



POPULAR ASSET MANAGEMENT

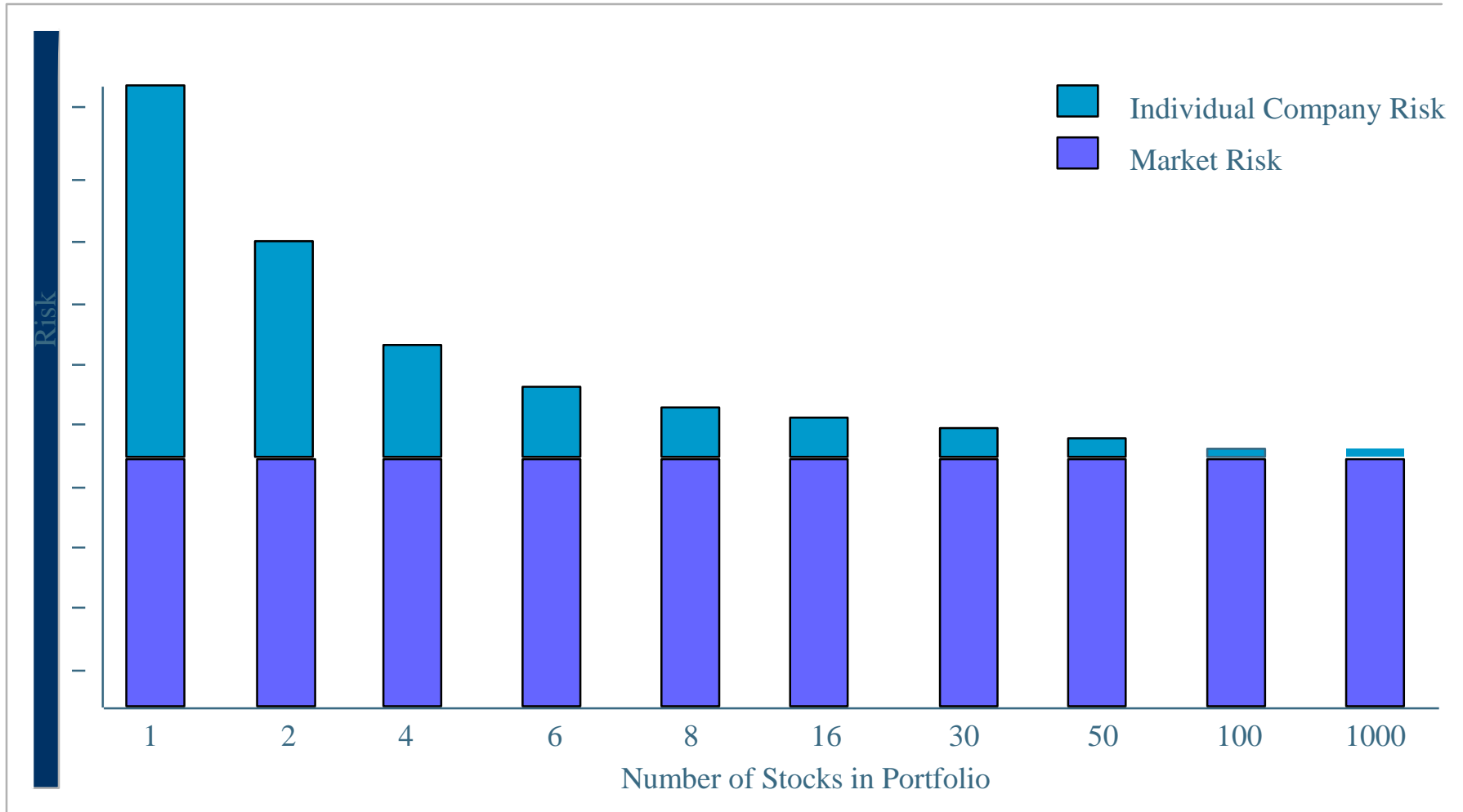
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Financial Diversification

The combination of different assets and/or asset classes in a portfolio with the objective of reducing risk without sacrificing expected return, or increasing expected return without assuming additional risk.

Equity Diversification



Source: Ibbotson Associates

Risk and Return Given Uncertainty

Returns – The return of an ex-ante uncertain event is referred to as expected return.

$$\text{Expected Return} = P(\text{events})$$



Risk – The risk in an ex-ante uncertain event is that the actual return may be different from the expected return.

$$\text{Risk} = \text{Standard Deviation of ER}$$

Example (Expected Return)

○ Investment 1

50% of $r = 20\%$, 50% of $r = -10\%$

$$\underline{\text{Expected Return}} = 5\% \quad (20\%)(.5) + (-10\%)(.5)$$

○ Investment 2

50% of $r = 4\%$, 50% of $r = 6\%$

$$\underline{\text{Expected Return}} = 5\% \quad (4\%)(.5) + (6\%)(.5)$$

Example (Risk – Standard Deviation)

○ Investment 1

50% of $r = 20\%$, 50% of $r = -10\%$

Standard Deviation = 1%

○ Investment 2

50% of $r = 4\%$, 50% of $r = 6\%$

Standard Deviation = 15%

Diversification

By combining assets in a portfolio, the weighted expected return is maintained while the risk will be lower than the weighted risk of the combined assets.

This holds only when the assets in the portfolio are not perfectly correlated.

Example

(Combine Two Assets in a Portfolio 50/50)

- Asset A

- Expected Return = 12%

- Risk (Standard Deviation) = 4%

- Asset B

- Expected Return = 8%

- Risk (Standard Deviation) = 3%

Example

(Combined Two Assets in a Portfolio 50/50)

○ Expected Return:

○ $(12\%)(.5) + (8\%)(.5) = 10\%$ **Correct**

○ Risk (Standard Deviation)

○ $(4\%)(.5) + (3\%)(.5) = 3.5\%$ **True, but only if both assets are perfectly correlated, otherwise the risk will be lower.**

How is Diversification Achieved?

- By combining assets that are not perfectly correlated.
- The less correlated the assets, the more efficient the portfolio will be.

Asset Allocation

The combination of different asset classes (bonds, stocks, real estate, international securities, etc) in a portfolio.

Asset Allocation



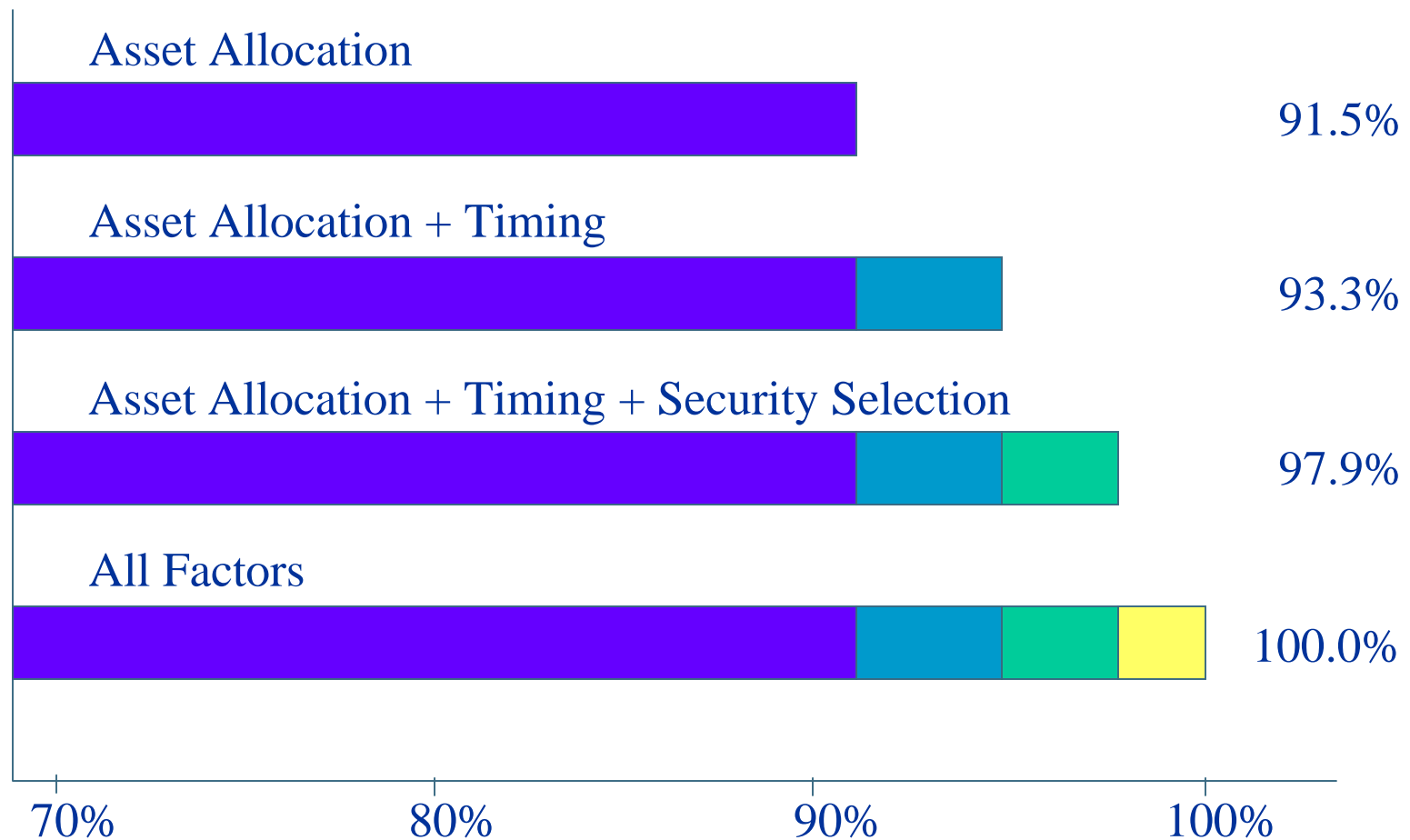
Ibbotson Associates

Asset Allocation

- 85% to 95% of investment returns differences arise from the long-term asset allocation decisions.

Brinson, Singer and Beebower, "Determinants of Portfolio Performance II: An Update" Financial Analysts Journal 47, no.3 (May-June 1991): 40-48

Asset Allocation



Source: Ibbotson Associates

Determining the Appropriate Asset Allocation

Determine Account Objectives

- Return objective
- Risk Tolerance

Determining the Appropriate Asset Allocation

Determine Expected Return, Risk and Correlations:

	<u>E. R.</u>	<u>Risk</u>
US Stocks	8.00%	17%
US Bonds	4.75%	5%
EAFE Equity	8.00%	20%
High Yield Bonds	7.00%	10%
Emerging Markets	8.00%	27%

Source: Wilshire Associates

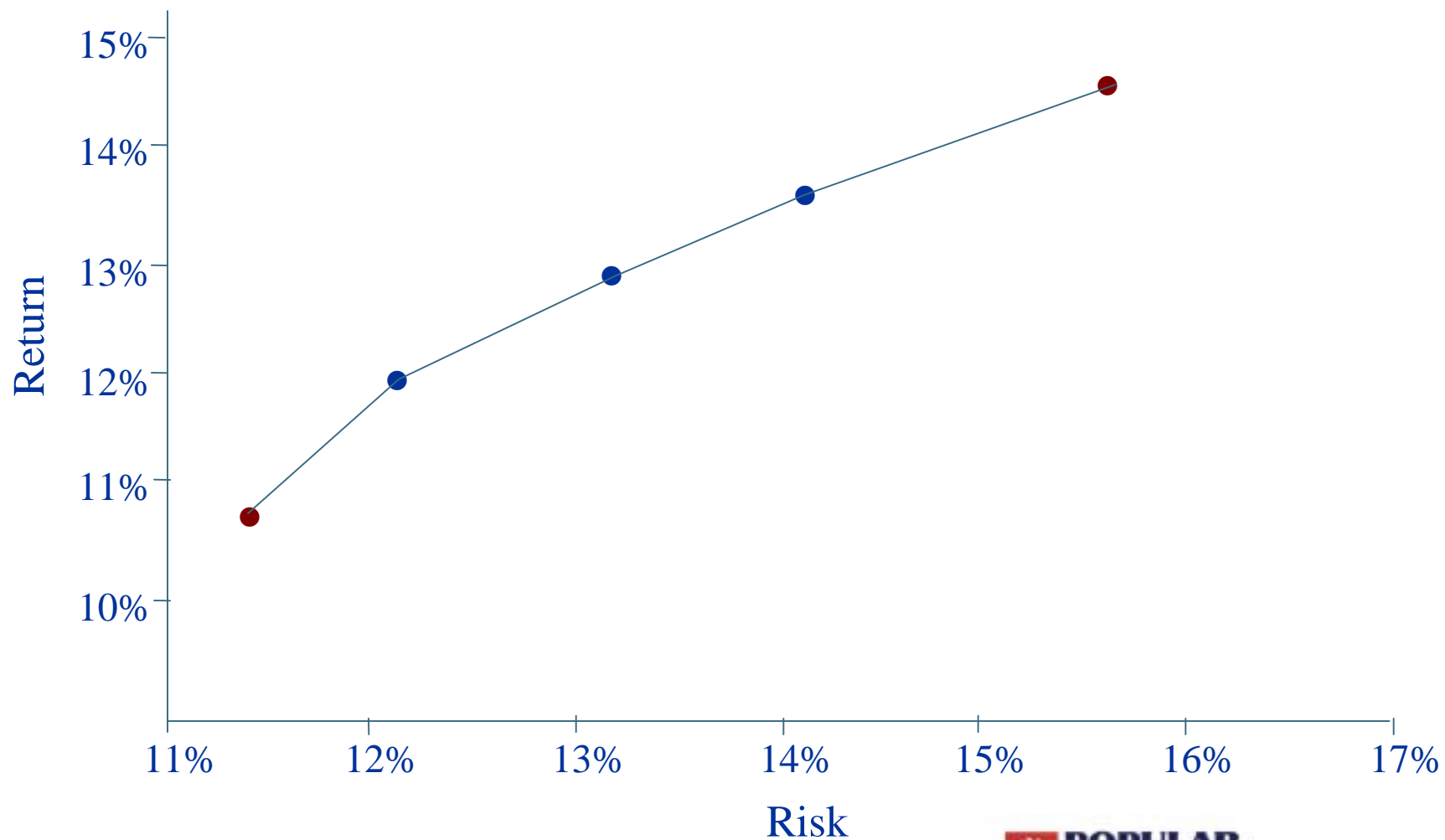
Determining the Appropriate Asset Allocation

Determine Expected Return, Risk and Correlations:

	<u>US Stocks</u>	<u>US Bonds</u>	<u>EA FE</u>	<u>High Yield</u>	<u>Emerg. Mrkts</u>
US Stocks	-	0.30	0.65	0.50	0.60
US Bonds	0.60	-	0.20	0.40	0.10
EAFE Equity	0.65	0.20	-	0.30	0.75
High Yield Bonds	0.50	0.40	0.30	-	0.20
Emerging Markets	0.60	0.10	0.75	0.20	-

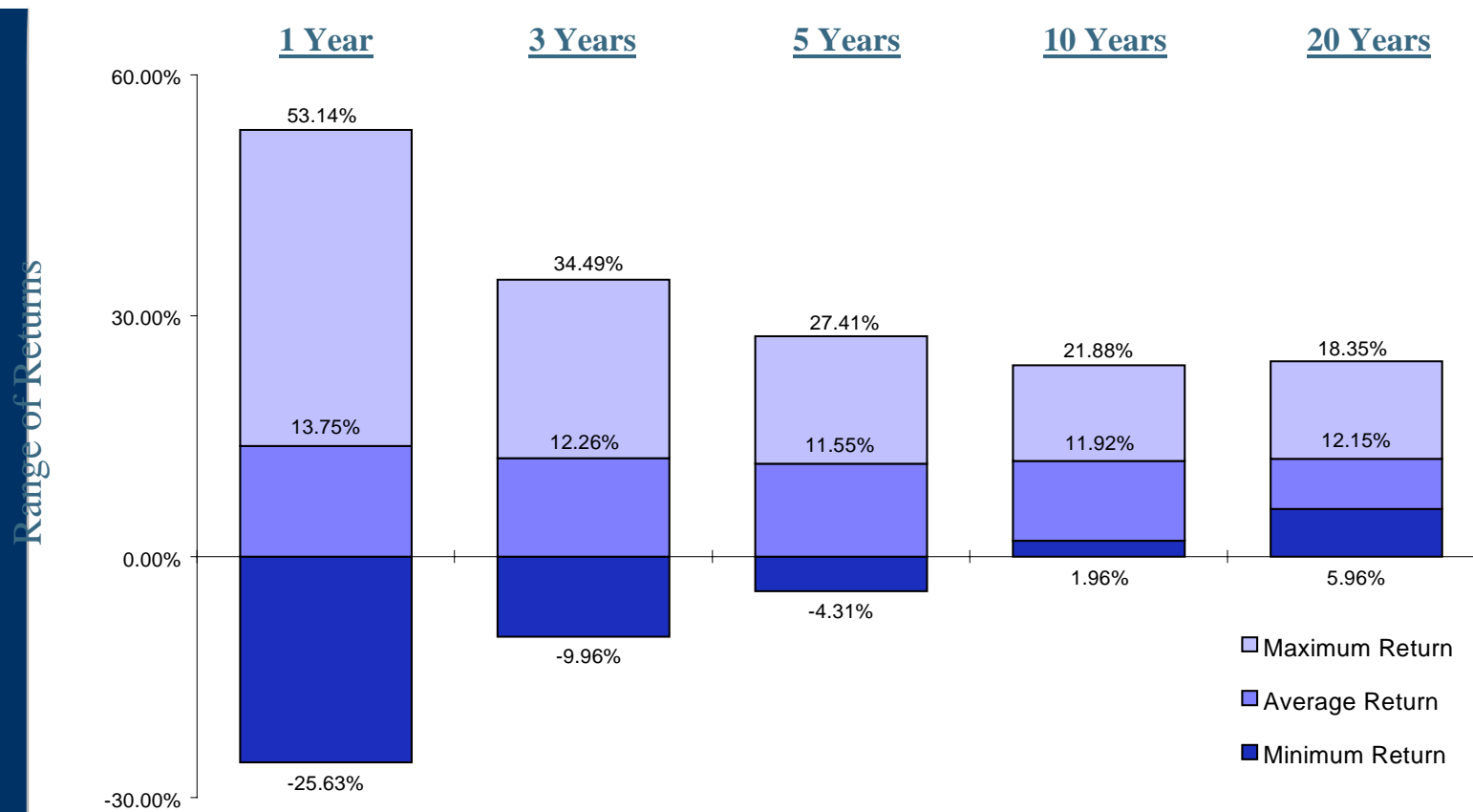
Source: Wilshire Associates

Risk Vs Return (Efficient Frontier)



Reduction of Risk Over Time, 1925 - 1998

Dow Jones Industrial Average, Annualized Returns for Different Holding Periods



Maximum and minimum returns reflect 95% probability interval based on the Normal Distribution

Source: Ibbotson Associates