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Investing Across Periods: Asset Allocation Beyond Traditional Risk Budgeting and Risk Parity

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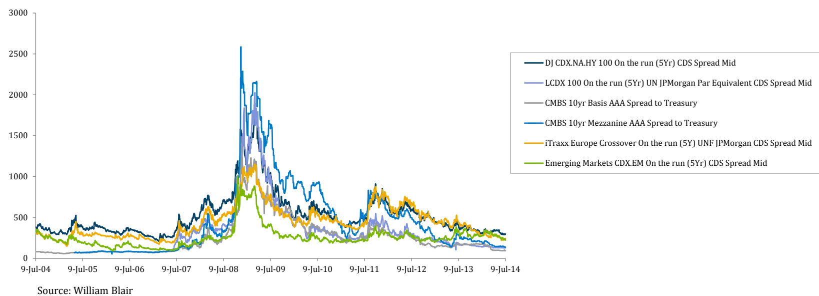
Allocating Risk Across Periods is Important

- Investment opportunities vary widely through time.
- Looking back at the 2006-2010 period in fixed income markets, investing with fixed risk budgets led to:
  - Increasing exposures when spreads are tight
  - Decreasing exposures when spreads are wide

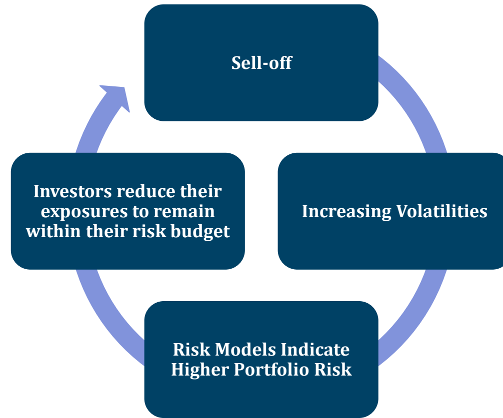


Source: William Blair

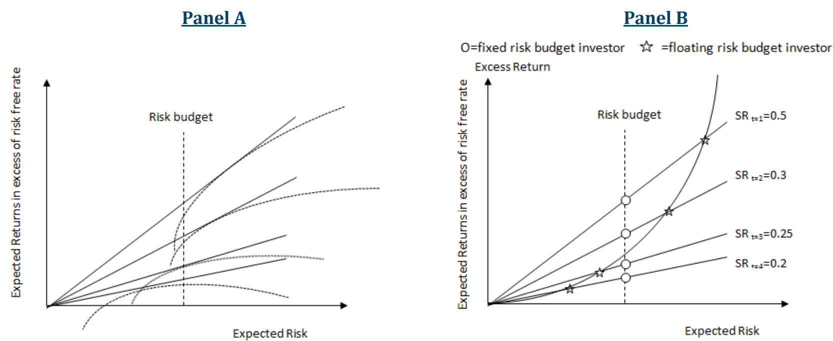
- Implication: it is critical to focus not only to allocating capital across assets (***where***), but also to focus on allocating risk capital across periods (***when***)

Endogenous Risk

- Risk Management can be counter-productive
- A fixed risk budget can create a pro-cyclical return profile



Measuring the Investment Opportunity Set



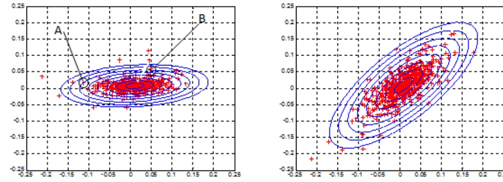
- The ex-ante Sharpe Ratio provides a measure of risk-adjusted investment opportunities
- This measure is independent of the investor's risk/return preference

Sharpe Ratio: A risk-adjusted measure calculated using standard deviation and excess return (Portfolio return – Risk Free Rate) to determine reward per unit of risk. The higher the Sharpe Ratio, the better the portfolio's historic risk-adjusted performance.

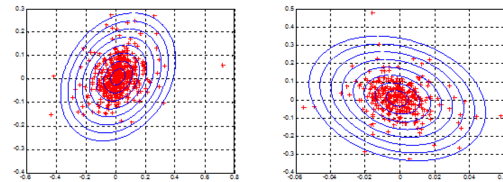
Past returns are no guarantee of future performance.

Measuring Investment Opportunities with the Mahalanobis Distance

Panel A: MSCI USA (x-axis) / Barclays Global Aggregate (y-axis) **Panel B: MSCI USA (x-axis) / MSCI Canada (y-axis)**



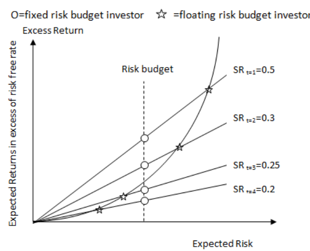
Panel C: MSCI Italy (x-axis) / MSCI Hong-Kong (y-axis) **Panel D: SGD-USD (x-axis) / Oil Price WTI (y-axis)**



Past returns are no guarantee of future performance. An investment in an unmanaged index is not possible.

Where to Take Risk and **When** to Take Risk?

- There are two components to strategy long-term Sharpe Ratio:
  - The expected value of Sharpe ratios in each period
  - The variations in the Sharpe ratios in each period
- **Everything else equal larger variations in Sharpe Ratio → Higher long term Sharpe Ratio**



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Application: Measuring Investment Opportunities Across Asset Classes

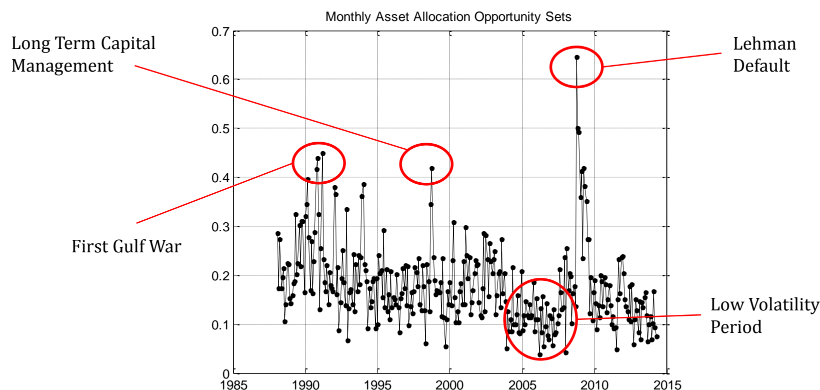
- Alphas are unique to every manager and can not be reliably observed
- However, alphas should explain variations in realized returns
- Therefore variation in realized returns should provide in indication of variation in alpha

- Application to a 7-asset classes universe from December 1987 to March 2014:

Fixed-Income:
- US Treasuries (Barclays Capital US Treasuries Index)
- Ex-US Treasuries (Barclays Capital Global Treasuries ex-US Index)
- Investment Grade Bonds (Barclays Capital US Corporate Investment Grade Index)
- High-Yield Bonds (Barclays Capital US Corporate High Yield Index)

Equities:
- US Equities (MSCI USA Index)
- Non-US Equities (MSCI World ex-USA)
- Emerging Markets (MSCI Emerging Market)

Opportunities: 80% Where / 20% When



During the January 1988 – March 2014 Period

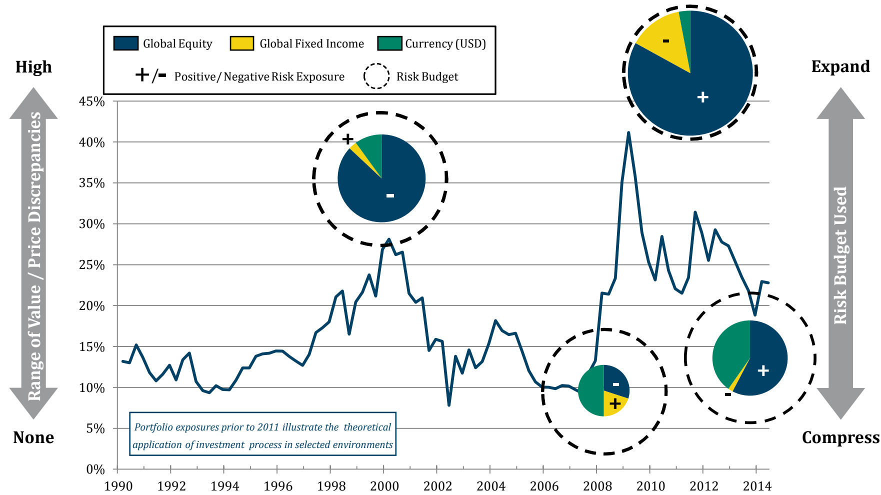
→ 20% of the opportunity set can be attributed to the allocation of risk across period (when)

→ 80% of the opportunity set can be attributed to the allocation of risk across assets (where)

Source: William Blair

Representative Risk Capital Allocation Over Time

Representative risk budget deployment in selected market environments



As of June 30, 2014.
Source: Shiller, MSCI, Bloomberg, Datastream, William Blair.
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Conclusion

> **“We simply attempt to be fearful when others are greedy and to be greedy only when others are fearful”**
> *– Warren Buffet, Berkshire Hathaway 1986 Investment Letter*

- To maximize the use of one’s risk budget over time it is critical to not only focus on the allocation of risk capital across assets (where) but also to focus on the allocation of risk capital across periods (when)
- The key benefit of this approach are:
  - Increase Long Term Sharpe Ratio by taking advantage of fluctuations in investment opportunities
  - Avoid being lured by small opportunities during times of low volatilities
  - Decrease correlations with other investors
  - Decrease endogenous risk