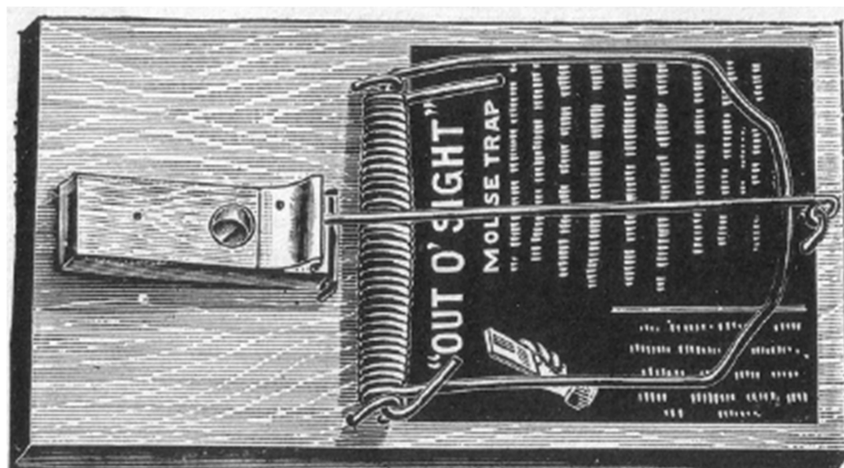# as[]lum trading

Zero Waste Investing™

THE PORTFOLIO ENGINEERING SESSION

A Better Mousetrap that Can Beat the Market™

Explained by your Asylum Trading Risk Ombudsman™

THE NO TEARS DISCLAIMER

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Warren Buffett is a legendary value investor who got rich by concentrating his bets and never selling anything, which is what you do in an **Index+5**™ portfolio

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Nobody works for free, but we will teach you how to DIY invest for about as close as you can get

PORTFOLIO ENGINEERING LECTURE 1
DISCOVERING THE MARKET PORTFOLIO

Explained by your **Asylum Trading Risk Ombudsman**™
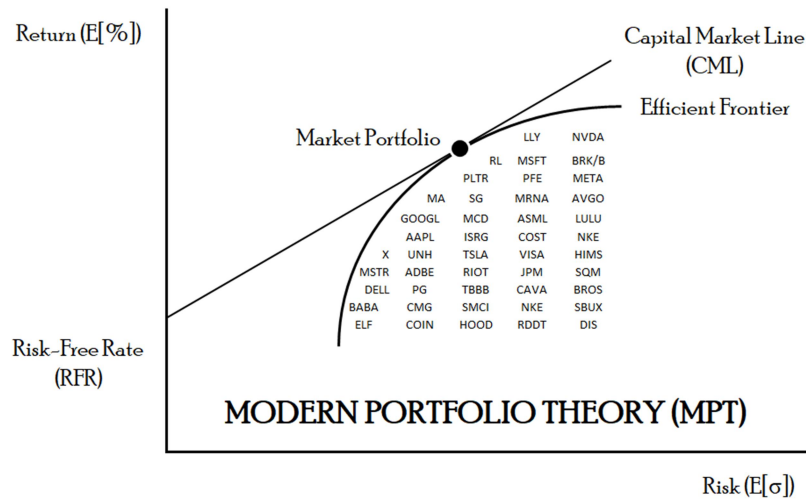
Return (E[%])

Capital Market Line (CML)

Efficient Frontier

Market Portfolio

			LLY	NVDA
	RL	MSFT	BRK/B
	PLTR	PFE	META
MA	SG	MRNA	AVGO
GOOGL	MCD	ASML	LULU
AAPL	ISRG	COST	NKE
X	UNH	TSLA	VISA	HIMS
MSTR	ADBE	RIOT	JPM	SQM
DELL	PG	TBBB	CAVA	BROS
BABA	CMG	SMCI	NKE	SBUX
ELF	COIN	HOOD	RDDT	DIS

Risk–Free Rate (RFR)

MODERN PORTFOLIO THEORY (MPT)

Risk (E[σ])

Return (E[%])

Capital Market Line (CML)

Efficient Frontier

Market Portfolio

		LLY	NVDA
	RL	MSFT	BRK/B
	PLTR	PFE	META
MA	SG	MRNA	AVGO
GOOGL	MCD	ASML	LULU
AAPL	ISRG	COST	NKE
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MSTR	ADBE	RIOT	JPM	SQM
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BABA	CMG	SMCI	NKE	SBUX
ELF	COIN	HOOD	RDDT	DIS

Risk-Free Rate (RFR)

MODERN PORTFOLIO THEORY (MPT)

Risk (E[σ])
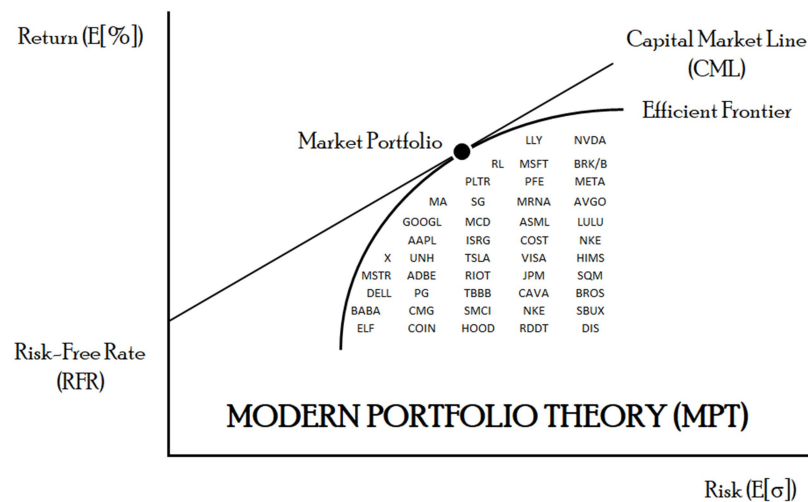
The diagram above is iconic among MBA graduates, CFA charter holders, finance and economics professors, and Wall Street investment professionals. It illustrates two brilliant insights into risk and portfolio management. It's as close as finance gets to $E = mc^2$, so Harry Markowitz and William Sharpe shared a Nobel Prize for it in 1990.

Before we get into the nuts and bolts of Markowitz's **Modern Portfolio Theory (MPT)** and Sharpe's **Capital Asset Pricing Model (CAPM)** let's define some terms. **Expected return** is an estimate of the percentage gain or loss a stock will

deliver, usually over the next year. **Expected risk** is how much random movement the stock will suffer along the way to achieving the expected return, stated as standard deviation. **Covariance** measures how closely two stocks move together.

Under **Modern Portfolio Theory** every stock can be assigned an expected return, expected risk, and a covariance with every other stock. Markowitz understood that combining stocks into pairs can create a better proposition than holding either stock by itself because he knew two formulas. One formula tells us the expected return for the pair is the weighted average of the expected returns for each stock. This is a linear relationship. The other formula is more complicated. It tells us the expected risk for the pair is based on the expected risk for each stock and the expected risk from the pair. It is a compounding relationship where three decimal components combine to press toward zero. This means diversifying can reduce expected risk if you do it right without sacrificing as much expected return.

Markowitz was an expert mathematician, so he knew what would happen to portfolio expected risk when you diversify into a third stock. Risk is based on the risk for each stock (three terms) and the risk for all pairs (three pairs). Add a fourth stock and the number of components is based on four stocks and the risk from six pairs. Five stocks, five and ten. Six stocks, six and fifteen. For each additional stock, when all the risk components are added together they can add up to less and less until the diversification benefit from the next stock runs out.

Markowitz explained it all in a 1952 journal article. Computing wasn't as easy to do at the time, but he was able to demonstrate the concept and provide workable shortcut formulas to replace the massive number of calculations computers would eventually do. The result of the theory and the math is the **Efficient Frontier (EF)** in the **Modern Portfolio Theory** diagram. The EF represents the portfolio for every level of expected risk that offers the highest expected return. There is no reason to invest in any portfolio
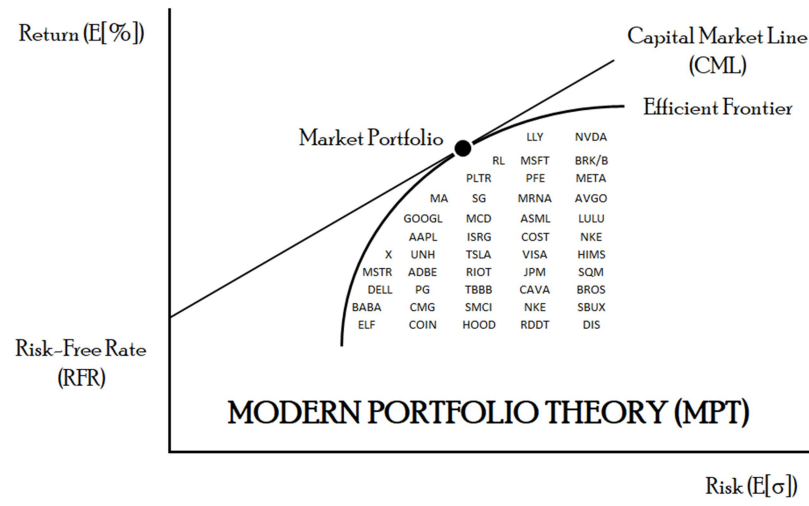
below the **Efficient Frontier** because it offers inferior expected return for the same level of risk.

Find the **Capital Market Line (CML)** on the **Modern Portfolio Theory** diagram. It starts at the **Risk-Free Rate (RFR)** on the left and touches the **EF** at a tangent point. That tangent point identifies the **Market Portfolio (MP)**. It is a very important portfolio. William Sharpe explained why in a 1964 journal article.

Sharpe recognized investors can calibrate a better portfolio for any level of expected risk than anything else on the **EF** by combining cash or debt with the **MP**. To the left of the **MP** the portfolio is cash plus the **MP**, to the right it is more than 100% invested in the **MP** with the help of margin debt.

The **CML** is why Sharpe was awarded the Nobel Prize. It displays why all investors should only invest in the **MP**. Sharpe explained decades before it happened why market capitalization weighted index funds dominate stock investing with about a 50% market share as a strategy. He also provided a basis to define the **Market**

Portfolio for stocks as an S&P500 Index fund known as SPY.

Return (E[%])

Capital Market Line (CML)

Efficient Frontier

Market Portfolio

		LLY	NVDA
	RL	MSFT	BRK/B
	PLTR	PFE	META
MA	SG	MRNA	AVGO
GOOGL	MCD	ASML	LULU
AAPL	ISRG	COST	NKE
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MSTR	ADBE	RIOT	JPM	SQM
DELL	PG	TBBB	CAVA	BROS
BABA	CMG	SMCI	NKE	SBUX
ELF	COIN	HOOD	RDDT	DIS

Risk-Free Rate (RFR)

MODERN PORTFOLIO THEORY (MPT)

Risk (E[σ])

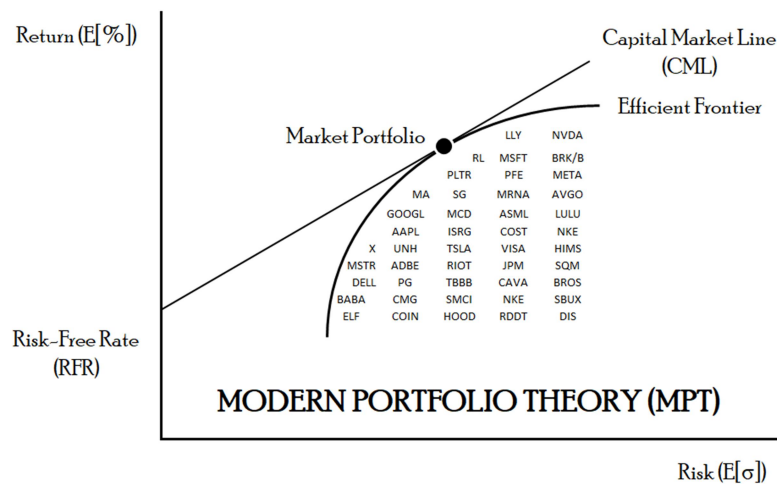USE THIS PAGE FOR NOTES

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PORTFOLIO ENGINEERING LECTURE 2
THE MARKET PORTFOLIO = SPY

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Nothing in this material constitutes investment advice, an offer to buy or sell securities, or a recommendation. All information is for educational purposes only. We are not engaging in a fiduciary relationship with you, we are only providing education.

Modern Portfolio Theory (MPT) identifies an Efficient Frontier (EF) of portfolios based on estimates of return, risk, and covariance. It doesn't work, unfortunately, because very small forecast errors can build wildly disappointing portfolios. For example, academic research into MPT shows passive portfolio weighting rules – like investing 1/N into N stocks – tend to do better than the MPT portfolio with the same N stocks.

Academic research confirms the forecasted EF rarely matches the realized EF, but after the fact SPY persistently appears on the diagram very close to where the Market Portfolio (MP) for stocks belongs. In the spirit that "it quacks like a duck," SPY looks like the MP should look, it shows up where the MP belongs, and it reliably beats the field, therefore SPY ≈ MP. This notion has been tested repeatedly across multiple academic theories of how the stock market functions, and it is recognized to hold up.

This is where we must go through a "like you are five years old" education ritual. There are a handful of high density core concepts you must

understand to move forward from here into **Easy Alpha™** and **Index+5™** investing. You paid a large sum to learn how portfolio management works. This is where we make sure you get your money's worth.

WHAT YOU NEED TO KNOW

- Every stock can be assigned an expected return, expected risk, and an expected covariance with every other stock
- Pairs of stocks can deliver much better expected return versus expected risk profiles than either stock on its own
- Portfolios full of stocks can do even better
- Computers can create tens of thousands of theoretical portfolios to identify expected return versus expected risk profiles
- The best theoretical portfolios define an **Efficient Frontier (EF)** that delivers maximum expected return for any level of expected risk

- There is a portfolio on the **Efficient Frontier (EF)** that is the best of all called the **Market Portfolio (MP)**
- The **Capital Market Line (CML)** starts at the **Risk-Free Rate (RFR)** and identifies the MP as its tangent point on the **EF**
- The **CML** consists of portfolios that combine the **MP** with cash, or that leverage it by borrowing
- All portfolios on the **CML** are better than anything else on the **EF**
- Theory and practice confirm that an S&P500 index fund is an excellent proxy for the theoretical **MP** for stocks
- Decades of research and practice confirm there is no better way to invest in stocks than buying and holding an S&P500 index fund like SPY

If you'd like to just stop here, raise your hand, and say, "That sounds fine with me," you will have the blessing of modern finance. They say "nobody can beat the market" for a reason ... With

very few exceptions nobody has, and believe us, someone has tried every which way to do it. From Nobel Prize winners to Warren Buffett, it is understood if you sock away as much as you can as soon as possible into SPY and never sell you are likely to do better than 90%+ of alternatives over your investment life.

Why is it so hard to beat the **Market Portfolio (MP)** for stocks as represented by SPY? It is a pretty good portfolio. Think of it like a professional sports franchise with the top 500 highest paid players on the team. Among them there will be busts and bargains, but there is no way a team with 500 lower paid players is going to beat them over time. Another advantage, arguably the de facto kill shot in any battle between the **MP** and anything else, is that the **MP** imposes virtually zero waste. Fees, commissions, trading costs, taxes, and discretionary epic investment fails are as low as possible or do not exist.

When you invest in SPY you own all of the most valuable companies. More important, you

own them in proportion to how valuable they are. Superstars create dynasties, and the most valuable companies create virtually all of the stock market gains. Winners win in sports, and they also win in business.

If all we do is help you genuinely understand why SPY is the **Market Portfolio** and default choice for best practice stock investing, this pamphlet is a deal. The good news is we have more to offer. We call it **Easy Alpha**™ and **Index+5**™ investing.