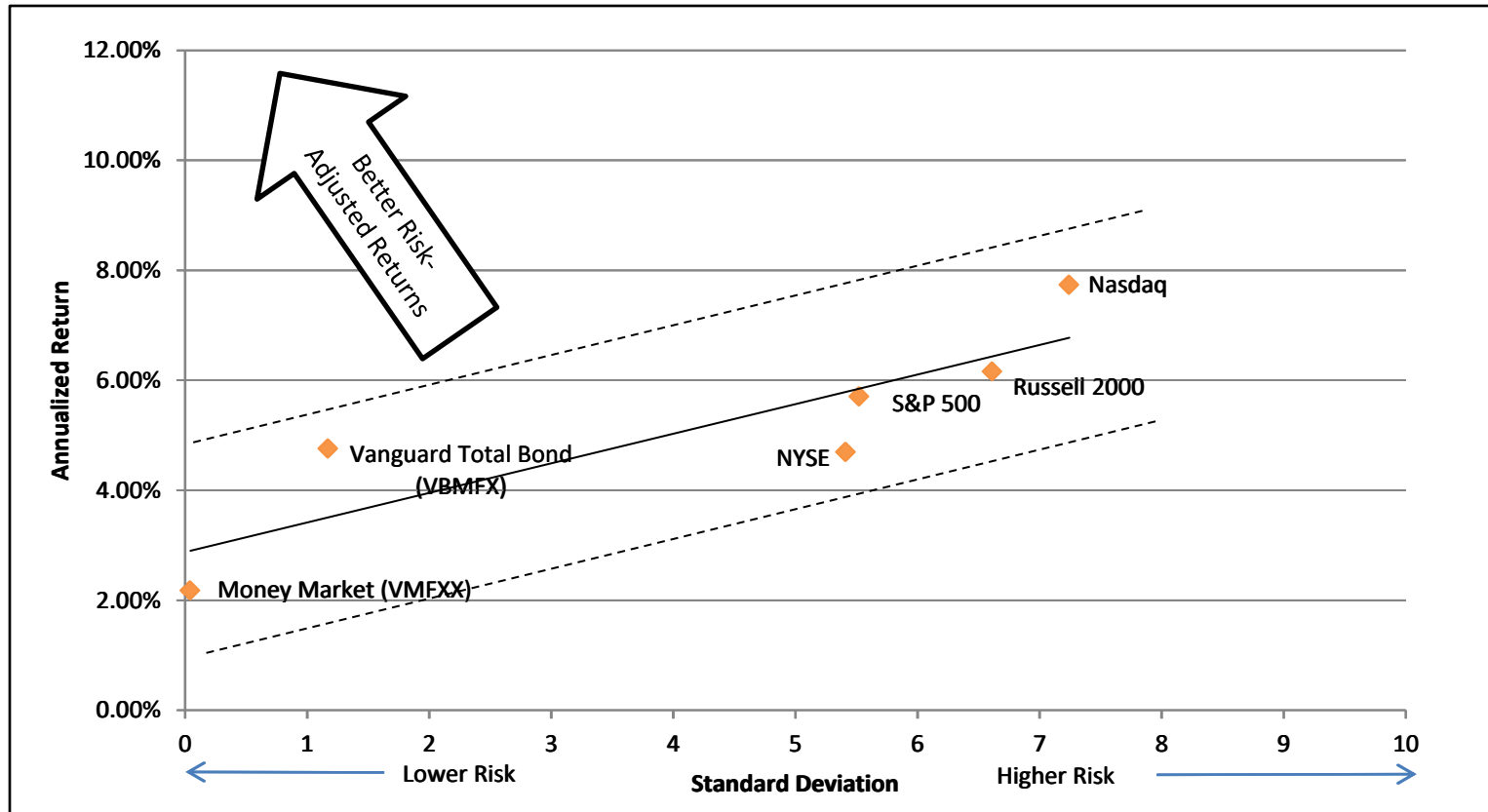
- By definition, the standard deviation of a straight line is zero.
- Therefore, standard deviation does not provide clues to the strength of return.

Limitations of Standard Deviation



Risk vs. Reward

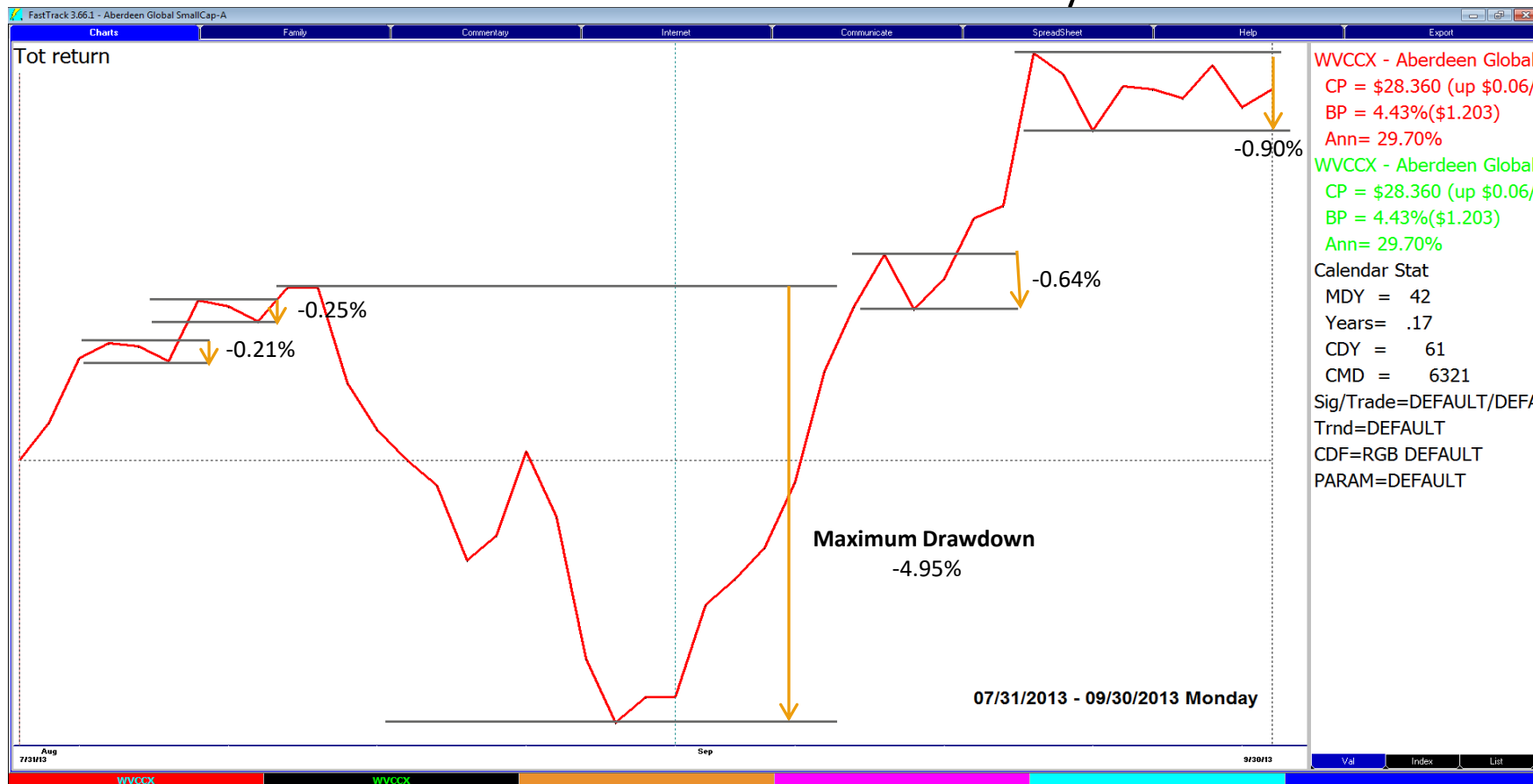
12/31/1996 – 12/31/2018



Our goal as investors is to achieve returns outside the long-term, expected return channel by striving for better risk-adjusted returns (i.e. upper left-hand quadrant).

Drawdown

A Measure of Downside Volatility

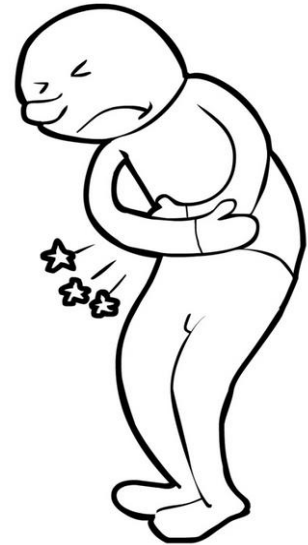


- Most investors are concerned with downside volatility.
- Drawdown (or retracement) measures the % price decline from a peak to a trough. The **maximum drawdown** for WVCCX from 07/31/2013 – 09/30/2013 was 4.95%.
- Drawdown does not measure the duration of the decline.

Ulcer Index and Ulcer Performance Index

Ulcer Index (UI) is a downside volatility metric that incorporates depth and duration of drawdowns. Lower values represent less volatile investments.

Ulcer Performance Index (UPI) is a measure of trend strength that uses downside volatility. Higher values represent better risk-adjusted returns.



For a detailed handout on how to calculate the Ulcer Index and Ulcer Performance Index please visit: www.rgbcapitalgroup.com/resources and select the UI-UPI Guide.

Ulcer Index

- The Ulcer Index (UI) is a measure of risk that incorporates the depth and duration of drawdowns from a previous high.
- Calculation:
 - 1) Square the % Price Decline:** For each period, square the % price decline from the previous high.
 - 2) Calculate the Mean of the Squares:** Sum the values from Step 1 and divide by the number of periods.
 - 3) Calculate the Square Root:** Take the square root of the value from Step 2.
- The lower the ulcer index, the less volatile the fund.

Ulcer Index

Sample Calculation

The calculation of the Ulcer Index (UI) for WVCCX for a two month period is shown below.

Date	NAV	Drawdown		
		\$\$	Percent	% Squared
7/31/2013	27.54	0.00	0.00	0.00
8/1/2013	27.66	0.00	0.00	0.00
8/2/2013	27.87	0.00	0.00	0.00
8/5/2013	27.92	0.00	0.00	0.00
8/6/2013	27.91	0.01	0.04	0.00
8/7/2013	27.86	0.06	0.21	0.05
8/8/2013	28.06	0.00	0.00	0.00
8/9/2013	28.04	0.02	0.07	0.01
8/12/2013	27.99	0.07	0.25	0.06
8/13/2013	28.10	0.00	0.00	0.00
8/14/2013	28.10	0.00	0.00	0.00
8/15/2013	27.79	0.31	1.10	1.22
8/16/2013	27.64	0.46	1.64	2.68
8/19/2013	27.54	0.56	1.99	3.97
8/20/2013	27.46	0.64	2.28	5.19
8/21/2013	27.22	0.88	3.13	9.81
8/22/2013	27.30	0.80	2.85	8.11
8/23/2013	27.57	0.53	1.89	3.56
8/26/2013	27.36	0.74	2.63	6.94
8/27/2013	26.91	1.19	4.23	17.93
8/28/2013	26.71	1.39	4.95	24.47
8/29/2013	26.79	1.31	4.66	21.73
8/30/2013	26.79	1.31	4.66	21.73

Date	NAV	Drawdown		
		\$\$	Percent	% Squared
9/3/2013	27.08	1.02	3.63	13.18
9/4/2013	27.16	0.94	3.35	11.19
9/5/2013	27.26	0.84	2.99	8.94
9/6/2013	27.47	0.63	2.24	5.03
9/9/2013	27.83	0.27	0.96	0.92
9/10/2013	28.04	0.06	0.21	0.05
9/11/2013	28.21	0.00	0.00	0.00
9/12/2013	28.03	0.18	0.64	0.41
9/13/2013	28.13	0.08	0.28	0.08
9/16/2013	28.33	0.00	0.00	0.00
9/17/2013	28.37	0.00	0.00	0.00
9/18/2013	28.88	0.00	0.00	0.00
9/19/2013	28.81	0.07	0.24	0.06
9/20/2013	28.62	0.26	0.90	0.81
9/23/2013	28.77	0.11	0.38	0.15
9/24/2013	28.76	0.12	0.42	0.17
9/25/2013	28.73	0.15	0.52	0.27
9/26/2013	28.84	0.04	0.14	0.02
9/27/2013	28.70	0.18	0.62	0.39
9/30/2013	28.76	0.12	0.42	0.17
Sum of Squares				169.27
Average				4.03
Square Root (UI)				2.01

Ulcer Performance Index

- Ulcer Performance Index (UPI) is a risk-adjusted return that takes into account downside risk, duration of drawdowns and the strength of a return.

$$\text{UPI} = (\text{Annualized Total Return} - \text{Annualized Risk Free Return}) / \text{UI}$$

- Using WVCCX and Vanguards Money Market Fund (VMFXX) as the risk free return, we get:

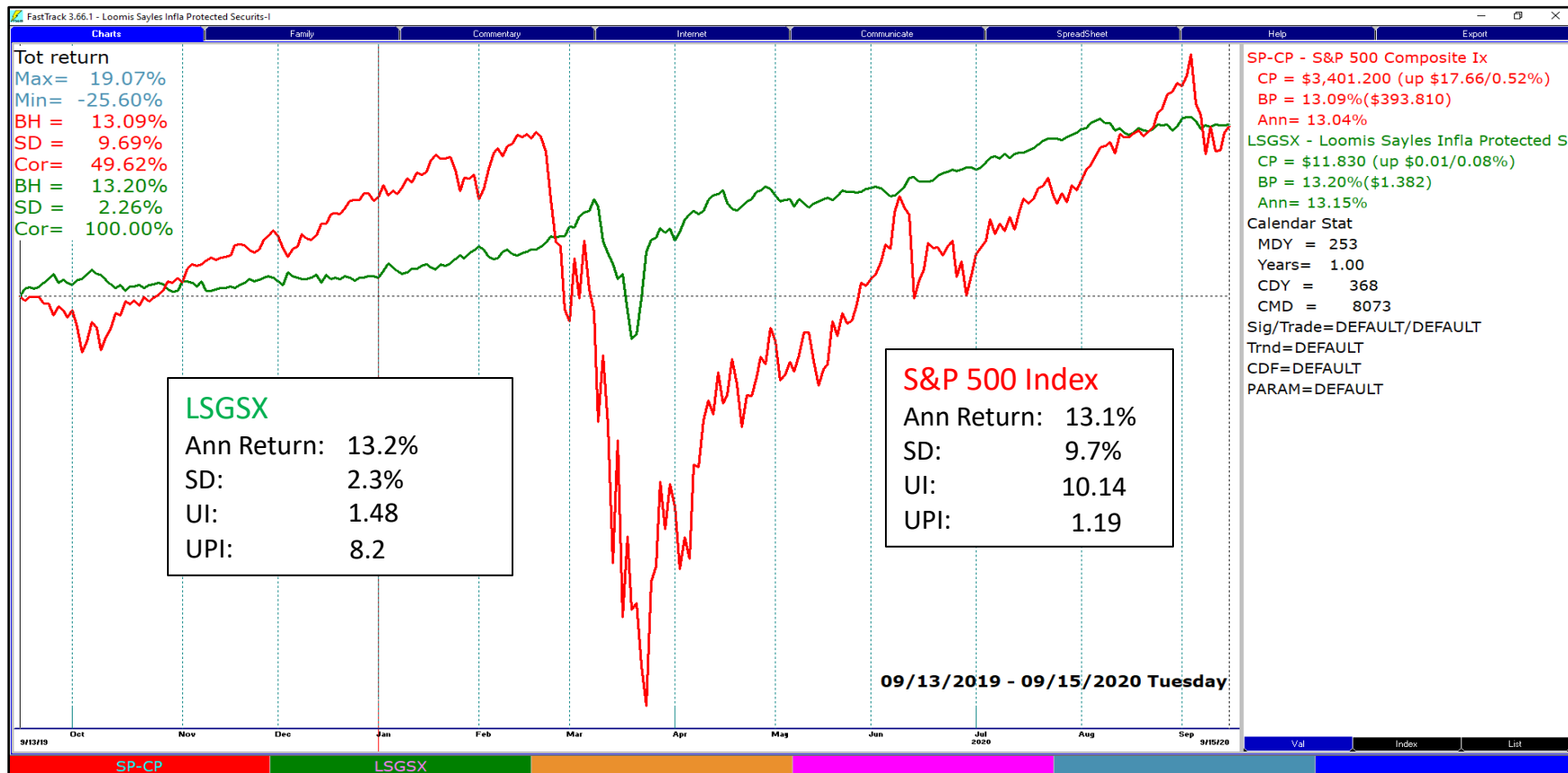
$$\text{UPI} = (29.70\% - 0.05\%) / 2.01$$

$$\text{UPI} = 14.75$$

- The higher the UPI, the better the risk-adjusted return.
- UPI represents the additional return achieved for an incremental increase in risk.

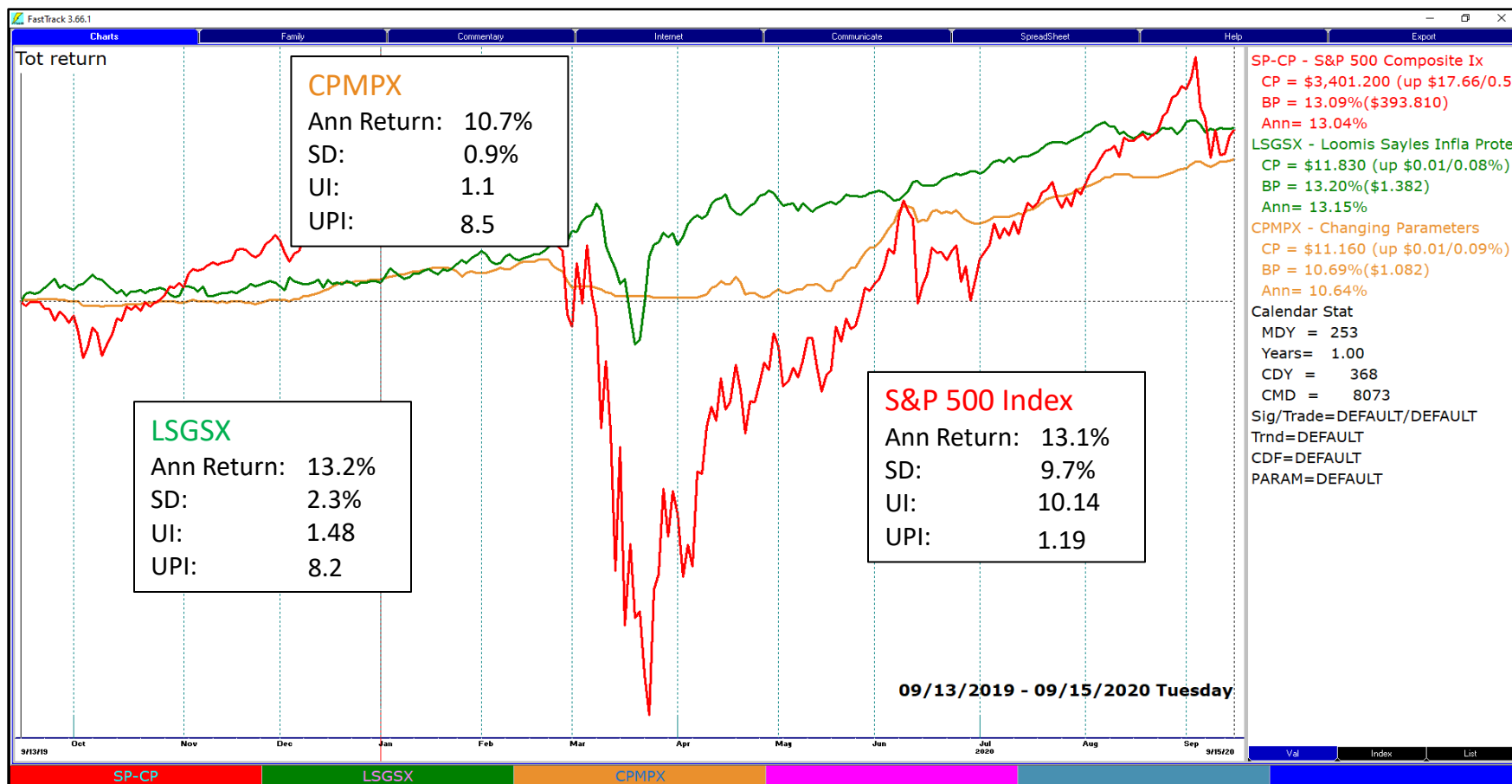
Understanding UI and UPI

1-Year Chart (9/13/2019 – 9/15/2020)



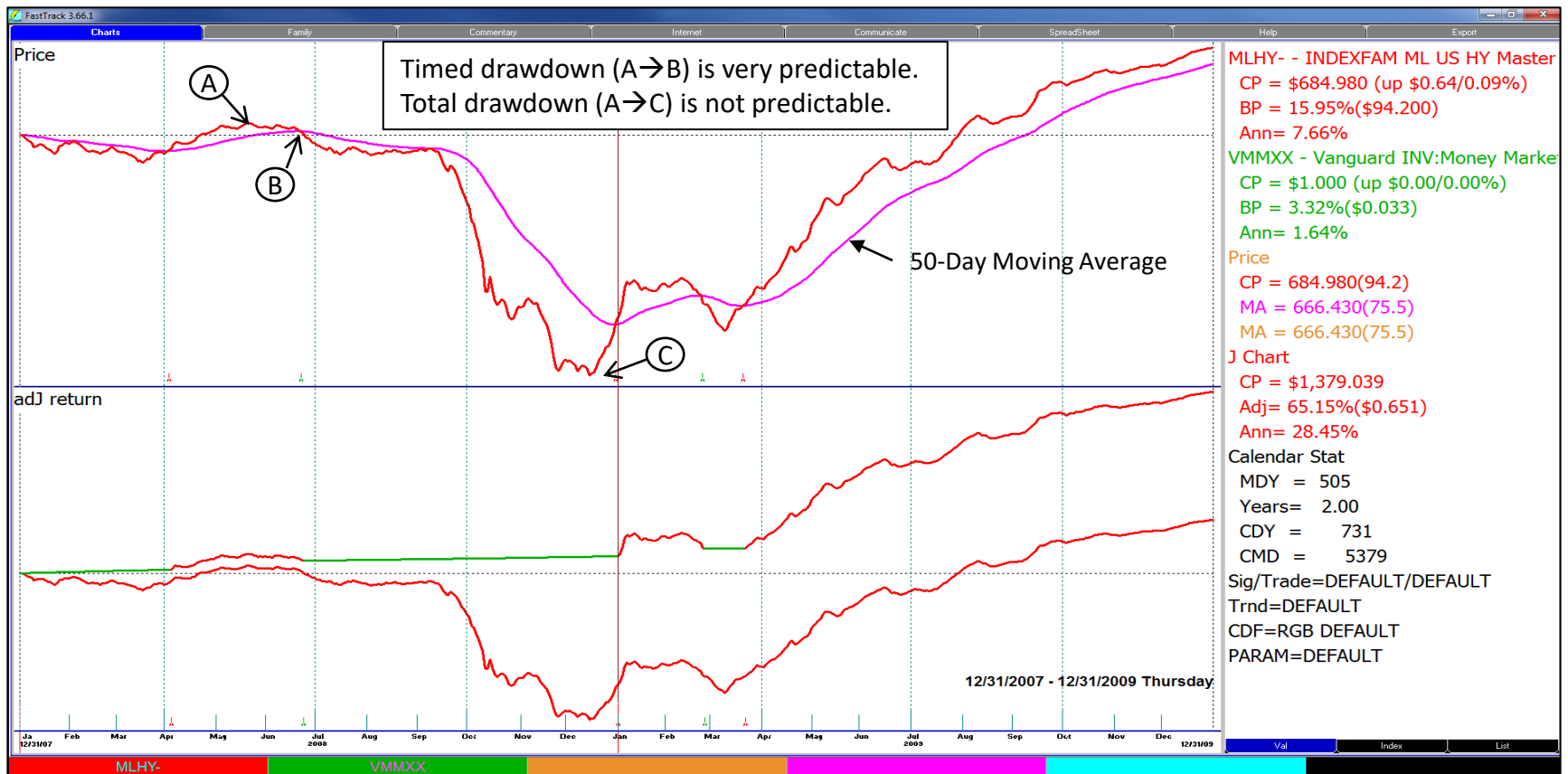
Understanding UI and UPI

1-Year Chart (9/13/2019 – 9/15/2020)



Moving Average Timing Techniques

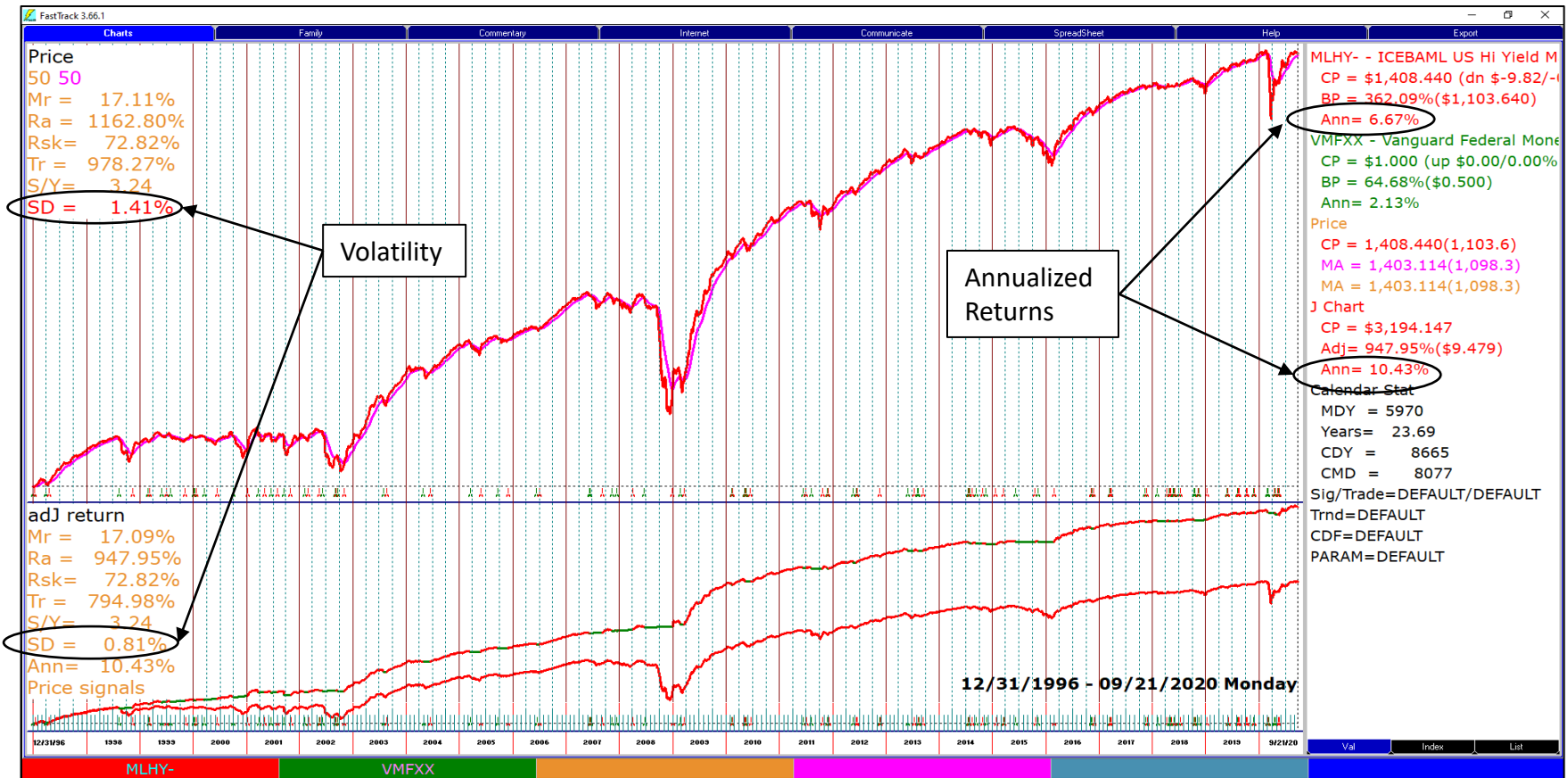
Timing HY Index with 50-Day Moving Average



- Timed drawdown for MLHY- (A → B) was 1.5%; a lot better than the total drawdown (A→C) of 34.7%.
- Timed drawdown for MLHY- using a 50-day MA for the last 20 years is generally between 1%-3% and is very predictable.
- Total drawdown is not predictable.

Moving Average Timing Techniques

Timing HY Index with 50-Day Moving Average



- Over the 20-year history of MLHY-, using a 50-day moving average has resulted in higher annualized returns and lower volatility.
- The maximum drawdown for the timed strategy is less than 6%.

Bond / Income Groups

Interest Rate Sensitive Groups

- US Treasury Bonds
- Corporate Bonds
- Municipal Bonds
- High-Yield Municipal Bonds
- Mortgage-backed Securities
- Inflation-Adjusted Bonds

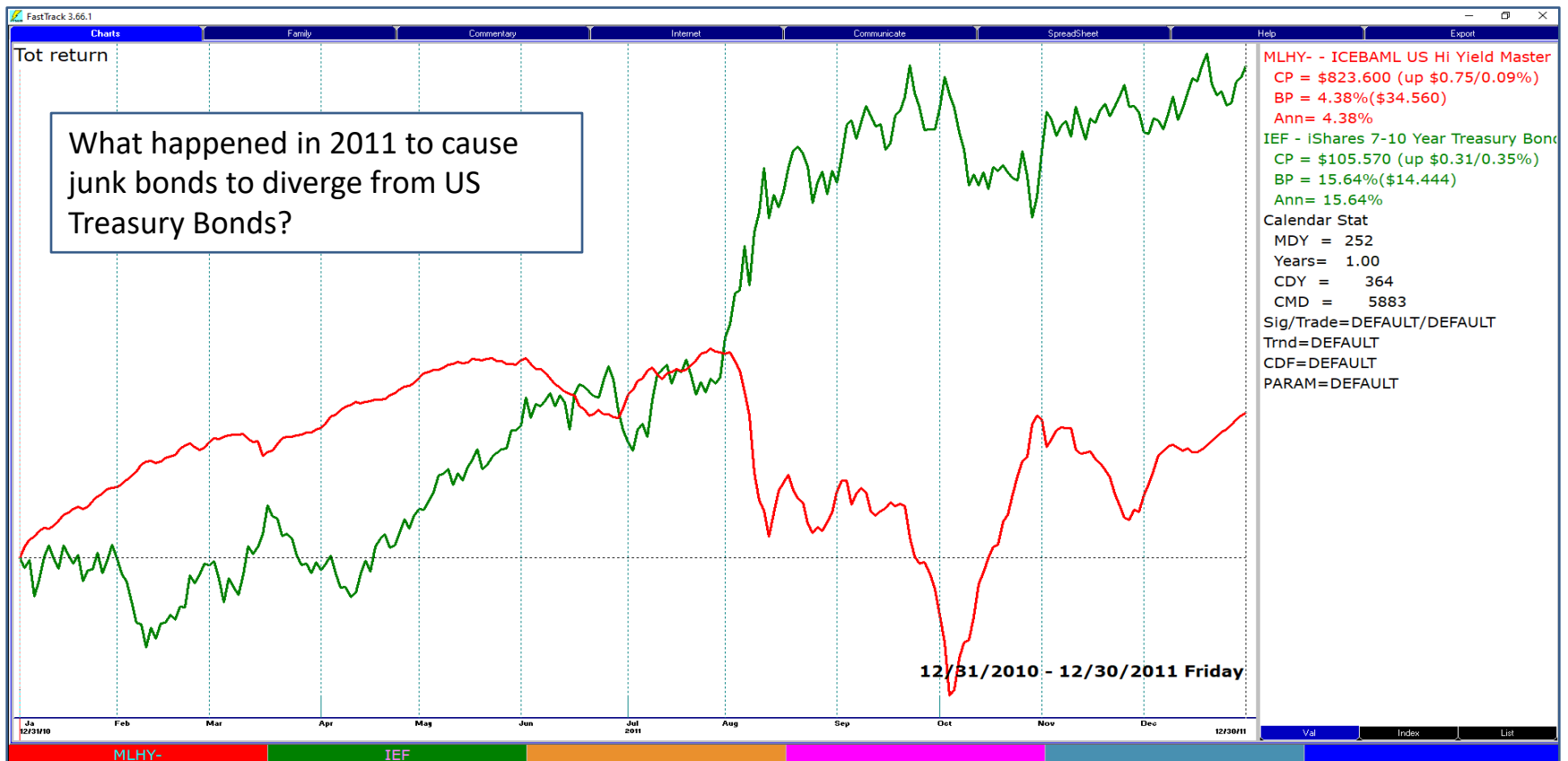
Economic Sensitive Groups

- Floating Rate Bonds
- Junk Bonds
- Emerging Bonds
- Preferred Securities

Mutual funds that track these groups have historically shown the propensity to take on low volatility trends which can provide increased probability of better risk-adjusted returns.

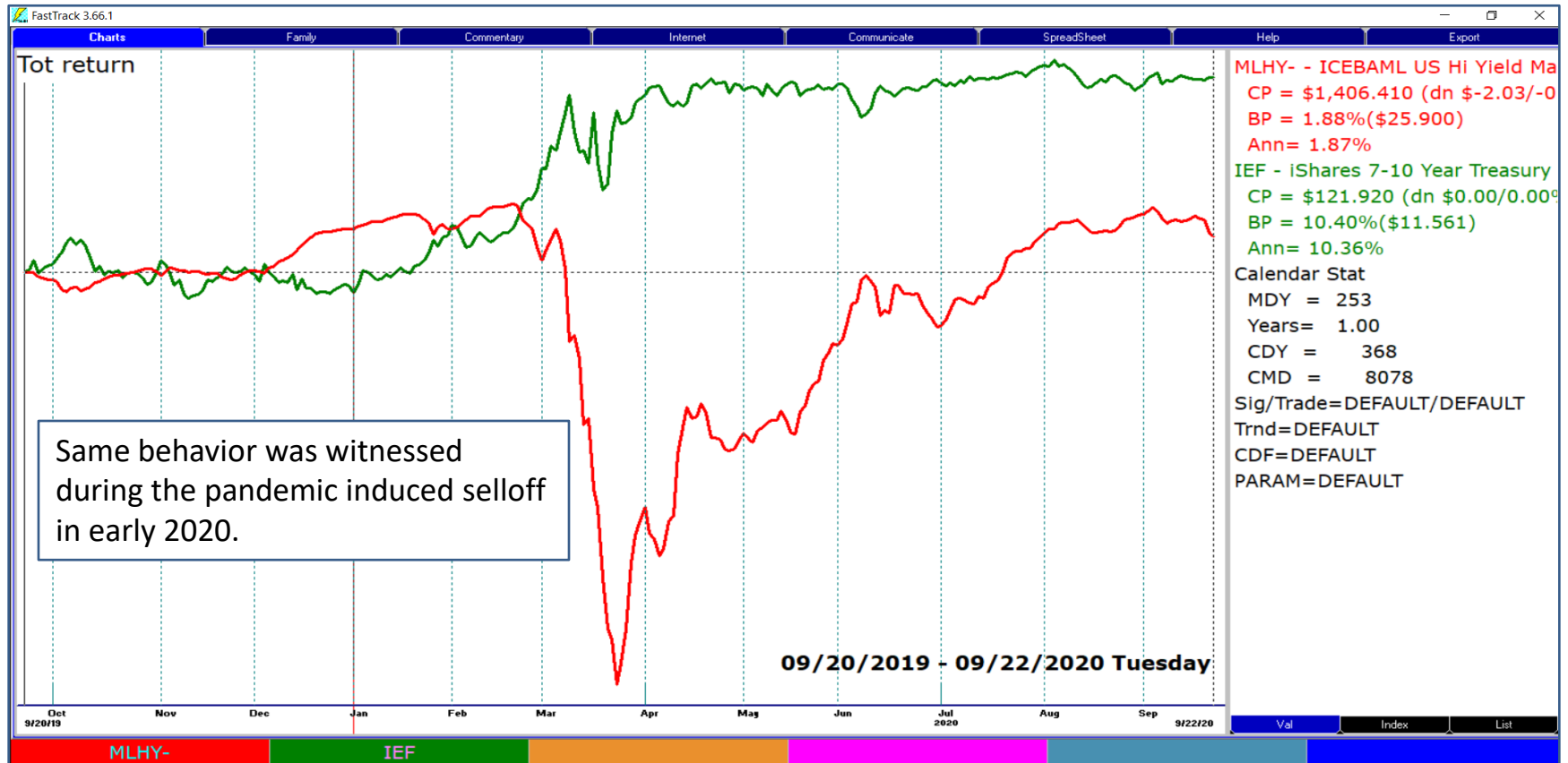
Economic Sensitive Bonds vs. Interest Rate Sensitive Bonds

One-Year Chart (12/31/2010 – 12/30/2011)



Economic Sensitive Bonds vs. Interest Rate Sensitive Bonds

One-Year Chart (9/20/2019 – 9/22/2020)



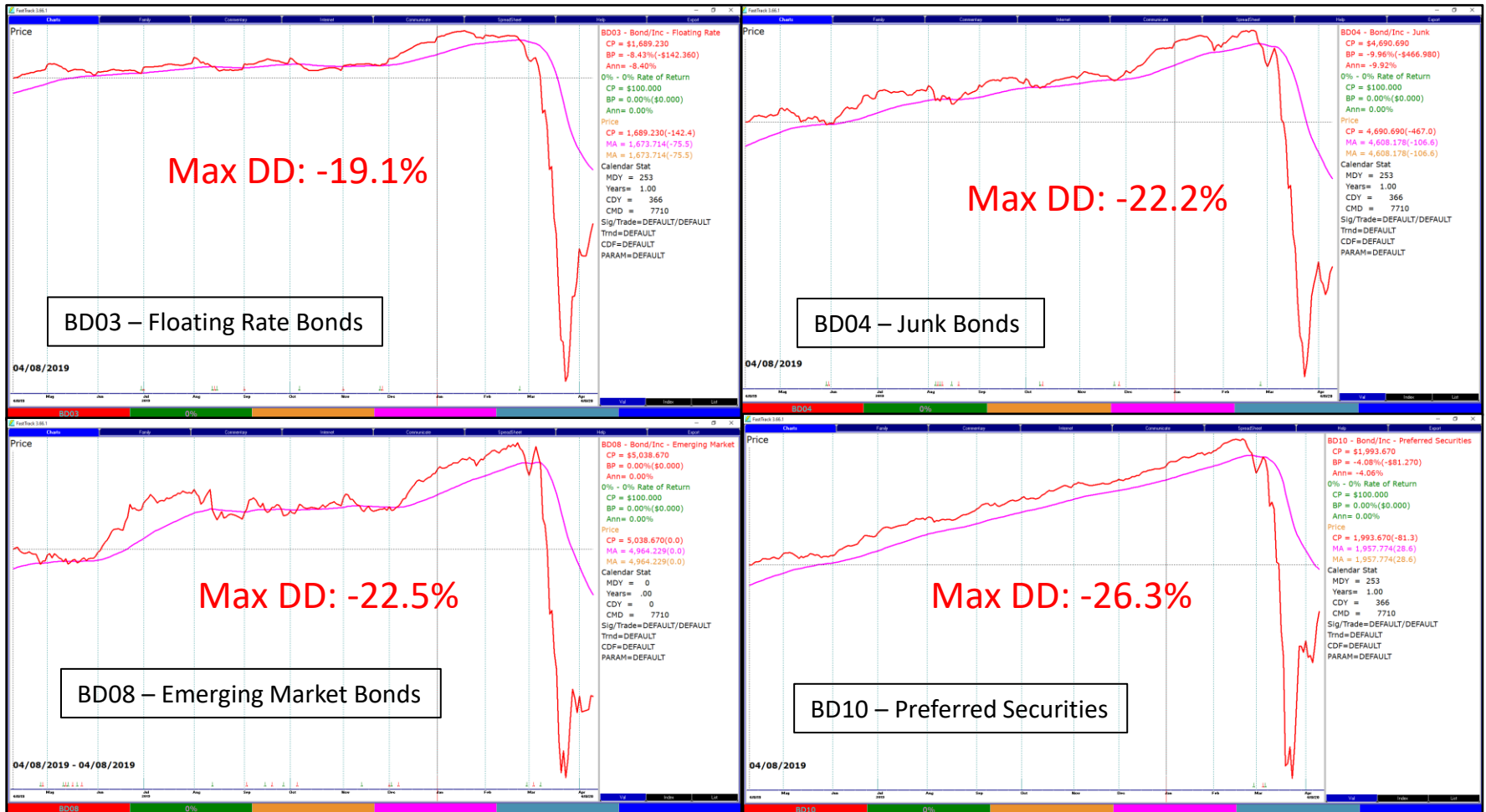
Market Monitor Newsletter

April 9, 2020



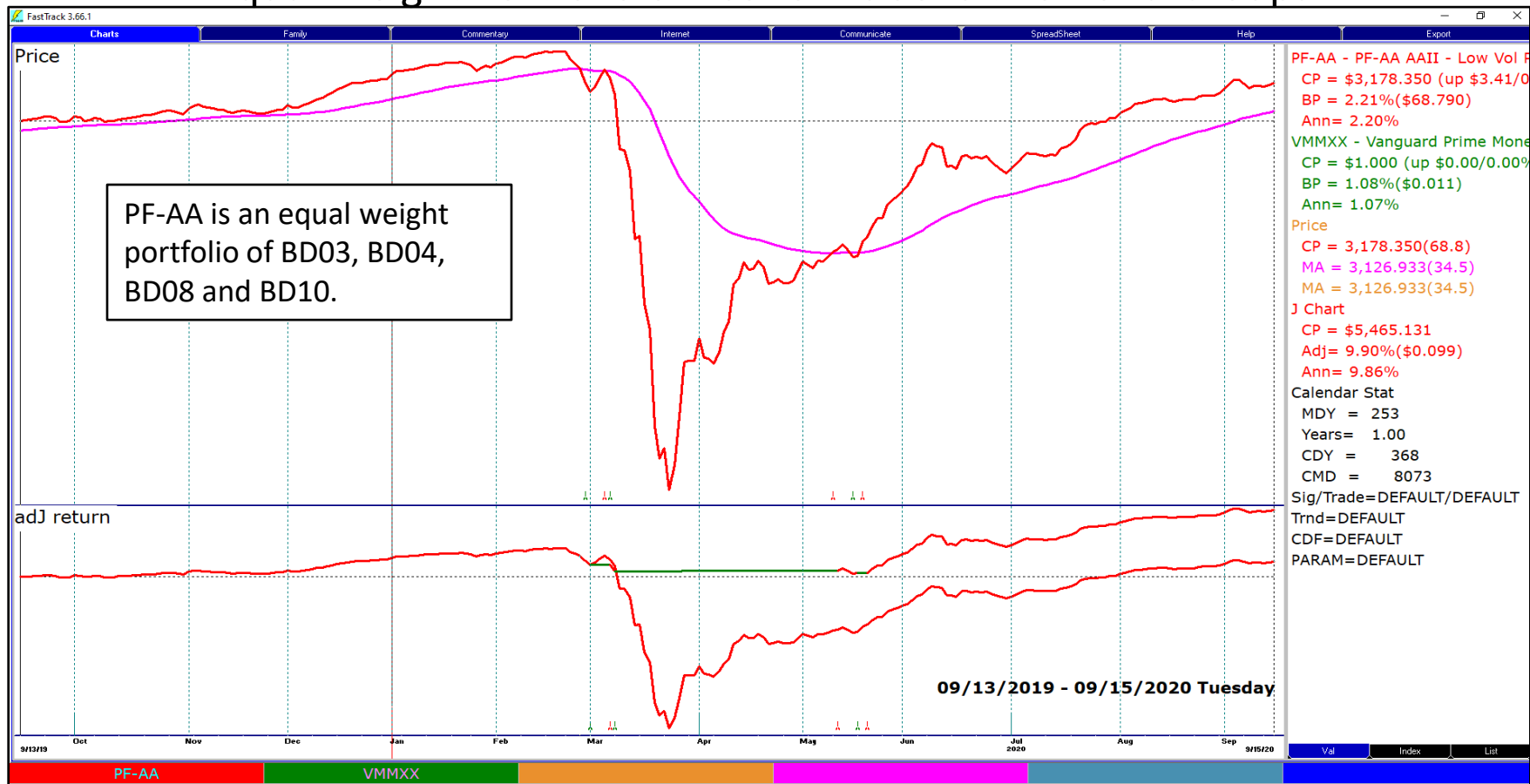
Economic Sensitive Bond Groups

1-Year Chart (4/8/2019 – 4/8/2020)



Creating a Simple Low Volatility Portfolio

Equal Weight Portfolio of Economic Sensitive Bond Groups



Symb1	Strategy	One Year Return	ULCER	UPI	MaxDrawND	SD	YTD Return
AAII	PF-AA - Timed w/ 50-day moving average	9.90%	1.54	5.77	-3.47%	0.93%	6.95%
PF-AA	PF-AA - Buy and Hold	2.21%	6.82	0.18	-22.40%	3.27%	-0.53%

Market Monitor Newsletter

April 9, 2020

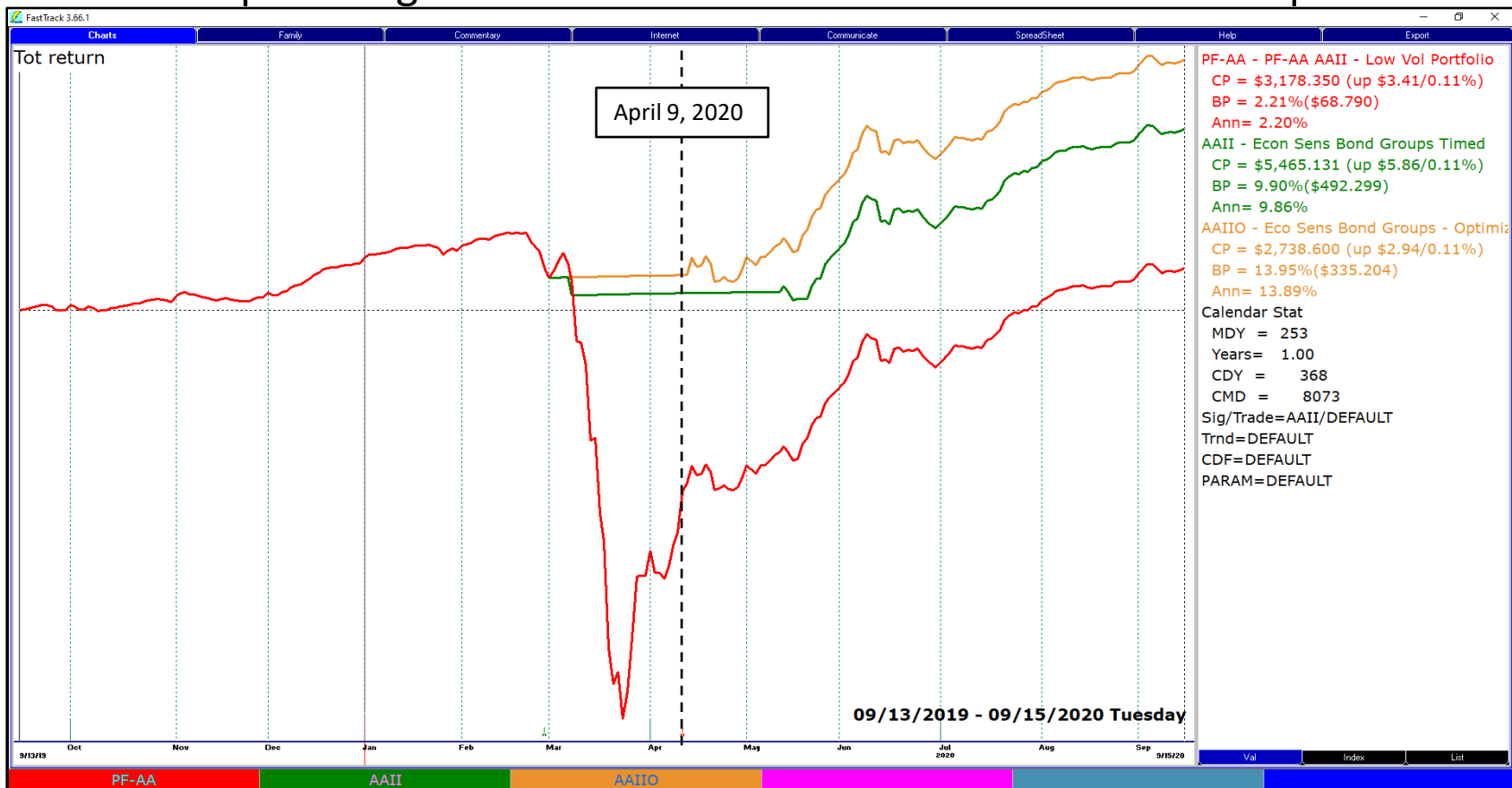
Overall Assessment – page 9

Bond / Income Allocation

The steep declines in the bond / income groups have created a unique opportunity for investors to benefit from the potential rebound in these groups. While most have not crossed above their 50-day moving averages, all but the most conservative investors might consider stepping back into the market to take advantage of the potential recovery as the Federal Reserve quantitative easing program provides support, either directly or indirectly, for these groups. If you do re-enter the market, remember to set 'mental' stops to so that if the market turns down, you know your risk exposure.

Creating a Low Volatility Portfolio

Equal Weight Portfolio of Economic Sensitive Bond Groups



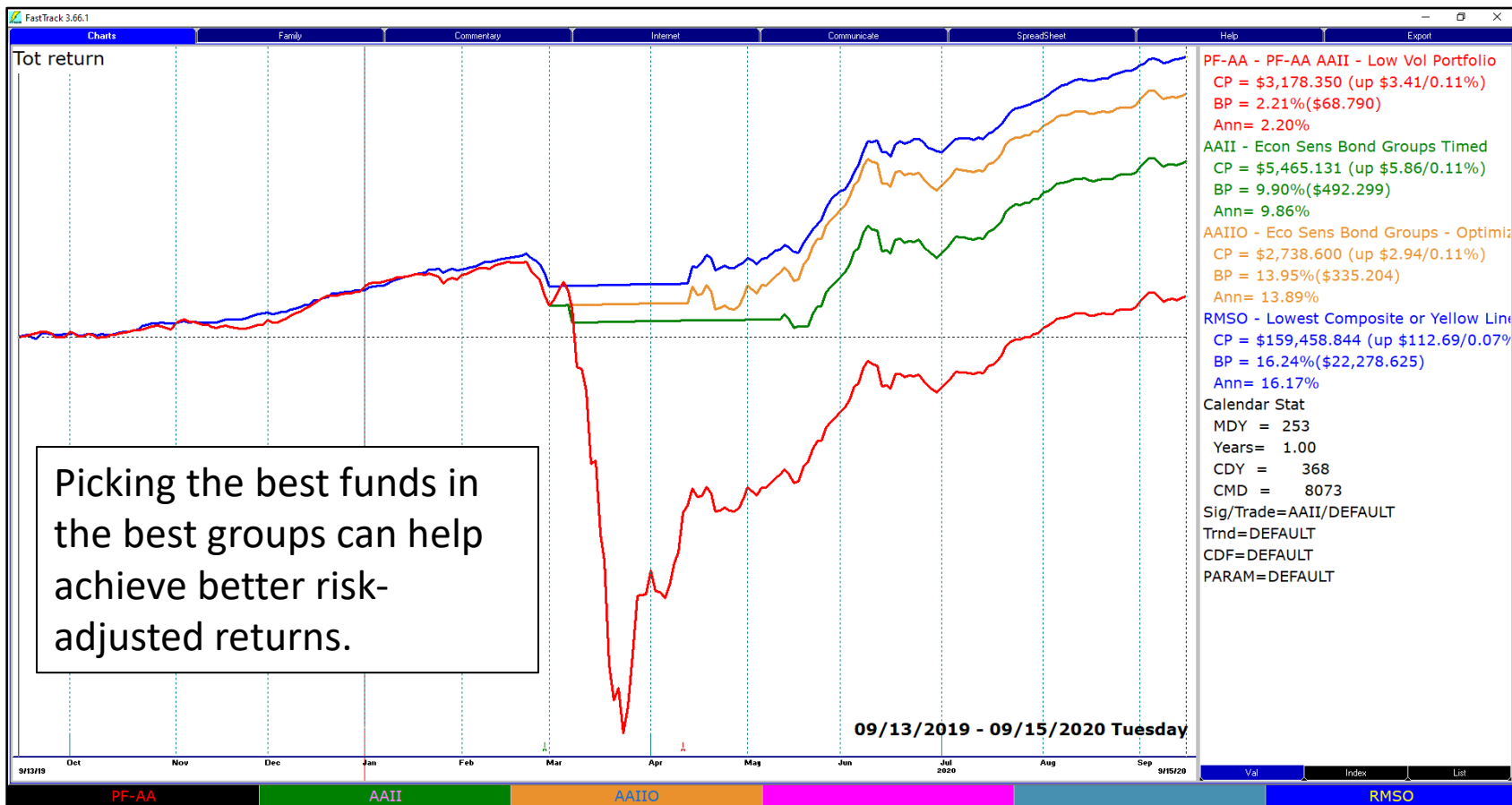
Symbl	Strategy	One Year Return	ULCER	UPI	MaxDrawND	SD	YTD Return
AAIIO	PF-AA - Timed w/ Market Monitor	13.95%	1.01	12.82	-2.53%	1.05%	10.89%
AAII	PF-AA - Timed w/ 50-day moving average	9.90%	1.54	5.77	-3.47%	0.93%	6.95%
PF-AA	PF-AA - Buy and Hold	2.21%	6.82	0.18	-22.40%	3.27%	-0.53%

Investment Decision Making and Implementation Process

You will need a charting tool to assist with the investment decision making process. I use FastTrack (www.investorsfasttrack.com) as my preferred charting and analysis tool for mutual funds.

1. Identify funds within the desired category
2. Plot portfolio results
3. Purchase funds
4. Set mental stops
5. Monitor Performance

Low Volatility Portfolios - Summary



Symbol	Strategy	One Year Return	ULCER	UPI	MaxDrawND	SD	YTD Return
RMSO	Risk Management SIG - Optimized	16.24%	0.63	24.08	-1.76%	0.79%	13.35%
AAIIO	Eco Sens Bond Groups - Optimized	13.95%	1.01	12.82	-2.53%	1.05%	10.89%
AAI	Econ Sens Bond Groups Timed	9.90%	1.54	5.77	-3.47%	0.93%	6.95%
PF-AA	PF-AA AAI - Low Vol Portfolio	2.21%	6.82	0.18	-22.40%	3.27%	-0.53%