"THE PROOF IS IN THE PUDDING"
Covid MARKET DECLINE SPOTLIGHTS DIVERSIFIED PORTFOLIOS

by J. Ben Vernazza CPA/PFS TEP emeritus & Stewart Frank CPA/PFS AIFA
The Portfolio Diversification InstituteLLC

INTRODUCTION AND BACKGROUND

Ever since Nobel Laureate, Eugene Fama and his colleague, David Booth, published their article *"Diversification Returns and Asset Contributions,"* 48-3 Financial Analysts J. 26 (May-June 1992), it has become an intellectually accepted fact that over time well diversified investment portfolios out-perform their less diversified brethren. The driver of this better performance is less volatility. Lower volatility causes better diversified portfolios to decline less during periods of market declines establishing a higher starting plateau for subsequent market recoveries. Fama-Booth thought better (evenly weighted) diversified portfolios tended to underperform during periods of market increases. We find that *diversified weighted* portfolios can gain back more than the less diversified portfolios in both up and down markets!

While the "added diversification return" identified in the Fama-Booth article is an academically accepted feature of well diversified portfolios, many non-academics don't understand or accept the finding. So, we herewith present the results from our own recently completed study. We have been testing Diversification monthly since 2015. In September 2019, long before Covid 19 was known, we analyzed, then optimized (for diversification) nine investment portfolios. From the nine portfolios tested for diversi-fication weighting, we show the outcomes for the worst and best through June 11, 2020.

BIG DATA + AI ASSISTANT + HUMAN ASSISTANCE = RESULTS

We OPTIMIZED only the equity portion of the nine portfolios because 80 to 90% of Uncompensated Risk resides in the risk assets and that 2/3rd of total risk is uncompensated and 1/3rd is compensated risk.* The system's unique predictive modeling algorithm selects new sub-sectors and weightings for inclusion in overlays that are combined with progressively declining percentages of the portfolio's legacy portion resulting in 6 suggested new and improved diversified portfolios. Criteria for overlay selection are based on best predicted diversification outcomes of the combined overlay/legacy portfolio. The algorithm selects from sixty-one (61) sub-sector proxies. After that Human Intelligence takes over customization of the portfolio using the platform's capabilities to easily analyze changes and finalize portfolio positions (Securities or proxies other than our 61 options can be used at this stage).

THE WORST AND BEST PERFORMING PORTFOLIOS IN THE STUDY

The LEAST diversified original PORTFOLIO had only five (5) equity constituents, all highly correlated. As expected, its results showed the biggest improvement over the study period (September 19, 2019 - June 11, 2020). The MOST diversified original PORTFOLIO had 21 equity constituents that were adequately uncorrelated. Because it started out more diversified, increased portfolio diversification still significantly improved performance but not as much as it did in the less diversified portfolio. See details analysis in our June 2018 AICPA Webcast page 47 and see details of each study at the end of this overview.

*The source of the estimate of 2/3 of risk attributable to uncompensated risk, and 1/3 of risk attributable to compensated risk comes from Yale Law School Legal Scholarship Repository John H. Langbein, *THE UNIFORM PRUDENT INVESTOR ACT AND THE FUTURE OF TRUST INVESTING*, 1-1-1996, page 646-7. They cite Brealy at the bottom of page 647 who estimated 69% and 31% We have rounded it to 2/3 and 1/3. Also, there is another estimate of 80-90% of uncompensated risk are in the 'risk" assets with the balance in fixed income.

“CUT TO THE CHASE” Here are the Results

LEAST DIVERSIFIED STARTING PORTFOLIO

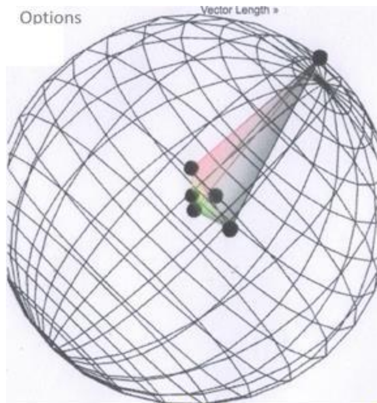
	Original Portfolio	Re-Optimized & Customized Portfolio	Basis Points Advantage
TOTAL RETURN 9/18/19 - 6/11/20	**-4.8%**	**+3.9%**	**870**
SHARPE RATIO	-.16	+.18	+.34

MOST DIVERSIFIED STARTING PORTFOLIO

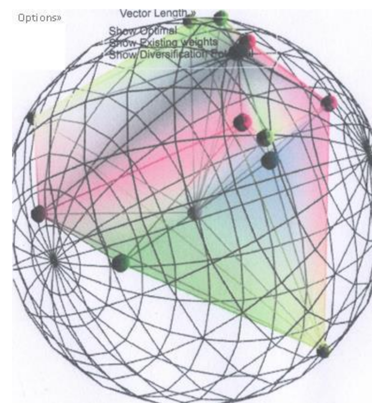
	Original Portfolio	Re-Optimized & Customized Portfolio	Basis Points Advantage
TOTAL RETURN 9/18/19 - 6/11/20	**-0.7%**	**+4.7%**	**540**
SHARPE RATIO	-.02	+.14	+.16

STUNNING - CONCLUSIVE!

This study provides convincing evidence that there is such a thing as “added diversification return” through “Diversification Weighting” a/k/a “The Only Free Lunch in Investing” by Nobel Prize Winners Markowitz, Fama, Booth and other experts.



NOT DIVERSIFIED-FIDUCIARY IN BREACH?



DIVERSIFIED BY PROCEDURAL PROCESS

Try us out for 3 mos. Complimentary: Use Special Code 7MRI78SK

THE PORTFOLIO DIVERSIFICATON TOOLBOX©

https://DivToolbox.com/

J. Ben Vernazza benv@cpa.com
Stewart Frank sfrank@precisionfiduciary.com

Comparative Results of Adding Diversification Weightings

Two Portfolios (Best and Worse) From 9 Analysis in September 2019

WORST Beginning Diversified Portfolio

GREAT Results of Diversification Weighted Optimization

9/18/2019 - 6/11/2020

	ASSET ALLOCATION (RISK ASSETS ONLY)			
	Legacy Portfolio	**70% Legacy/30% Re-Optimized**	**50% Legacy/50% Re-Optimized & Customized**	**60% Legacy/40% Re-Optimized & Customized**
Existing Portfolio Allocation				
U.S. Core Equity	50%	35.0%	25.0%	30%
International Equity	20	14.0	10.0	12
Tax Managed Equity	15	10.5	7.5	7
Emerging Market	10	7.0	5.0	7
Global Real Estate	5	3.5	2.5	4
Total	**100%**	70.0%	50.0%	60%
Portio Re-OPTIMIZED & Customized				
Medical Devices		5.0	4.0	6
On-line Retail		5.0	4.0	7
Nuclear		4.0	NONE	3
Health Care.		5.0	NONE	6
Gold		5.0	6.0	7
Semi-Conductor		3.0	2.0	6
Technology		3.0	2.0	5
Total		30.0%	18.0%	40%
Portfolio Portio Re-OPTIMIZED*				
Green Energy			5.0	
Utilities			3.0	
Aerospace-Defense			3.0	
Materials			3.0	
Timber			3.0	
Social Media			2.0	
Private Equity			2.0	
Asia-Pacific			2.0	
Infrastructure			2.0	
Canada			2.0	
Home Building			2.0	
Natural Resources			2.0	
Japan			1.0	
			32.0%	

WORST DIVERSIFIED PORTFOLIO IMPROVED BY DIVERSIFICATION OPTIMIZATION

	ORIGINAL	CUSTOMIZED	DIVERSIFICATION ADVANTAGE BASIS PTS.
TOTAL RETURN 9/18-2/19 "THE TOP"	+8.7%	**+10.5%**	180
TOTAL RETURN 2/19 - 3/20 "THE BOTTOM"	-34.7%	-31.0%	370
% NEEDED FROM BOTTOM TO +**10.50%**	+55.4%	+45.3%	1010
TOTAL RETURN 9/18 - 6/11	- 4.8%	+3.9%	870
% INCR. TO GET TO +**10.50%**	**+16.0%**	**+6.4%**	**960**
SHARPE RATIO	-.16	+.18	

Comparative Results of Adding Diversification Weightings
Two Portfolios (Best and Worse) From 9 Analysis in September 2019

BEST Beginning Diversified Portfolio

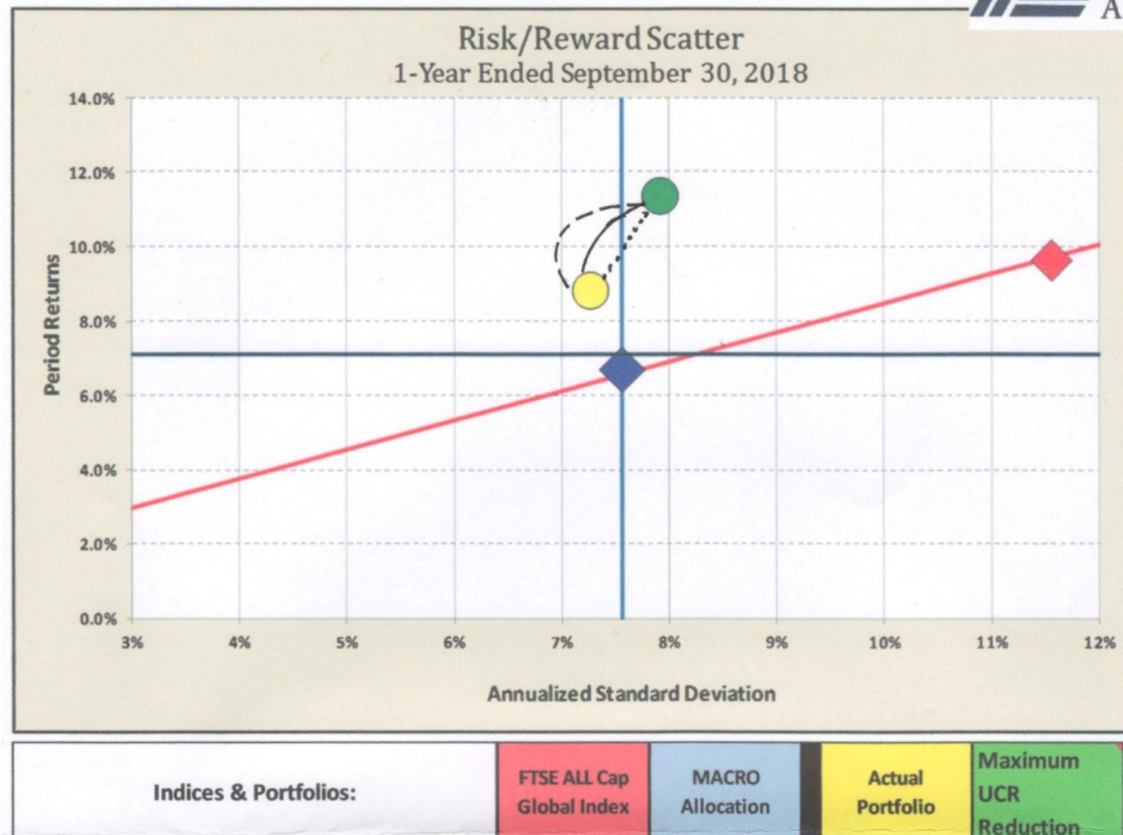
GREAT Results of Diversification Weighted Optimization

9/18/2019 - 6/11/2020

	ASSET ALLOCATION (RISK ASSETS ONLY	
	Legacy Portfolio	**80%Legacy/20% Re-Optimized**
Existing Legacy Portfolio Allocation		
SMALL CAP VALUE	7.4	6.0
HEALTH CARE	1.4	1.1
INTERNATIONAL EQUITY	2.3	1.9
SMALL CAP 600	2.6	2.0
MID CAP	7.1	5.7
UTILITIES	1.8	1.6
INTERNATIONAL MOMENTUM	9.1	8.2
EMERGING MARKETS	3.9	3.2
EURO PACIFIC	5.0	4.4
SMALL-MID CAP	3.1	2.2
DIVIDEND PAYING	4.6	3.5
VALUE EQUITY	4.1	3.4
VALUE MOMENTUM	5.7	5.1
S&P 500	20.1	15.5
BLUE CHIP GROWTH	12.1	8.0
MID CAP USA	1.1	1.0
COMMODITIES	1.0	0.9
REITs	0.8	0.8
U.S. BROAD EQUTIES	4.0	3.1
MATERIALS	2.8	2.4
	100.0%	80.0%
Portfolio Re-Optimized & Customized		
SEMI CONDUCTOR		8.5
GOLD		6.3
TECHNOLOGY		3.4
GREEN ENERGY		1.8
		20.0%

BEST DIVERSIFIED PORTFOLIO IMPROVED BY DIVERSIFICATION OPTIMIZATION

	ORIGINAL	CUSTOMIZED	BPS ADVANTAGE
TOTAL RETURN 9/18/19-2/19/20 "THE TOP"	+8.30%	+9.0%	70
MAX DRAW DOWN 2/19/20 - 3/20/20	-34.9%	-34.0%	90
% NEEDED FROM BOTTOM TO +**9.0%**	53.5%	51.6%	190
TOTAL RETURN 9/18 - 6/11	-0.7%	+4.7%	540
% INCR. TO GET TO +**9.0%**	**9.70%**	**4.1%**	**560**
SHARPE RATIO	-0.02	0.14	



8 – INFO & TAKEAWAYS
IS THIS PORTFOLIO REASONABLY DIVERSIFIED?

a) The answer is a tough one from a scatter chart viewpoint because this fairly large RIA firm got their return/risk ratio into the northwest quadrant which has been normally described as a "safe harbor" for investment advisers.

b) However, this portfolio still has left 84% of the Uncompensated Risk imbedded in it, and

c) For that reason there is a big opportunity!

d) Refer to the chart. The dotted line is not our experience in improving Uncompensated Risk removal. Rather, it is the solid line, BUT

e) In this particular case we would expect to see the dashed line path because there is so much uncompensated risk still in the portfolio the optimizing algorithm would canvass all available securities and first pick the ones with low correlation/low volatility/higher Sharpe Ratios. Eventually it runs out of higher returns and the path of the dashed line turns towards the maximum UCR reduction risk return.

f) So, in this case it looks like we can take a lower risk than the actual portfolio by stopping somewhere around a 10% ROR (a potential gain of 2 percentage points) with a reduction of ¾ of 1% in risk. This puts the expected results further northwest in the scatter chart.

g) From a technician's view (ours) the current portfolio it is not diversified. From a legal standpoint it might be difficult for a plaintiff to prove a breach with the current portfolio in the so called "safe haven" northwest quadrant and especially if past years were also 'safe'.

h) TAKEWAYS: The main point is many investment advisers are leaving significant amounts of money on the table that could easily be avoided by prudently and reasonably removing some significant portion of the Uncompensated Risk.