Decision Critical Resources

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Portfolio Construction and Asset Allocation

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- Traditional asset classing has proved inadequate to the task of generating acceptable risk-adjusted returns over time
- Subdividing highly risky assets such as domestic and international equities into market cap and style baskets is incapable of diversifying portfolio risk in volatile market environments
- A stock/cash/bond asset class approach is inherently limited and does little to address tail-risk

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- The key task is to identify return generating assets that are not highly correlated with traditional asset classes and do not participate in correlation “spikes” when risk premiums rise

- This reduces portfolio dependence on trending equity markets to generate return...

- And reduces the reliance on fixed income markets to control overall portfolio volatility

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- The introduction of alternative investments addresses many of the shortcomings associated with traditional portfolio construction methods
- The result is reduced portfolio volatility and a more efficient portfolio with higher Sharpe/Information ratios
- Thus, the central tenet of MPT as laid out by Markowitz
  – a focus on controlling risk through the construction of a "portfolio of diversified financial assets with low correlations to each other" -

  requires a thoughtful approach for blending alternatives with traditional investments

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- The key is to identify alternative asset classes and strategies that are not subject to the structural risks typically associated with Alts
  - Limited liquidity
  - Lockups
  - High fee structures
  - Performance fees
  - Accredited investor rules
  - Fraud
- Registered vehicles – open ended mutual funds and ETF’s – offer the safest and most practical solution for the vast majority of investors

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- The fact that alternatives mitigate the risk associated with traditional investments make them more suitable for conservative portfolios rather than aggressive ones
- This leads to the inevitable question...
  - **What are alts**
  - **And how should they be used?**
- Most asset allocation programs appear not to have grasped the reality of alternatives

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Investable alternatives fall into two broad categories:

- **Alternative Investment Strategies…**
  - **Absolute Return / Hedge Fund**
    - Free to Roam – Multiple Asset Classes
    - Long/Short
  - **Long/Short Equity**
    - 130/30
    - Long Bias
    - Market Neutral
  - **Managed Futures**
    - 50/50 Financials and Commodities
    - Long/Short
    - Trend Following

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- **… and Alternative Asset Classes**
  - **Commodity**
    - Long Only
    - Long/Short
  - **Currency**
    - Long Only
    - Harvest/Arbitrage
  - **Real Estate**

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Investment Characteristics of Alternatives

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- Alternatives offer an additional – and diversifying – source of return

(Periods of positive return shown in green)

Annualized Returns as of 6/30/10	10 Years	5 Years	3 Years	1 Year
S&P 500	-3.36%	-2.81%	-11.52%	+11.13%
Barclays Aggregate Index	+0.43%	+0.73%	+2.85%	+4.60%
CS/Tremont Hedge Index	+5.60%	+3.96%	-2.43%	-0.57%
CS/Tremont Long/Short Equity Index	+5.29%	+5.92%	-0.60%	+8.38%
DJ AIG Commodity Index	+1.83%	-3.77%	-9.26%	+2.41%
US Dollar (DXY) Index	-2.13%	-0.69%	+1.60%	+6.76%
S&P % 500 REIT Index	-3.33%	-6.50%	-14.78%	+46.45%
S&P DTI (Managed Futures) Index	+5.08%	+3.67%	+1.11%	-4.78%

Source: Decision Critical Resources, Bloomberg

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- And far lower inherent volatility than stocks

(Areas in green denote lower volatility than stocks)

Annual Standard Deviations a/o 06/30/10	10 Years	5 Years	3 Years	1 Year
S& P 500	16.46%	17.31%	21.31%	16.92%
Barclays Aggregate Index	3.53%	4.57%	5.34%	3.76%
CS/Tremont Hedge Index	6.76%	8.91%	10.74%	12.77%
CS/Tremont Long/Short Equity Index	7.54%	8.99%	10.26%	7.60%
DJ AIG Commodity Index	17.87%	21.04%	24.68%	13.45%
US Dollar (DXY) Index	8.53%	8.88%	10.61%	8.28%
S&P 500 REIT Index	24.69%	35.04%	43.84%	22.84%
S&P DTI (Managed Futures) Index	7.66%	8.62%	10.34%	5.72%

Source: Decision Critical Resources, Bloomberg

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- The key from a portfolio construction standpoint, however, is correlation
  - Traditional asset classing provides a diversification benefit but is limited

Monthly correlations 06/30/2000 – 06/30/2010

	S&P 500	10-Yr. Comp.	10-Yr .A Comp.
S&P 500	1.00	0.27	-0.08
Generic 10-Year UST	0.27	1.00	0.75
10-Year A Rated Composite	-0.08	0.75	1.00

Source: Decision Critical Resources, Bloomberg

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- Style-box allocations are ineffective at diversifying equity risk

Monthly correlations 06/30/2000 – 06/30/2010

	S&P 500 INDEX	S&P 400 MIDCAP INDEX	RUSSELL 2000 INDEX	S&P 500/CITIGRP PURE GRW	S&P 500/CITIGRP PURE VAL	S&P 400/CITIGROUP GROWTH	S&P 400/CITIGROUP VALUE	RUSSELL 2000 GROWTH IDX	RUSSELL 2000 VALUE IDX
S&P 500 INDEX	1.00	0.92	0.88	0.93	0.81	0.91	0.89	0.88	0.82
S&P 400 MIDCAP INDEX	0.92	1.00	0.96	0.90	0.84	0.98	0.97	0.93	0.91
RUSSELL 2000 INDEX	0.88	0.96	1.00	0.88	0.83	0.92	0.94	0.97	0.96
S&P 500/CITIGRP PURE GRW	0.93	0.90	0.88	1.00	0.69	0.92	0.82	0.93	0.75
S&P 500/CITIGRP PURE VAL	0.81	0.84	0.83	0.69	1.00	0.75	0.89	0.72	0.89
S&P 400/CITIGROUP GROWTH	0.91	0.98	0.92	0.92	0.75	1.00	0.90	0.94	0.82
S&P 400/CITIGROUP VALUE	0.89	0.97	0.94	0.82	0.89	0.90	1.00	0.87	0.95
RUSSELL 2000 GROWTH IDX	0.88	0.93	0.97	0.93	0.72	0.94	0.87	1.00	0.85
RUSSELL 2000 VALUE IDX	0.82	0.91	0.96	0.75	0.89	0.82	0.95	0.85	1.00

Source: Decision Critical Resources, Bloomberg

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- The addition of international equities also does little to reduce risk

Monthly correlations 06/30/2000 – 06/30/2010

	S&P 500 INDEX	MSCI EAFE	MSCI EM	DJ EURO STOXX 50 € Pr	FTSE 100 INDEX	DAX INDEX	CAC 40 INDEX	NIKKEI 225	HANG SENG INDEX	SHANGHAI SE COMPOSITE IX
S&P 500 INDEX	1.00	0.88	0.81	0.89	0.87	0.87	0.88	0.64	0.73	0.29
MSCI EAFE	0.88	1.00	0.89	0.85	0.86	0.80	0.84	0.73	0.80	0.35
MSCI EM	0.81	0.89	1.00	0.76	0.76	0.74	0.75	0.70	0.86	0.40
DJ EURO STOXX 50 € Pr	0.89	0.85	0.76	1.00	0.90	0.96	0.98	0.62	0.67	0.26
FTSE 100 INDEX	0.87	0.86	0.76	0.90	1.00	0.86	0.91	0.63	0.69	0.22
DAX INDEX	0.87	0.80	0.74	0.96	0.86	1.00	0.95	0.56	0.66	0.24
CAC 40 INDEX	0.88	0.84	0.75	0.98	0.91	0.95	1.00	0.63	0.66	0.23
NIKKEI 225	0.64	0.73	0.70	0.62	0.63	0.56	0.63	1.00	0.60	0.29
HANG SENG INDEX	0.73	0.80	0.86	0.67	0.69	0.66	0.66	0.60	1.00	0.48
SHANGHAI SE COMPOSITE IX	0.29	0.35	0.40	0.26	0.22	0.24	0.23	0.29	0.48	1.00

Source: Decision Critical Resources, Bloomberg

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- Alternatives, on the other hand, exhibit attractive correlation characteristics and are useful for reducing portfolio risk

Monthly correlations 06/30/2000 – 06/30/2010

	S&P 500 INDEX	Credit Suisse Tremont Hedge Fund	Credit Suisse Tremont Long Short	DJAIG AIG COMMODITY IDX	S&P 500 REAL EST INV IDX	DOLLAR INDEX SPOT	S&P Diversified Trends Indicator
S&P 500 INDEX	1.00	0.64	0.71	0.33	0.52	-0.27	-0.26
Credit Suisse Tremont Hedge Fund	0.64	1.00	0.93	0.63	0.37	-0.45	0.01
Credit Suisse Tremont Long Short	0.71	0.93	1.00	0.57	0.45	-0.46	0.04
DJAIG AIG COMMODITY IDX	0.33	0.63	0.57	1.00	-0.08	-0.49	0.21
S&P 500 REAL EST INV IDX	0.52	0.37	0.45	-0.08	1.00	-0.19	-0.14
DOLLAR INDEX SPOT	-0.27	-0.45	-0.46	-0.49	-0.19	1.00	0.03
S&P Diversified Trends Indicator	-0.26	0.01	0.04	0.21	-0.14	0.03	1.00

Source: Decision Critical Resources, Bloomberg

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- How did correlations behave during the financial crisis?
  - Style-box correlations spiked and became nearly perfectly correlated

Daily correlations 9/15/2008 – 3/09/2009

Security	S&P 500 INDEX	S&P 400 MIDCAP INDEX	RUSSELL 2000 INDEX	S&P 500/CITIGRP PURE GRW	S&P 500/CITIGRP PURE VAL	S&P 400/CITIGROUP GROWTH	S&P 400/CITIGROUP VALUE	RUSSELL 2000 GROWTH IDX	RUSSELL 2000 VALUE IDX
S&P 500 INDEX	1	0.966	0.933	0.985	0.937	0.961	0.962	0.937	0.922
S&P 400 MIDCAP INDEX	0.966	1	0.979	0.979	0.94	0.995	0.997	0.983	0.967
RUSSELL 2000 INDEX	0.933	0.979	1	0.943	0.927	0.965	0.983	0.994	0.996
S&P 500/CITIGRP PURE GRW	0.985	0.979	0.943	1	0.924	0.982	0.968	0.956	0.923
S&P 500/CITIGRP PURE VAL	0.937	0.94	0.927	0.924	1	0.921	0.949	0.913	0.932
S&P 400/CITIGROUP GROWTH	0.961	0.995	0.965	0.982	0.921	1	0.983	0.977	0.947
S&P 400/CITIGROUP VALUE	0.962	0.997	0.983	0.968	0.949	0.983	1	0.98	0.977
RUSSELL 2000 GROWTH IDX	0.937	0.983	0.994	0.956	0.913	0.977	0.98	1	0.981
RUSSELL 2000 VALUE IDX	0.922	0.967	0.996	0.923	0.932	0.947	0.977	0.981	1

Source: Decision Critical Resources, Bloomberg

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- How did correlations behave during the financial crisis?
  - Correlations between US and international equity markets declined but remained, for the most part above +.5

Daily correlations 9/15/2008 – 3/09/2009

Security	S&P 500 INDEX	MSCI EAFE	MSCI EM	DJ EURO STOXX 50 € Pr	FTSE 100 INDEX	DAX INDEX	CAC 40 INDEX	NIKKEI 225	HANG SENG INDEX	SHANGHAI SE COMPOSITE IX
S&P 500 INDEX	1.00	0.46	0.52	0.62	0.57	0.68	0.58	0.19	0.41	0.11
MSCI EAFE	0.46	1.00	0.86	0.89	0.89	0.81	0.89	0.78	0.66	0.36
MSCI EM	0.52	0.86	1.00	0.77	0.76	0.75	0.76	0.75	0.85	0.49
DJ EURO STOXX 50 € Pr	0.62	0.89	0.77	1.00	0.95	0.94	0.98	0.55	0.52	0.28
FTSE 100 INDEX	0.57	0.89	0.76	0.95	1.00	0.88	0.96	0.55	0.50	0.23
DAX INDEX	0.68	0.81	0.75	0.94	0.88	1.00	0.89	0.52	0.54	0.26
CAC 40 INDEX	0.58	0.89	0.76	0.98	0.96	0.89	1.00	0.55	0.51	0.28
NIKKEI 225	0.19	0.78	0.75	0.55	0.55	0.52	0.55	1.00	0.75	0.44
HANG SENG INDEX	0.41	0.66	0.85	0.52	0.50	0.54	0.51	0.75	1.00	0.59
SHANGHAI SE COMPOSITE IX	0.11	0.36	0.49	0.28	0.23	0.26	0.28	0.44	0.59	1.00

Source: Decision Critical Resources, Bloomberg

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- How did correlations behave during the financial crisis?
  - Despite perceptions to the contrary, alt correlations still provided a critical diversification benefit

Weekly correlations 9/15/2008 – 3/09/2009

	S&P 500 INDEX	Credit Suisse Tremont Hedge Fund	Credit Suisse Tremont Long Short	DJAIG AIG COMMODITY IDX	FTSE NAREIT COMPOSITE TR	DOLLAR INDEX SPOT	S&P Diversified Trends Indicator
S&P 500 INDEX	1.00	0.31	0.46	0.68	0.76	-0.63	-0.70
Credit Suisse Tremont Hedge Fund	0.31	1.00	0.86	0.73	0.41	-0.48	-0.83
Credit Suisse Tremont Long Short	0.46	0.86	1.00	0.69	0.52	-0.73	-0.84
DJAIG AIG COMMODITY IDX	0.68	0.73	0.69	1.00	0.50	-0.63	-0.94
FTSE NAREIT COMPOSITE TR	0.76	0.41	0.52	0.50	1.00	-0.63	-0.57
DOLLAR INDEX SPOT	-0.63	-0.48	-0.73	-0.63	-0.63	1.00	0.78
S&P Diversified Trends Indicator	-0.70	-0.83	-0.84	-0.94	-0.57	0.78	1.00

Source: Decision Critical Resources, Bloomberg

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The Implications for Portfolio Construction

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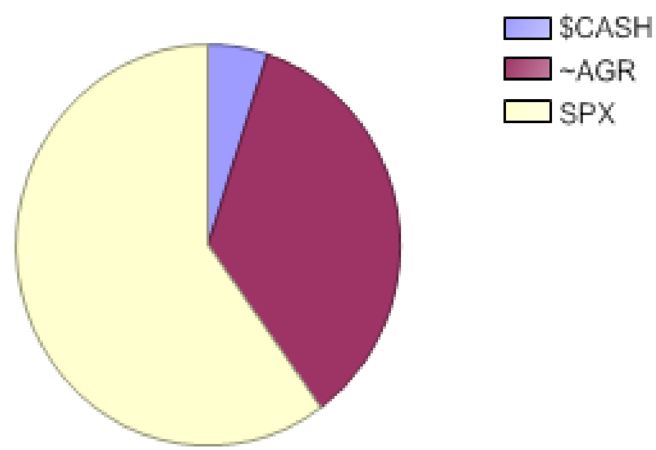
Moderate Benchmark June 2007 to June 2010
Benchmark Composition: S&P 500, Barclay's Aggregate Index, Cash Index

Annualized Total Returns – ETF data

Ticker	Amount	Weight(%)	Return	Std Dev
CASH	50.00	**5.00**	0.09%	0.51%
Barclay Agg.	350.00	**35.00**	2.85%	5.34%
S&P 500	600.00	**60.00**	-11.52%	21.31%
Summary	1,000.00	100.00	**-5.92%**	**13.33%**



Source: Decision Critical Resources

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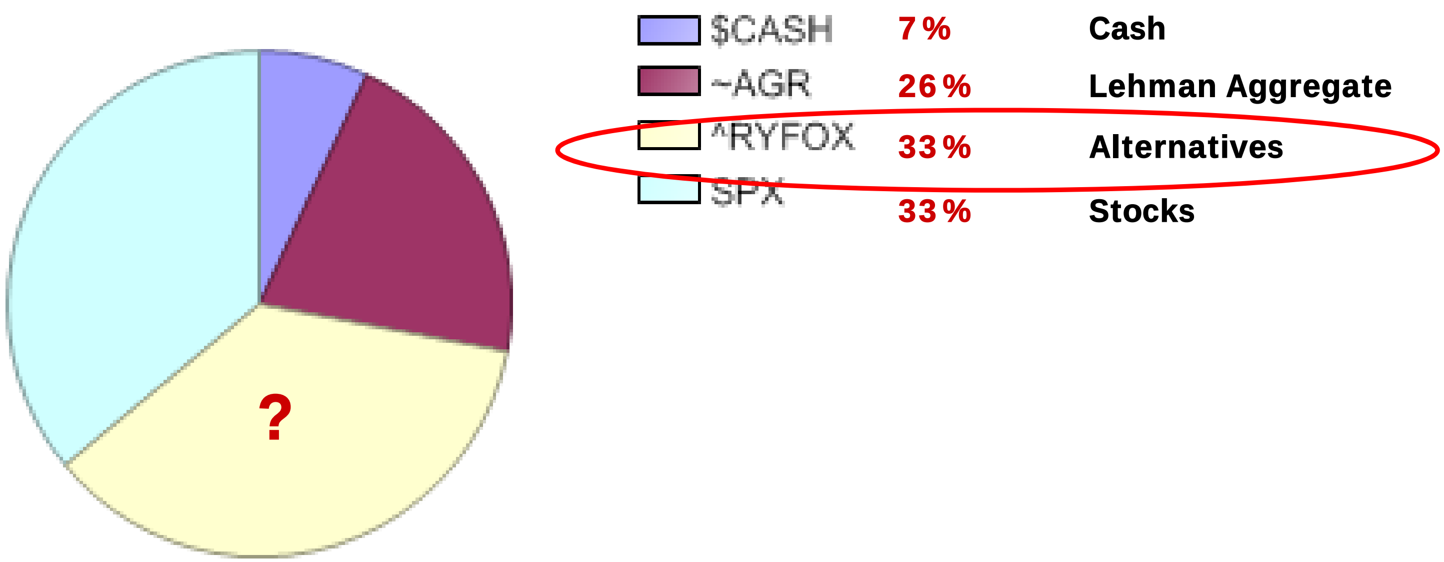
- What happens if we carve out a one-third slice for an equally weighted allocation to Alternatives?



Source: Decision Critical Resources

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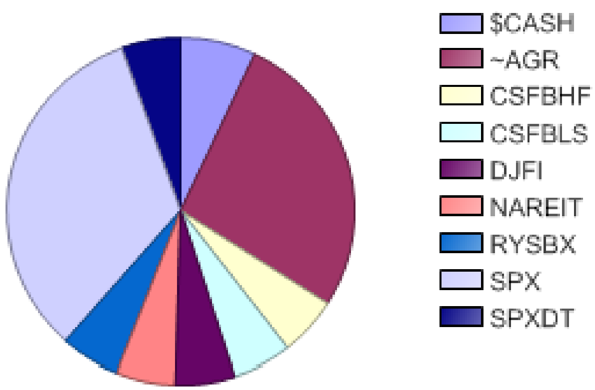
Moderate Portfolio with Alternatives June 2007 to June 2010

Ticker	Amount	Weight(%)	Return%	Std Dev%
CASH	700.00	7.00	0.09	0.51
Barclay Agg.	2,700.00	27.00	2.85	5.34
CS/T HF	550.00	5.50	-2.43	10.74
CS/T EQLS	550.00	5.50	-0.60	10.26
DJUBS Commodity	550.00	5.50	-9.26	24.68
S&P 500 REIT	550.00	5.50	-14.78	43.84
DXY	550.00	5.50	1.60	10.61
S&P 500	3,300.00	33.00	-11.52	21.31
SP DTI	550.00	5.50	1.11	10.34
Summary	10,000.00	100.00	**-4.38**	**10.41**



Source: Decision Critical Resources

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The result is an improvement in return and meaningful reduction in risk

	60/40 Portfolio	Portfolio w One-Third Alts	Percent Change
Return	-5.92%	-4.38%	+26.01%
Risk	13.33%	10.41%	-21.91%

Source: Decision Critical Resources

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- Moreover, this improvement is consistent over most measurement periods indicating that the addition of alternatives results in an improved portfolio across market cycles

Annualized performance as of 06/30/10

	10 Year	5 Year	3 Year	1 Year	9/08-4/09
Portfolio Return	-0.03%	-0.06%	-4.38%	+8.14%	-17.03%
Benchmark Return	-1.86%	-1.43%	-5.92%	+8.29%	-19.47%
Portfolio Risk	7.14%	8.37%	10.41%	7.48%	18.90%
Benchmark Risk	10.07%	10.73%	13.33%	9.93%	23.56%
Basis Point Chng. in Return	+183	+137	+154	-015	+244
Basis Point Chng. In Risk	-293	-236	-292	-245	-466

Source: Decision Critical Resources

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- The introduction of alternatives results in an accelerating improvement in portfolio return and risk characteristics as allocations increase

5-Year annualized performance as of 06/30/10

	S&P 500	Lehman Agg	Cash	EW Alts	Return	Risk	Ret Chg. from Prior	Risk Chg. from Prior
Moderate Benchmark	60.00%	35.00%	5.00%	0.00%	**-1.43%**	**10.73%**	**N.A.**	**N.A.**
Mod Bench w 10% Alts	55.00%	30.00%	5.00%	10.00%	**-1.28%**	**10.48%**	**+11.7%**	**-2.3%**
Mod Bench w 15% Alts	50.00%	30.00%	5.00%	15.00%	**-1.12%**	**9.98%**	**+12.5%**	**-4.8%**
Mod Bench w 20% Alts	45.00%	30.00%	5.00%	20.00%	**-0.01%**	**9.48%**	**N.A.**	**-5.0%**
Mod Bench w 25% Alts	40.00%	30.00%	5.00%	25.00%	**-0.01%**	**9.00%**	**N.A.**	**-5.1%**

Source: Decision Critical Resources, Bloomberg

Conclusion

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- As correlations among global equity and fixed income markets continues to increase, diversification of market risk will become more challenging
- The demise of the global, secular bull market of 1982 to 2000 makes the identification of non equity-based sources of return imperative
- Portfolio diversification, the central tenet in Markowitz's risk-based MPT model, is a practical impossibility without a robust embrace of alternatives

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- The era of the stock/bond buy-and-hold model has passed
- In an environment characterized by volatility and range-bound markets, relative return investing makes little sense
- Portfolios constructed of long-only strategies will be incapable of generating satisfactory returns over meaningful market cycles
- Strategic portfolio construction, the identification of a diverse mix of asset classes and investment strategies – rather than a search for alpha generating managers - offers the greatest opportunity for investment success going forward

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- Due to their return, volatility and correlation characteristics, alternative investments offer the greatest benefit for the moderate to conservative portfolio
- The move of alternative investment strategies into portfolio construction methodologies is an established fact and will accelerate from here
- The key is to utilize a quantitative approach the maximizes the risk mitigating potential of a broad cross-section of non-traditional assets

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- The marriage of quantitative portfolio construction techniques and traditional tactical asset allocation offers the highest likelihood of satisfactory risk-adjusted returns going forward

- Decision Critical Resources has constructed its business strategy around the implementation of portfolio construction methodologies that have proven their superiority to traditional industry approaches.

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