What is Risk?

Jessica N. Portis, CFA
Senior Vice President

***Summit** Strategies Group*
8182 Maryland Avenue, 6th Floor
St. Louis, Missouri 63105

314.727.7211
summitstrategies.com

WHAT IS RISK?

risk {noun}

1. Possibility of loss or injury
2. Someone or something that creates or suggests a hazard
3. The chance of loss or the perils to the subject matter of an insurance contract
4. **The chance that an investment will lose value**

- Relationship between risk and reward
- Outcomes may be different than expectations
- Choices can lead to undesirable outcomes

TOP 10 ISSUES FACING INSTITUTIONAL INVESTORS*

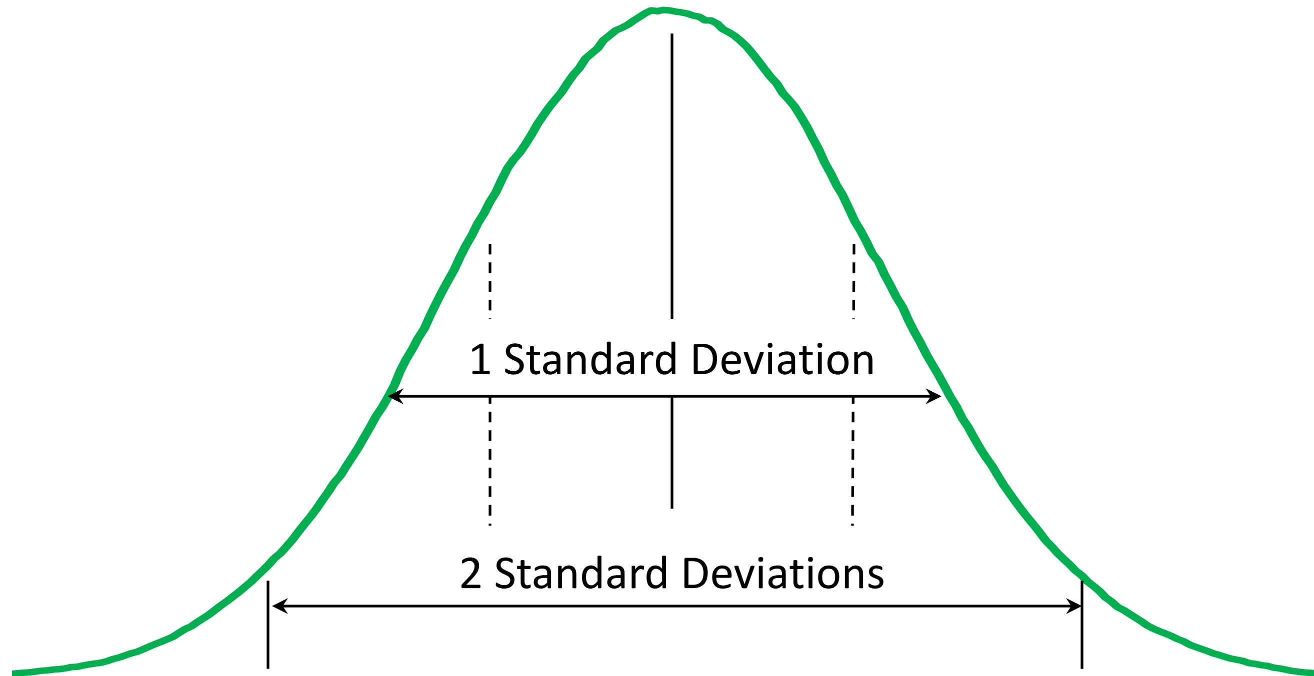
1. Asset Allocation
2. Market Volatility
3. Rate of Return and Funding Issues
4. Risk Management
5. Funding Rate Volatility
6. Liability Management
7. Government Regulation
8. Manager Selection
9. Liquidity
10. Inflation Risk

* Greenwich Associates, Market Trends 2011, United States Investment Consulting Business

RISK IN THE CONTEXT OF INVESTING

- Short-Term: Price volatility or price decline
  - Financial theory regarding risk and return relationships usually focuses on standard deviation
    - Measures the amount of variation in returns around the average
- Long-Term: Failure to meet goals and objectives
  - Endowment does not ensure the future of the ministry
  - Opportunity cost
  - Failure to keep pace with inflation
- Assessing Risk Today
  - Can I withstand the short-term to make it to the long-term?
  - All investors tend to extrapolate the recent short-term to their long-term outlook

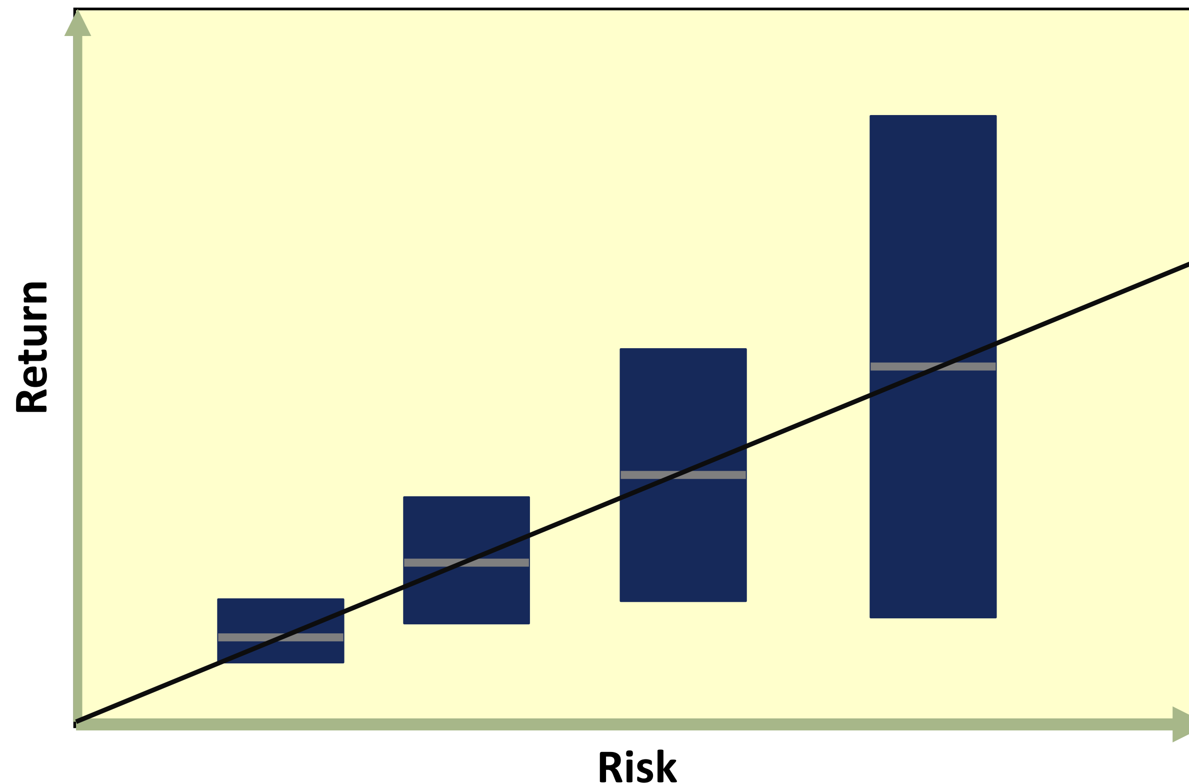
SHORT-TERM: THE LANGUAGE OF RISK



- Volatility (of return) and standard deviation are synonymous
- Measures how much the individual returns vary around the annualized return
- Provides little insight into source of variability

GREATER VOLATILITY ≠ GREATER ACTUAL RETURN

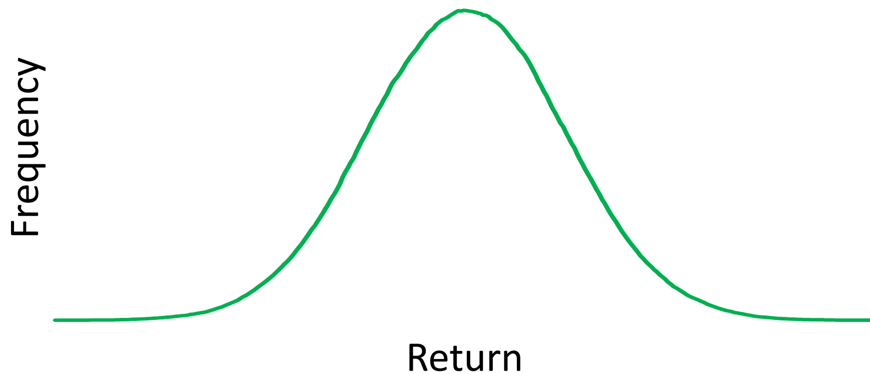
- Riskier investments provide greater uncertainty, which means:
  - Should provide greater expected return
  - There is a possibility for lower returns (or even loss)



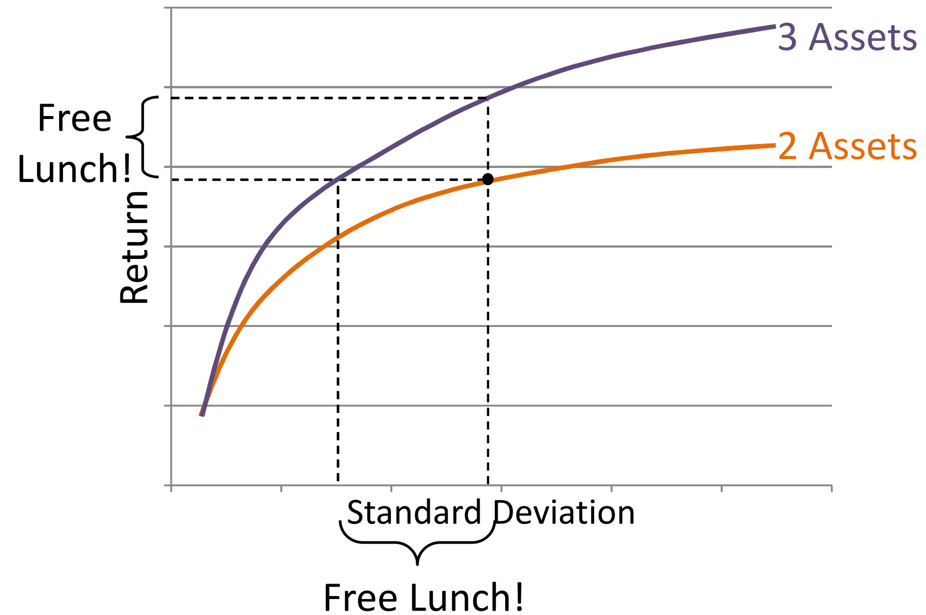
CAPITAL ASSET PRICING MODEL (CAPM)

- Relationship between risk and return
  - Focused on price movement
  - Emphasis on past behavior
- Correlation allows optimization of multiple asset classes into an efficient portfolio

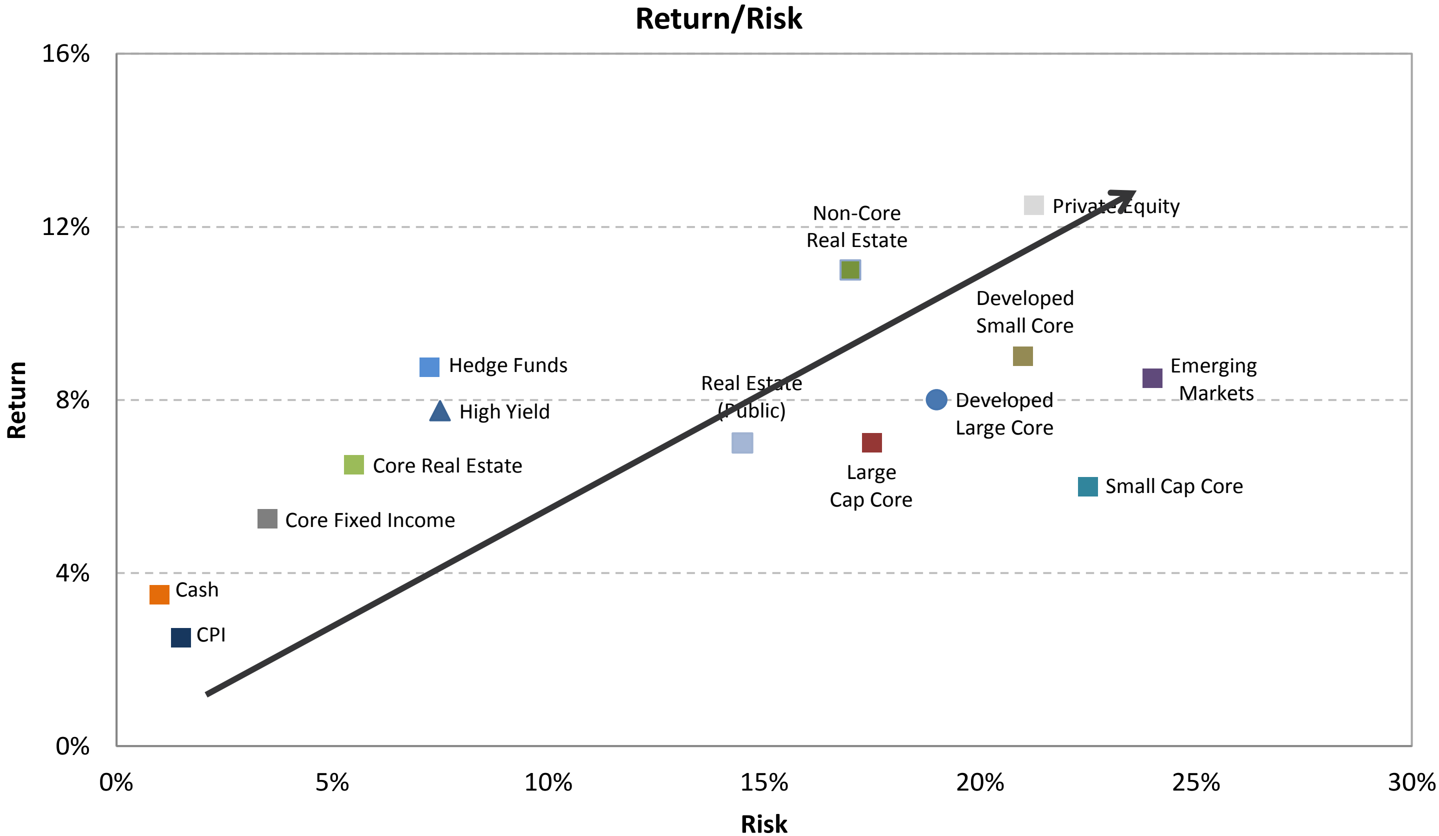
Mean Variance



Diversification and the Efficient Frontier

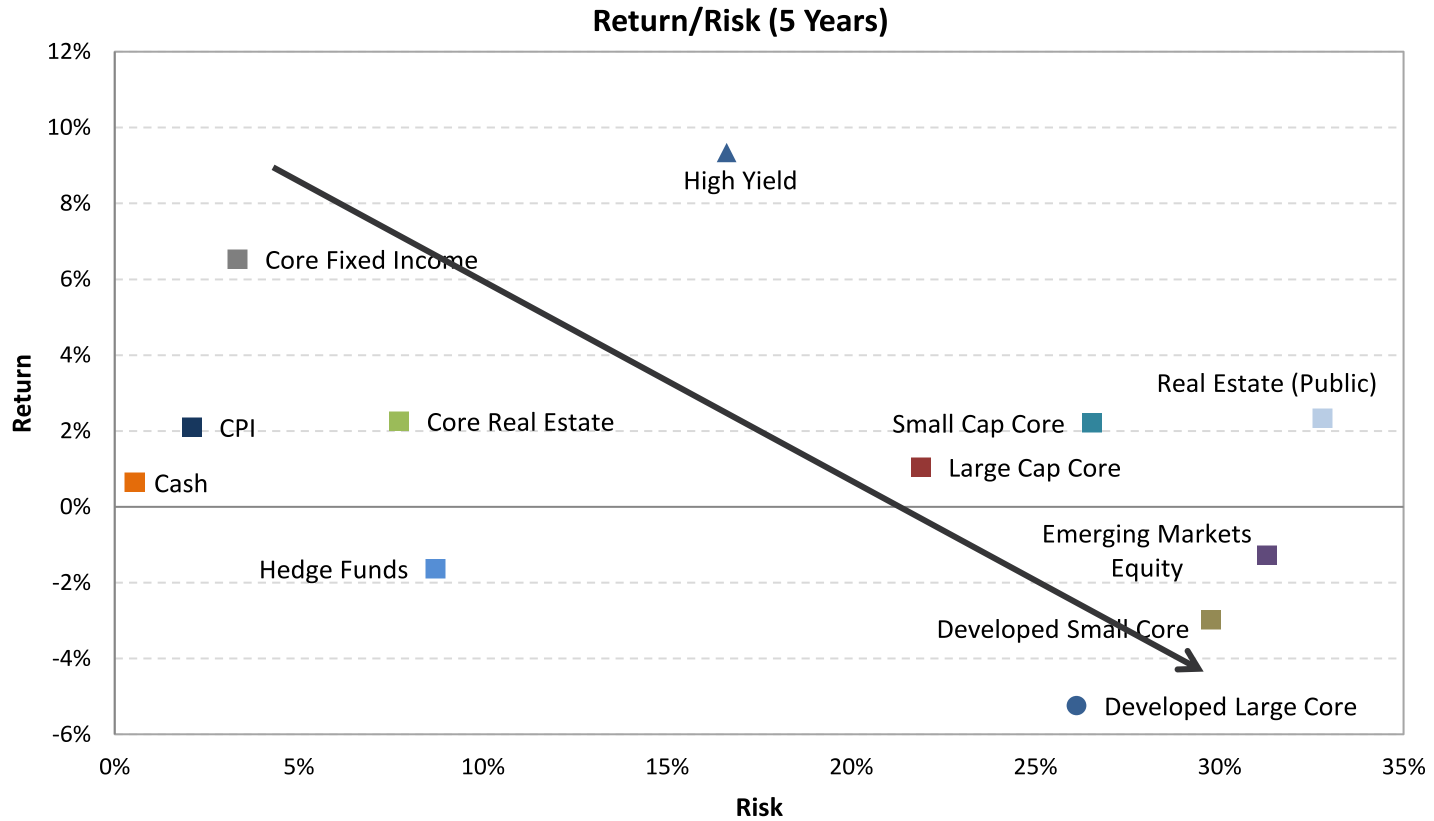


A LOOK BACK IN TIME: 2008 CAPITAL MARKET ASSUMPTIONS



Source: Summit's 10-Year Capital Market Assumptions

REALITY: HIGHER VOLATILITY, LOWER RETURN – WHAT HAPPENED?

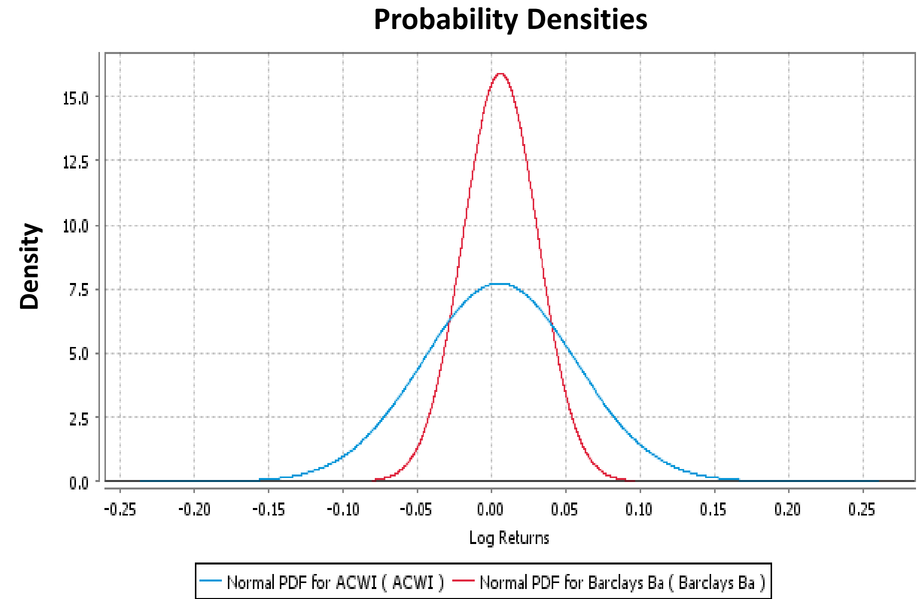


WHY DOES DIVERSIFICATION WORK, EXCEPT WHEN IT MATTERS MOST?

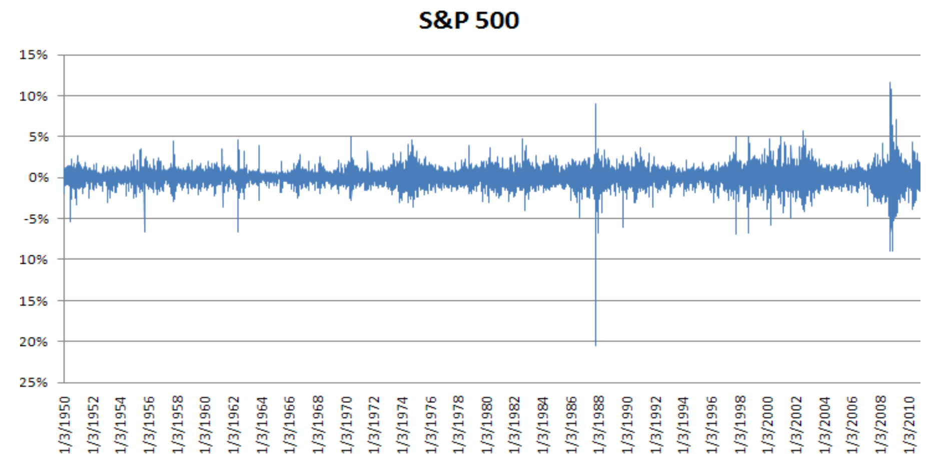
- During "normal" market environments, a well-diversified portfolio mitigates the volatility of individual assets…
  - Fundamentals dominate; correlations behave as expected
- …but diversification benefits evaporate during periods of market or economic distress
  - Correlations increase dramatically while volatilities jump
- Why?
  - Asset classes are simply portfolios of common risk factors that are shared by the asset classes in varying degrees
    - Liquidity risk
    - Inflation risk
    - Corporate risk
    - Equity risk
    - Currency risk

ALL MODELS ARE WRONG (BUT SOME ARE USEFUL)

- Mean-Variance Optimization – useful, but limited
  - Assumes normal distribution – returns are symmetric around the mean
  - Correlations are stable and asset class "tails" are independent



- If returns were "normal," statisticians would expect the S&P 500 to move up or down by 4% or more in one day only once every 100,000 years
  - 84 times since 1950
    - Nearly half of those in the last 3 years
    - 6 times in August 2011



FEAST OR FAMINE: S&P 500 INDEX ANNUAL RETURNS (1926-2012)

Less than-20%	-20% to -12%	-12% to -8%	-8% to 0	0 to 8%	8% to 12%	12% to 20%	More than 20%
1930 -24.90	1973 -14.69	1929 -8.42	1934 -1.44	1947 5.71	1926 11.62	1944 19.75	1927 37.49
1931 -43.34		1932 -8.19	1939 -0.41	1948 5.50	1959 11.96	1949 18.79	1928 43.61
1937 -35.03		1940 -9.78	1953 -0.99	1956 6.56	1968 11.06	1952 18.37	1933 53.99
1974 -26.47		1941 -11.59	1977 -7.16	1960 0.47	1993 10.08	1964 16.48	1935 47.67
2002 -22.10		1946 -8.07	1981 -4.92	1970 4.01	2004 10.88	1965 12.45	1936 33.92
2008 -38.49		1957 -10.78	1990 -3.10	1978 6.57		1971 14.30	1938 31.12
		1962 -8.73		1984 6.27		1972 18.99	1942 20.34
		1966 -10.06		1987 5.25		1979 18.61	1943 25.90
		1969 -8.50		1992 7.62		1986 18.67	1945 36.44
		2000 -9.10		1994 1.32		1988 16.61	1950 31.71
		2001 -11.89		2005 4.91		2006 15.80	1951 24.02
				2007 5.49		2010 15.06	1954 52.62
				2011 2.11		2012 16.00	1955 31.56
							1958 43.36
							1961 26.89
							1963 22.80
							1967 23.98
							1975 37.23
							1976 23.93
							1980 32.50
							1982 21.55
							1983 22.56
							1985 31.73
							1989 31.69
							1991 30.47
							1995 37.58
							1996 22.96
							1997 33.36
							1998 28.58
							1999 21.04
							2003 28.68
							2009 26.46

The S&P 500 Index has grown at about its average rate of return of 9.8% only 5 times in 86 years

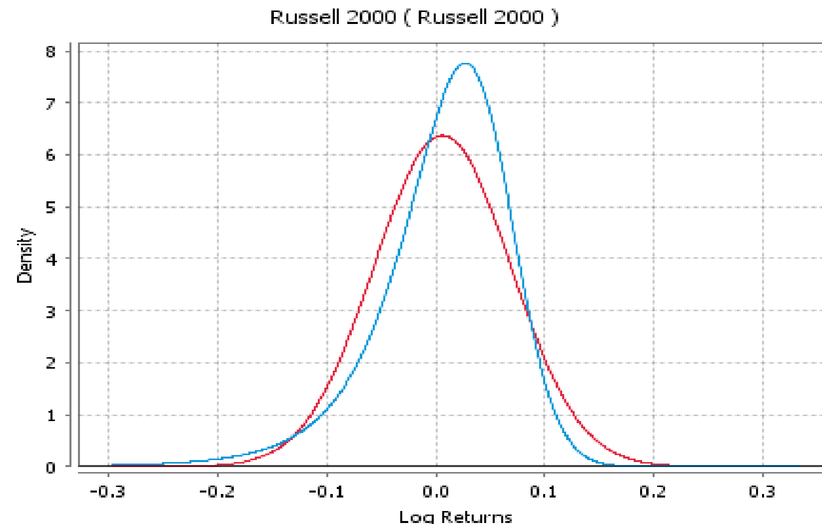
$8\% < \mathbf{x} < 12\%$

1926	11.62
1959	11.96
1968	11.06
1993	10.08
2004	10.88

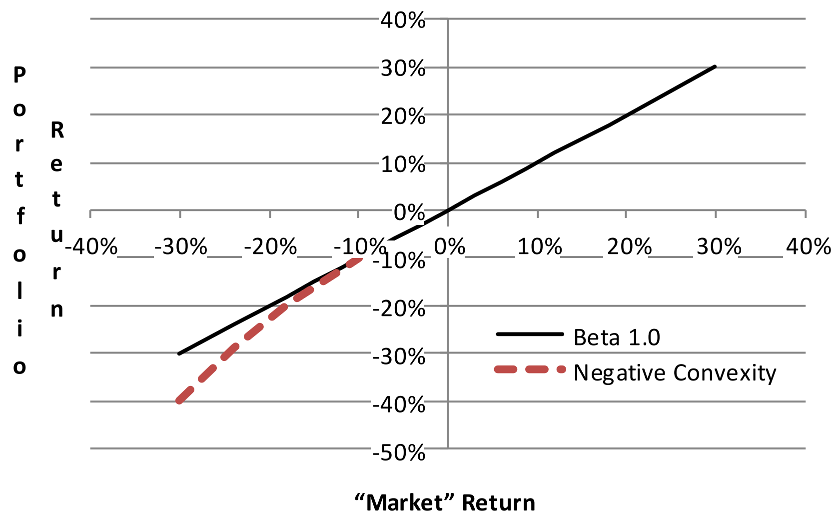
Source: Ibbotson Associates and Standard & Poor's.

RECOGNIZE THE SHORTCOMING: TAIL RISK AND FAT TAILS

- Small returns and extreme returns are more frequent than "normal"
- Modest returns occur less frequently
- The frequency and magnitude of large losses is much greater than large gains



- Higher volatility and increasing correlations cause "Fat Tails" and negative convexity
  - Downside risk is magnified and worsens as the market drops further



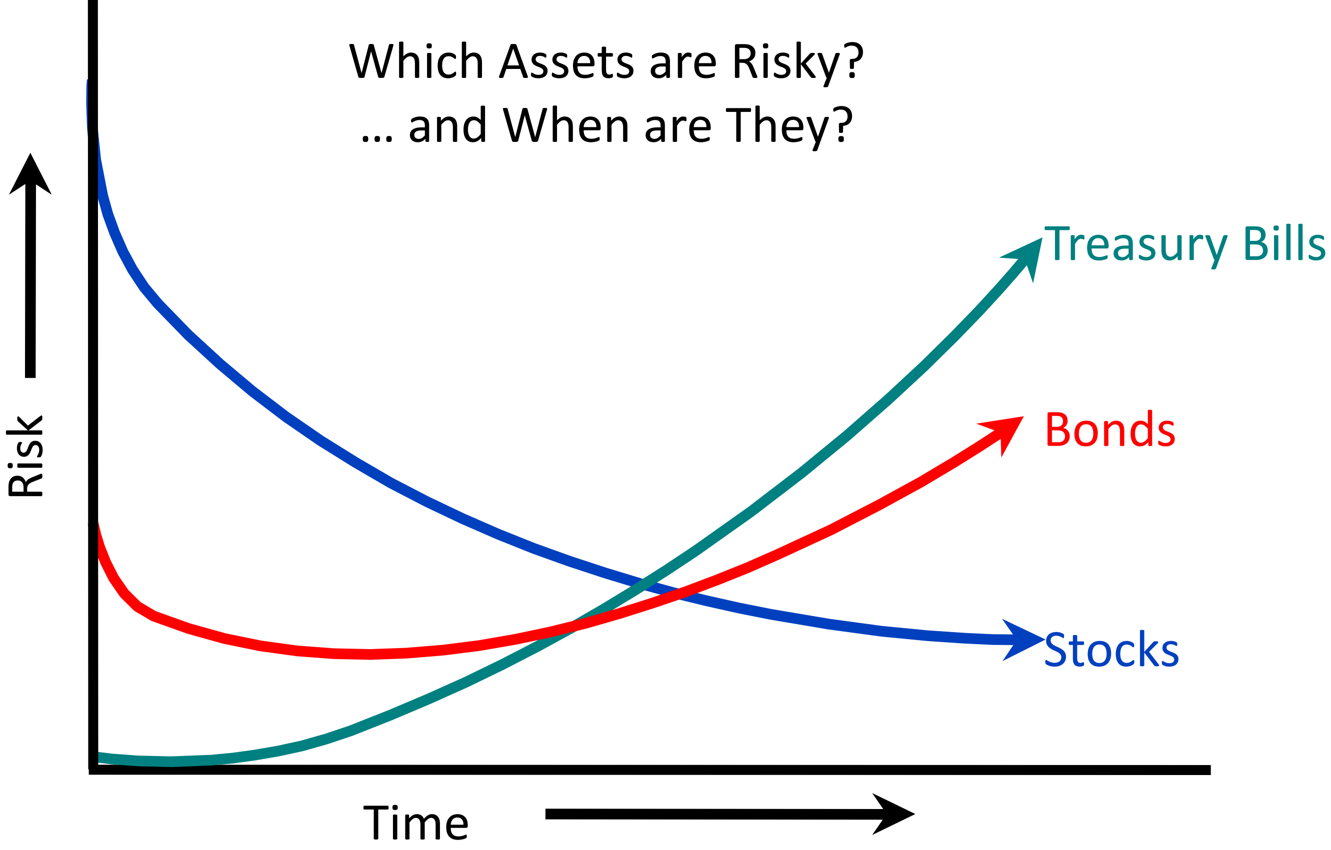
SURVIVING THE SHORT-TERM (VOLATILITY) RISK

- Spend time understanding the portfolio given current and recent market conditions
  - How much risk am I taking?
  - What are the key sources?
  - How is it changing with market conditions?
  - How can I improve portfolio construction?
- Determine how assets might behave differently under various economic regimes
  - Stagflation
  - Inflation
  - Boom

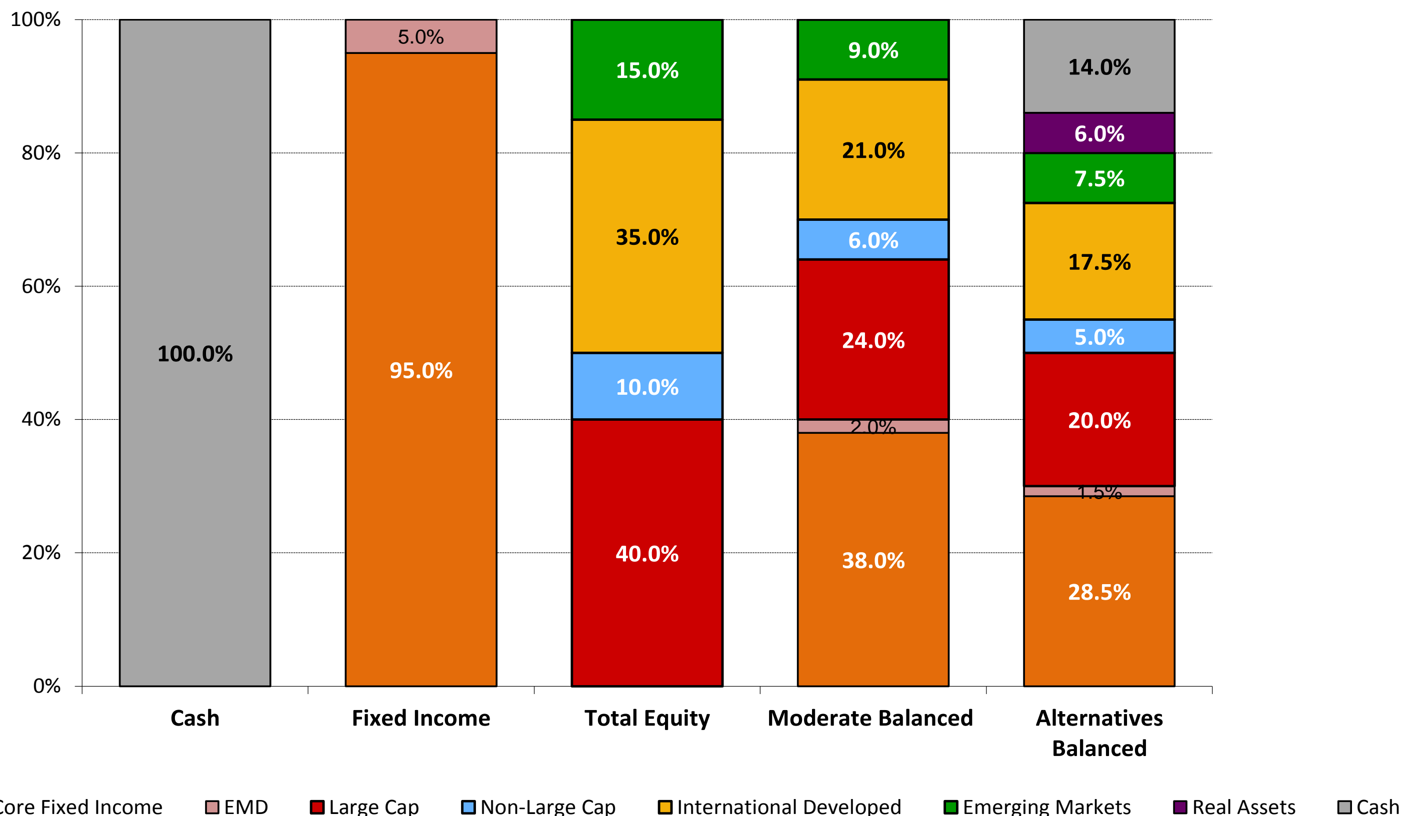
LONG-TERM RISK: BEYOND VOLATILITY

- There are other risks that affect the success of an investment program that are not related to statistical metrics (i.e., standard deviation)
- These measures are client specific and ultimately influence results:
  - Falling short of one's goals
  - Capitulating in difficult times
  - Avoiding conventionality trap
  - Underestimating liquidity needs

FALLING SHORT OF ONE'S GOALS



WHICH UCF STRATEGY IS RIGHT FOR YOU?*

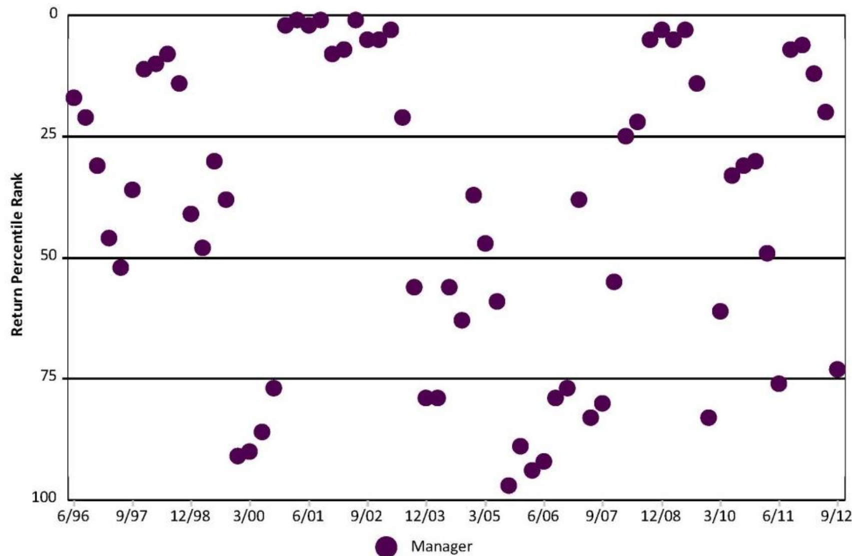


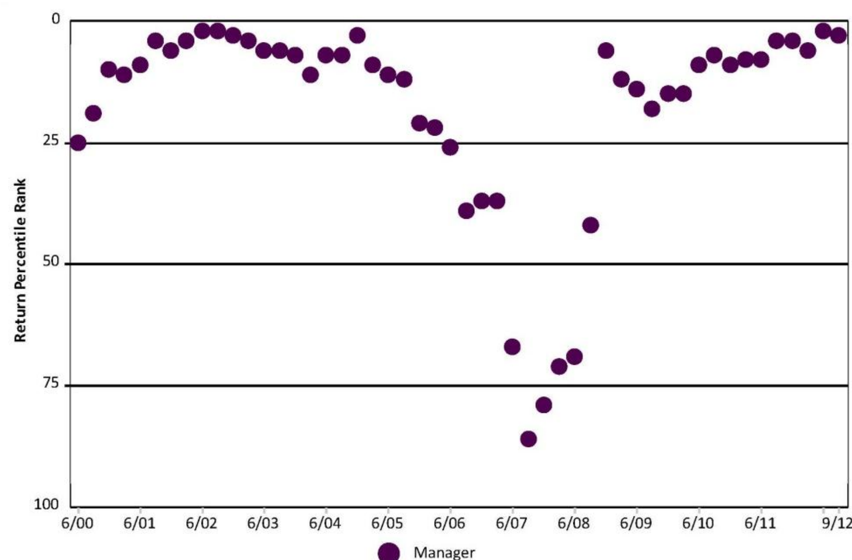
10-Year Geometric Expected Return & Standard Deviation

	Cash	Fixed Income	Total Equity	Moderate Balanced	Alternatives Balanced
Expected Return w/Alpha*	1.7%	2.8%	7.9%	6.2%	6.4%
Standard Deviation w/Alpha	1.8%	3.5%	19.7%	11.9%	10.7%
Return/Risk w/Alpha	100.0%	79.3%	40.2%	52.4%	59.8%

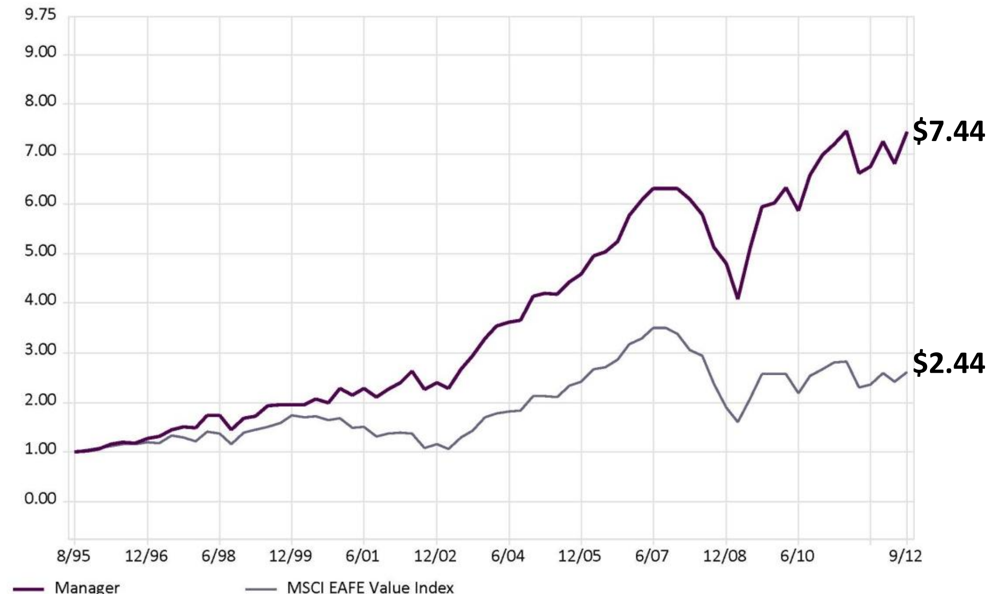
* 10 year expected return based on Summit's current capital market assumptions (inclusive of manager alpha). Not a complete list of UCF funds.

CAPITULATING IN DIFFICULT TIMES





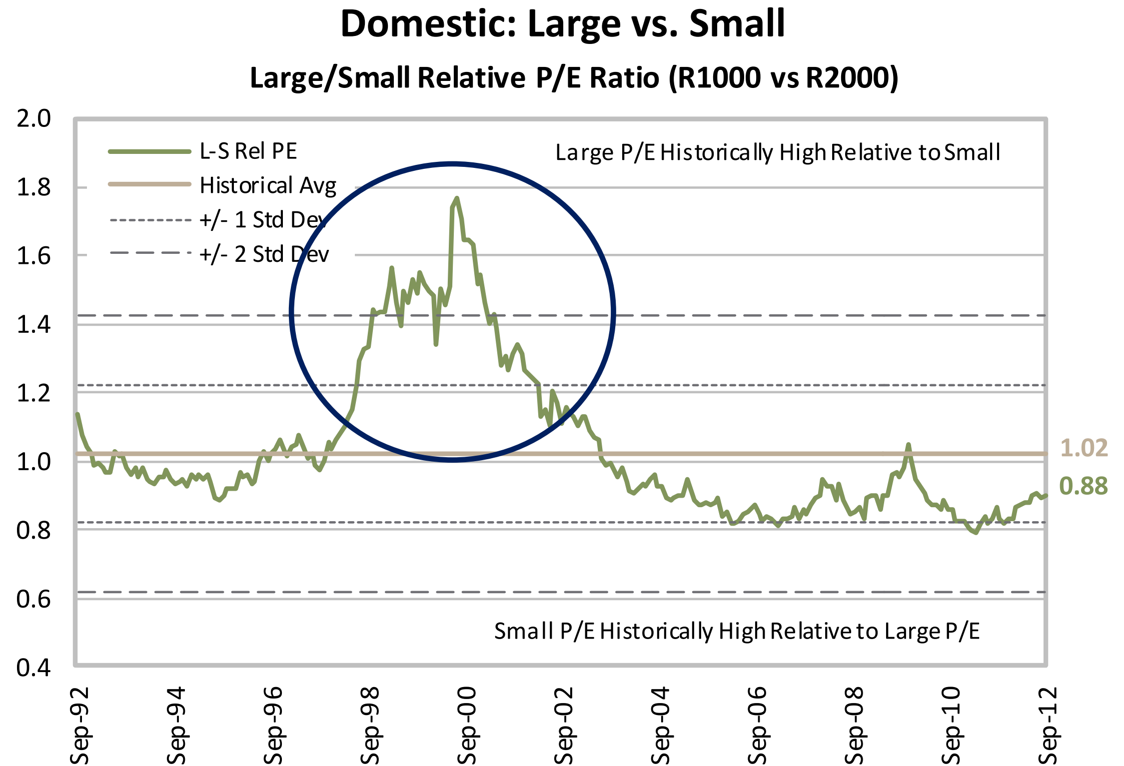
- A high conviction manager underperforms badly. Do you stay or go?
  - Was the firm sold? No
  - Had the AUM changed dramatically? No
  - Did the team leave/experience turnover? No
  - Did the process change? No
  - Were the markets rewarding their approach? No!



AVOIDING CONVENTIONALITY TRAP

- Recognizing the opportunity in small cap after large cap run up during the technology boom

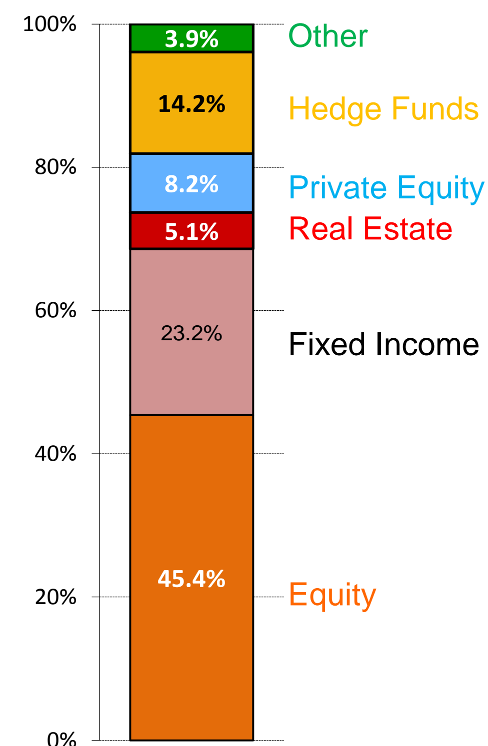
September 1999



UNDERESTIMATING LIQUIDITY NEEDS

- Being unable to turn an investment into cash at a reasonable price represents a real risk
- Endowments and Foundations experienced the severity of this risk in 2008. Managing cash needs proved challenging for many investors:
  - According to Greenwich, in 2008, the average allocation to alternatives was approximately 27.5%
    - Even larger number for some organizations, leading to unplanned changes to asset allocation to meet obligations
- Key is being able to avoid forced liquidations
  - Liquidity needs must be examined as part of asset allocation discussions
  - Determine optimal mix of liquid and illiquid in the portfolio

Endowment & Foundation Asset Allocation 2008*



* Greenwich Associates, Market Trends 2011, United States Investment Consulting Business

Is it risky or not?
It depends

- Non-statistical measures of risk affect each investor differently
- Consider decisions in the context of your situation
- Establish realistic goals and objectives
- Risk assessment key to success
- Take advantage of market opportunities after careful consideration

RISK AND INVESTING: FINAL THOUGHTS

- Investors are by nature risk averse
  - Higher risk requires prospect for higher return
- Risk is multi-dimensional and difficult to precisely measure
  - Statistical
  - Non-Statistical
- Diversification of assets doesn't guarantee diversification of risk
  - Examine portfolio in context of a wide range of potential outcomes
- Careful assessment of portfolio risk imperative to success
  - No "modeling" approach offers certainty about the future
- Risk is dynamic and ever-changing
  - No longer "set it and forget it"

> "…you need comfort that the risk and exposure are understood, appropriately managed, and made more transparent for everyone…This is not risk aversion; it is risk intelligence."
>
> - Rick Funston (Deloitte & Touche)

QUESTIONS AND ANSWERS

Disclaimer: Summit Strategies Group (Summit) has prepared this report for the exclusive use by the client for which it was prepared. The information herein was obtained from various sources, such as the client's custodian(s) accounting statements, commercially available databases, and other economic and financial market data sources. While Summit believes these sources to be reliable, Summit does not guarantee nor shall be liable for the market values, returns or other information contained in this report. The market commentary, portfolio holdings and characteristics are as of the date shown and are subject to change. Past performance is not an indication of future performance. No graph, chart, or formula can, in and of itself, be used to determine which securities or investments to buy or sell. Any forward-looking projection contained herein is based on assumptions that Summit believes may be reasonable, but are subject to a wide range of risks, uncertainties and the possibility of loss. Accordingly, there is no assurance that any estimated performance figures will occur in the amounts and during the periods indicated, or at all. Actual results and performance will differ from those expressed or implied by such forward-looking projections. Any information contained in this report is for information purposes only and should not be construed to be an offer to buy or sell any securities, investment consulting or investment management services.