



## **Recommended Asset Allocation**

**Jacob Hoffman — 11/20/2020**

FRONTIER CURVE OPTIMAL PORTFOLIO ANALYSIS

MONTE CARLO SIMULATION OF RETURNS

CORRELATION MATRIX

---

Prepared by Thomas K. Provins

THOMAS.PROVINS@LPL.COM

1910 Cochran Road

Manor Oak 2 Suite 450

412.440.6949

# Contents

<b>1</b>	<b>Statistical Terminology &amp; Asset Class Descriptions</b>	<b>2</b>
<b>2</b>	<b>Investment Profile — Prescribed Allocation Changes</b>	<b>3</b>
<b>3</b>	<b>Performance Improvements Of Prescribed Portfolio</b>	<b>4</b>
<b>4</b>	<b>Current Portfolio Overview - Statistical Analysis</b>	<b>5</b>
<b>5</b>	<b>Prescribed Portfolio Overview - Statistical Analysis</b>	<b>6</b>
<b>6</b>	<b>Frontier Curve</b>	<b>7</b>
<b>7</b>	<b>Correlation Matrices</b>	<b>8</b>

# 1 Statistical Terminology & Asset Class Descriptions

**Expected Return** - Of an investing strategy is the amount of money you are expected to get back from your investment. For example, if 90 dollars is invested for 1 year with an expected return of 100 dollars, then in the average case the investment will yield back 100 dollars.

**Risk** - Or standard deviation of an investing strategy is a measure of how much the return of an investment strategy will vary from it's expected return. For example, an investment strategy with an expected return of 20% and a risk of 8% will yield 112% to 128% return with a probability of 68.2% , and 104% to 136% return with a probability of 94.4%

## The 18 Asset Classes :

Asset Class	Index	Description
Large Cap Growth	FSPGX	Fastly growing stocks from big companies.
Large Cap Value	SVX	Undervalued stocks from big companies.
Small Cap Growth	RUT	Fastly growing stocks from small companies.
Small Cap Value	RUJ	Undervalued stocks from small companies.
Mid Cap	SP400	Stocks from mid sized companies.
International	VTIAX	Stocks not traded in U.S.A. exchanges.
Emerging Mkt.	VEMAX	Stocks from emerging Mkt. countries.
Real Estate	DJUSRE	Land and buildings.
Venture Capital	AMZX	New and innovative companies.
Inter. Govt. Bonds	GVI	Govt. bonds that mature in 5-10 years.
Long Govt. Bonds	ILTB	Govt. bonds mature in more than 10 years.
Corporate Bonds	SPDBDACPT	Bonds issued by a corporation.
High Yield Bond	HYG	Lower credit rating higher return bonds.
Municipal Bond	MUB	Bonds Issued by local government.
Foreign Bonds	BNDX	Bonds issued in other countries.
Emerging Mkt. Debt	JEDAX	Bonds issued by emerging countries.
Commodities	DJCI	Basic goods used in commerce.
Cash	BIL	Currencies, Foreign Currencies

## 2 Investment Profile — Prescribed Allocation Changes

### Investment Profile:

Name : Jacob Hoffman

Birthday : 11/20/1960

Time Frame : 9 Years

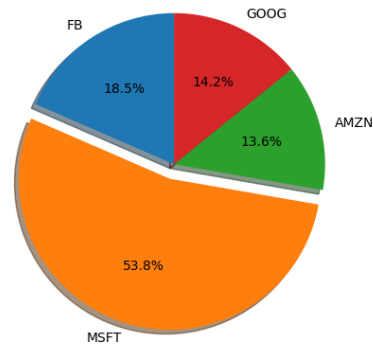
Available Funds : \$1,232,683.45

Preferred Risk : ( $\pm 8\%$  Yearly)

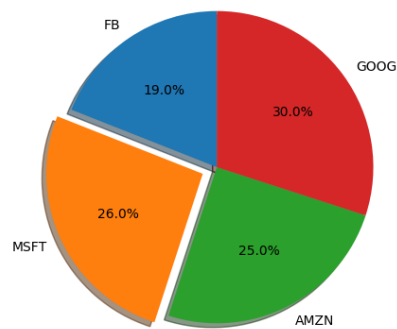
### **Preffered Asset Classes:**

- Large Cap Growth Stocks
- Large Cap Value Stocks
- High Yield Bonds
- Emerging Mkt. Stocks
- Venture Capital
- Cash

(a) Current Portfolio



(b) New Portfolio



### Prescribed Allocation Changes

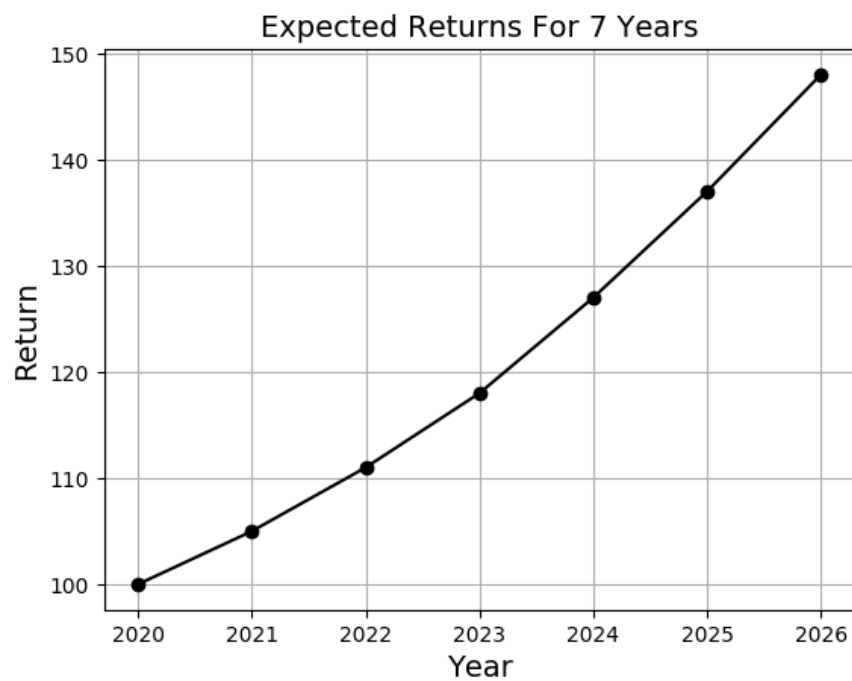
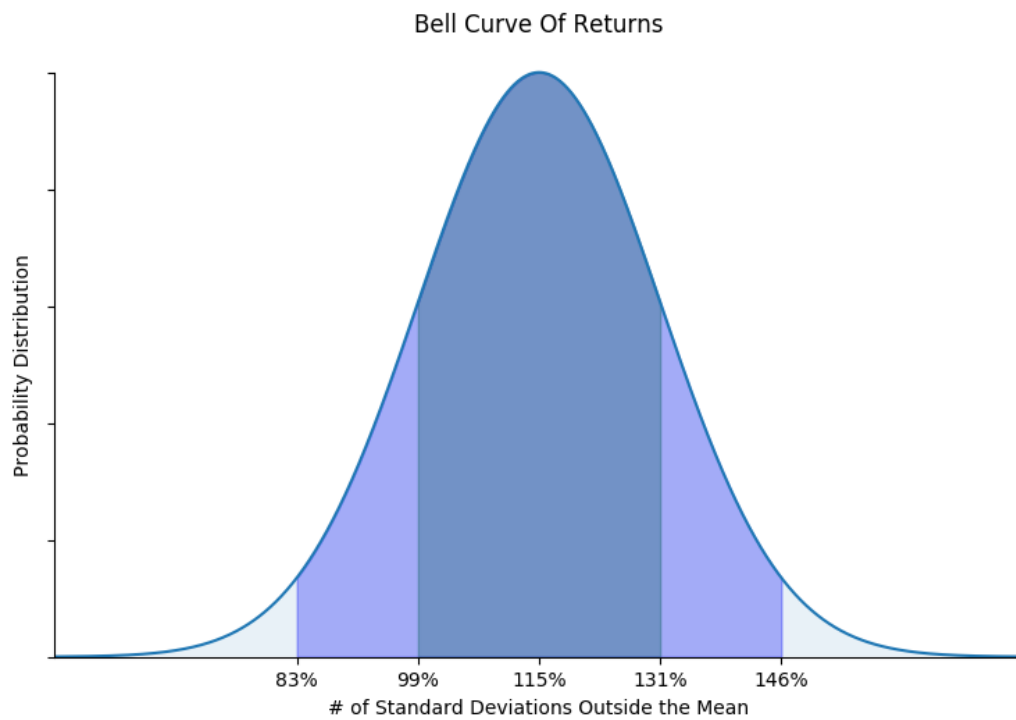
Asset Class	Current	Suggested	Change
Large Cap Growth	\$54,441.73	\$43,210.22	+\$34,321.34
Large Cap Value	\$54,441.73	\$43,210.22	+\$34,321.34
Small Cap Growth	\$54,441.73	\$43,210.22	+\$34,321.34
Small Cap Value	\$54,441.73	\$43,210.22	+\$34,321.34
Mid Cap	\$54,441.73	\$43,210.22	+\$34,321.34
International Stock	\$54,441.73	\$43,210.22	+\$34,321.34
Emerging Mkt Stock	\$54,441.73	\$43,210.22	+\$34,321.34
Real Estate	\$54,441.73	\$43,210.22	+\$34,321.34
Venture Capital	\$54,441.73	\$43,210.22	+\$34,321.34

### 3 Performance Improvements Of Prescribed Portfolio

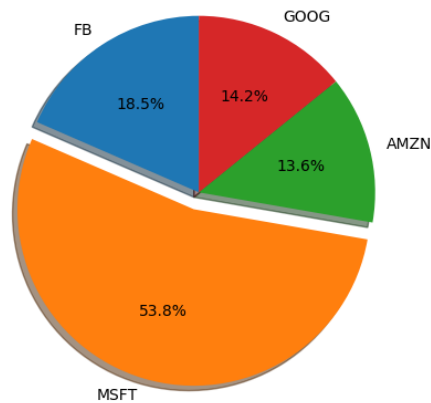
Below are 7 year simulation results of your current investing strategy versus the investment strategy prescribed in this report.

Change In Expected Return : \$124,432.23

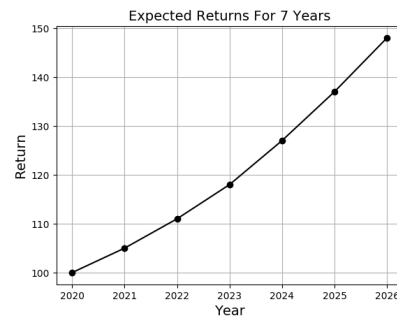
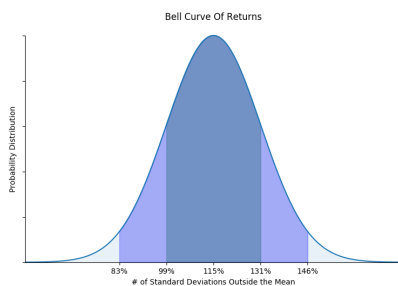
Change in Risk : ( -3% )



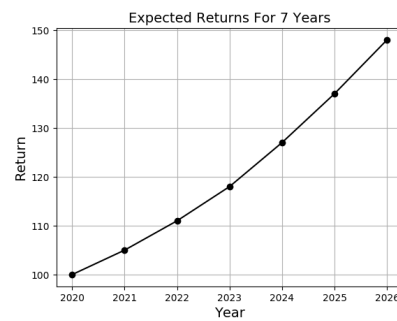
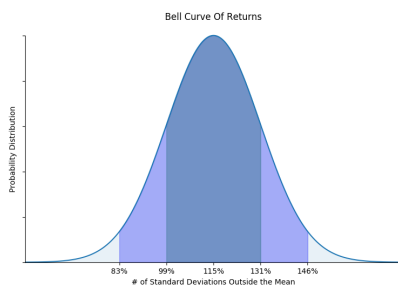
## 4 Current Portfolio Overview - Statistical Analysis



Portfolio Breakdown



Current Portfolio 1 Year Projections



Current Portfolio 7 Year Projections

1 Year Expected Return (\$) : \$343,203.20 (33.3%)

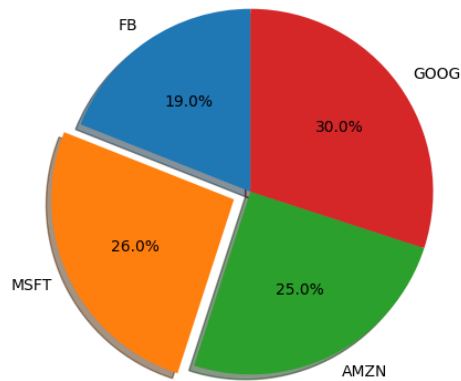
1 Year Risk (Standard Deviation %) :  $\pm 3.54\%$

7 Year Expected Return (\$) : \$343,203.20 (33.3%)

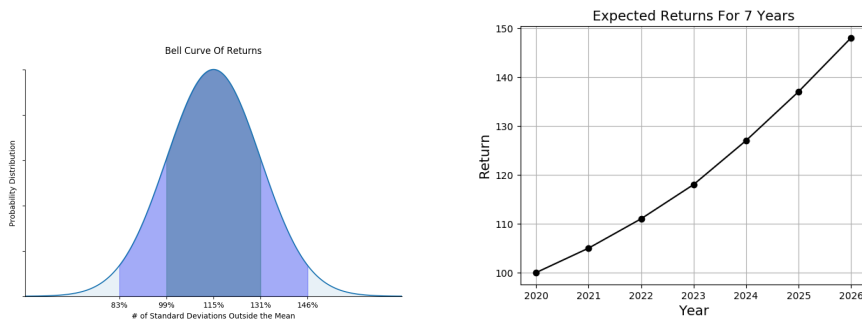
7 Year Risk (Standard Deviation %) :  $\pm 3.54\%$

Sharpe Ratio : .37

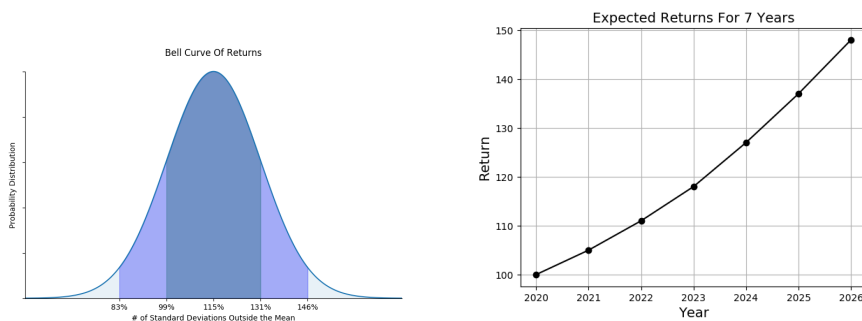
## 5 Prescribed Portfolio Overview - Statistical Analysis



Portfolio Breakdown



Prescribed Portfolio 1 Year Projections



Prescribed Portfolio 7 Year Projections

1 Year Expected Return (\$) : \$343,203.20 (33.3%)

1 Year Risk (Standard Deviation %) :  $\pm 3.54\%$

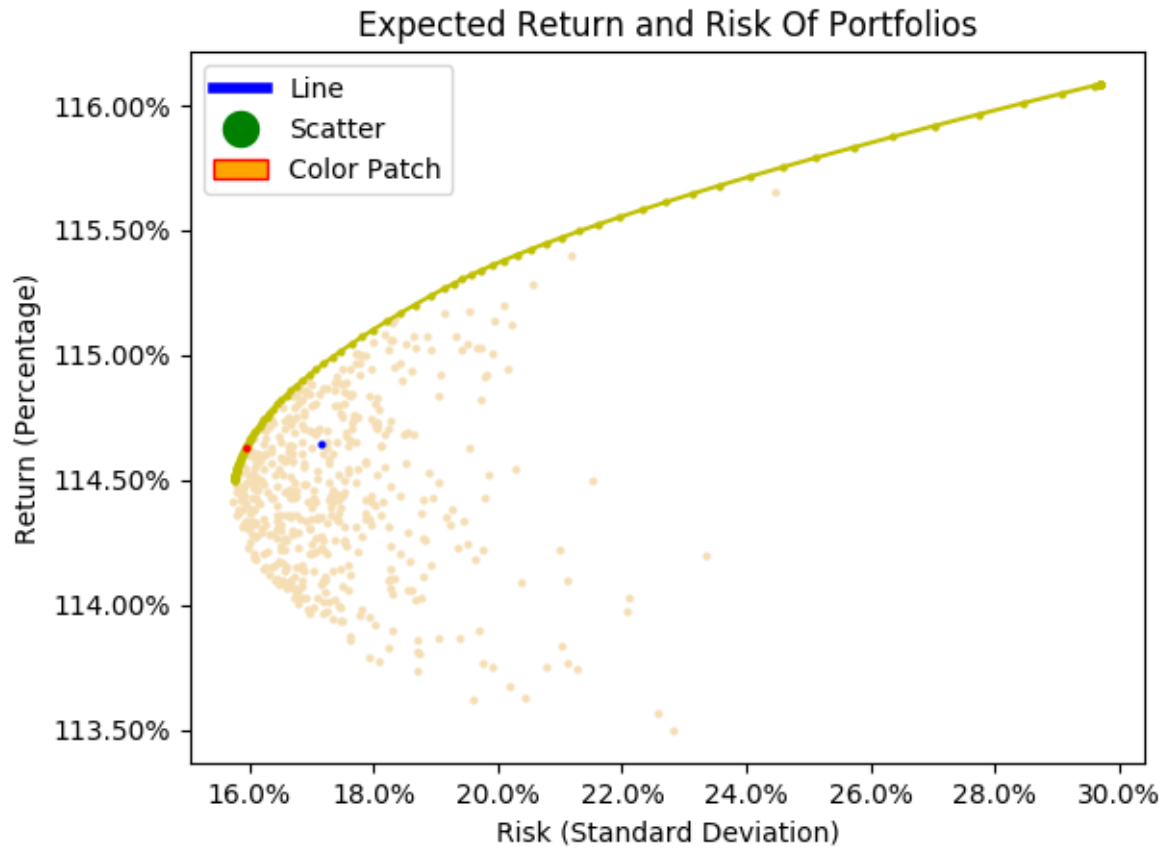
7 Year Expected Return (\$) : \$343,203.20 (33.3%)

7 Year Risk (Standard Deviation %) :  $\pm 3.54\%$

Sharpe Ratio : .37

## 6 Frontier Curve

Harry Markowitz won a nobel prize for inventing a portfolio balancing theory. Markowitz discovered that given assets to buy from and funds to buy with, all of the best portfolios formed a curved line called the "Frontier Curve."



Risk (Std. Deviation) : [15.930762844076593]

Expected Return : [114.6278881671014]

Improvement in risk : [[15.75921799]]

Improvement in return : [[113.48144129]]



## 7 Correlation Matrices

Corr.	MSFT	NTFX	HULU	RUS	BP	TR	SOCK
MSFT	16.128	+8.872	16.128	1.402	1.373	-146.6	-137.6
NTFX	3.442	-2.509	3.442	0.299	0.343	133.2	152.4
HULU	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
RUS	0.993	-0.429	0.993	0.086	0.08	25.6	90
BP	1.29	+0.099	1.29	0.112	0.097	-175.6	-114.7
TR	0.483	-0.183	0.483	0.042	0.063	22.3	122.5
SOCK	0.766	-0.475	0.766	0.067	0.039	141.6	-122

Above is the Semantic Correlation Matrix of the selected Asset Classes. It shows how each asset class is correlated to one another

Return	MSFT	NTFX	HULU	RUS	BP	TR	SOCK
1	16.128	+8.872	16.128	1.402	1.373	-146.6	-137.6
2	3.442	-2.509	3.442	0.299	0.343	133.2	152.4

Above is the ranking of the selected asset classes by risk

Risk	MSFT	NTFX	HULU	RUS	BP	TR	SOCK
1	16.128	+8.872	16.128	1.402	1.373	-146.6	-137.6
2	3.442	-2.509	3.442	0.299	0.343	133.2	152.4

Above is the ranking of the selected asset classes by return