CheckRisk LLP

Simplifying the Complexity of Investment Risk

www.check-risk.com

Pattern Recognition

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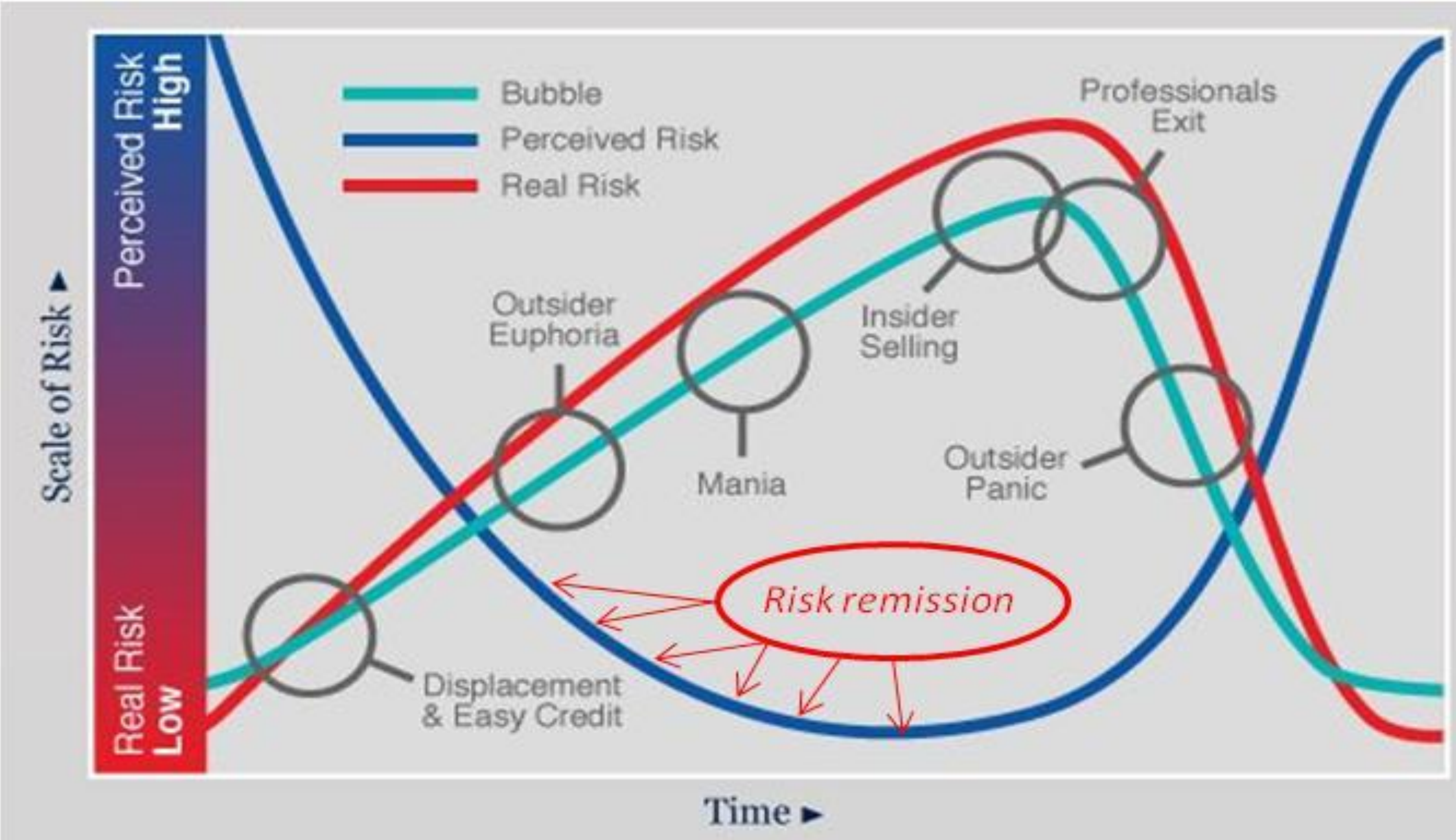
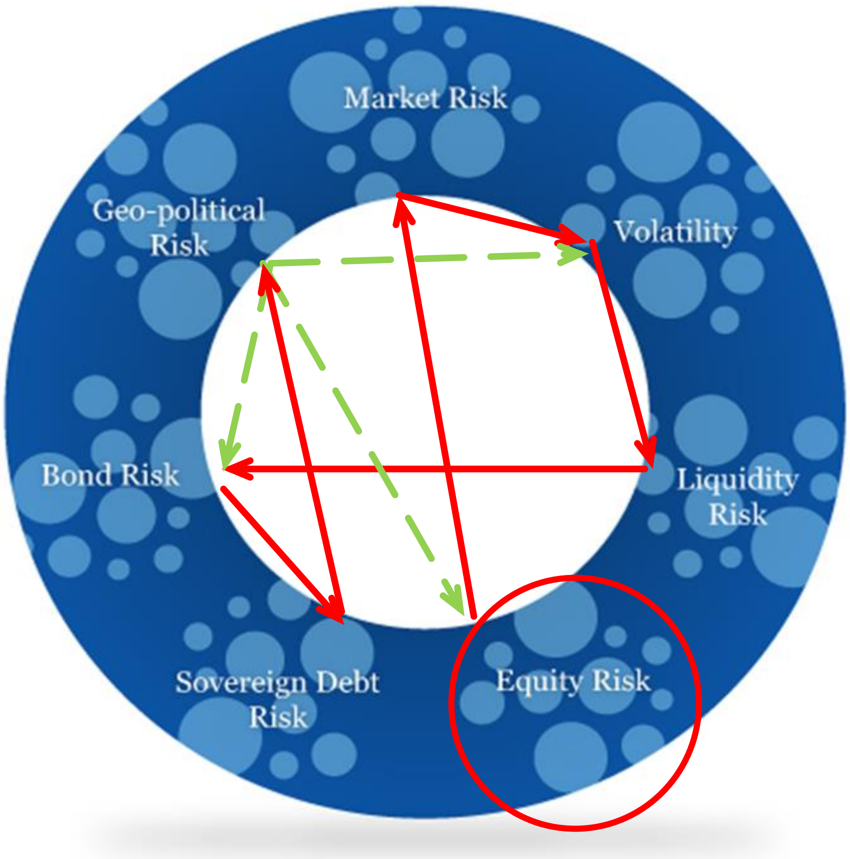
Perception of Risk vs. Real Risk



Clusters & Bridging



Risk clusters:

Risk events seldom occur in isolation

A risk event will by the level of its severity impact other risk factors forming risk clusters

Bridging of risk can occur <u>across</u> the system

This can happen during severe risk events and is counter intuitive, as in these circumstances, risk generates more risks to the point at which they begin to spread across the system.

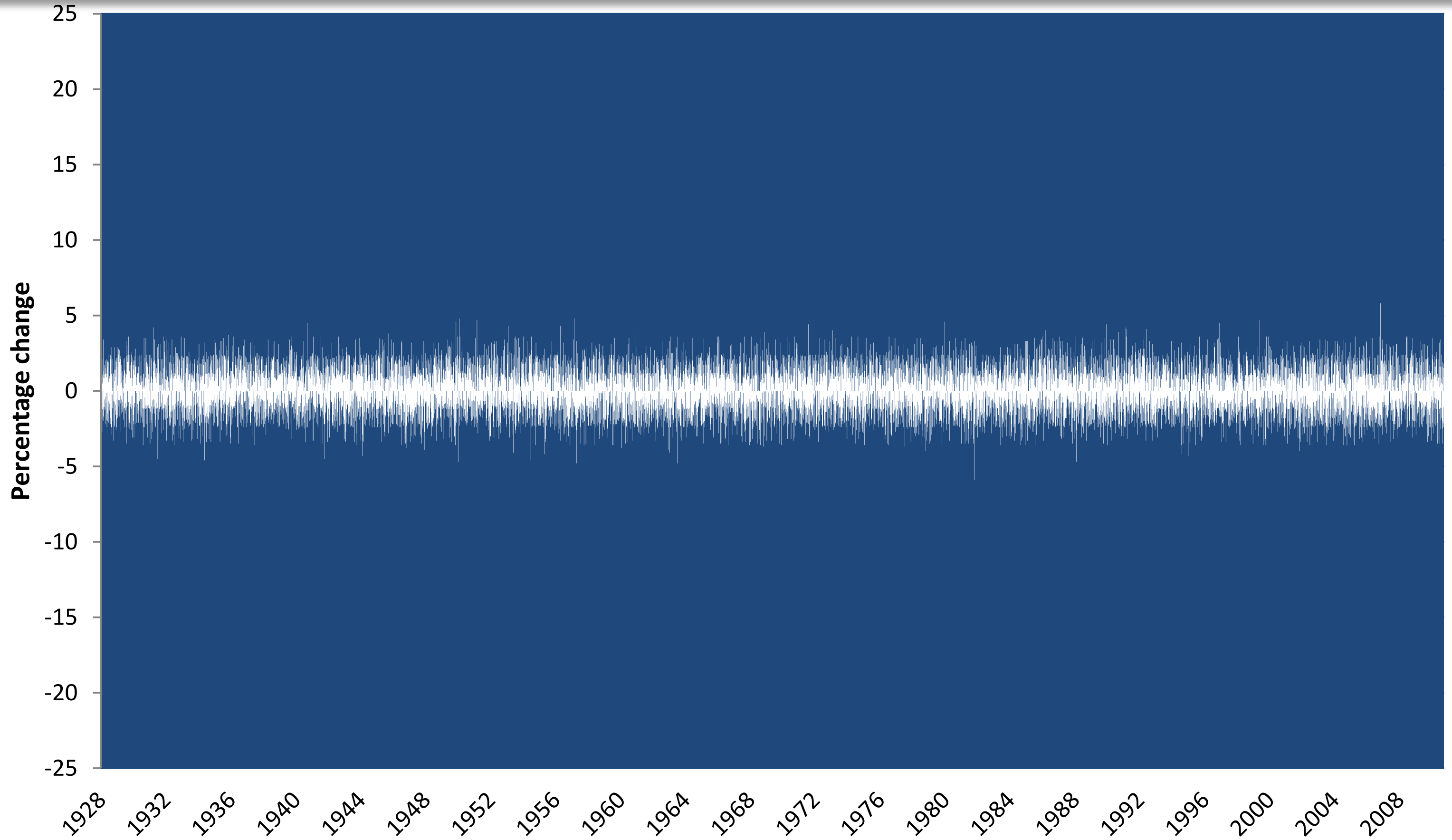
Clusters and bridges are therefore important to our knowledge of risk because understanding how they behave may help us to avoid further risk occurrences.

Source: CheckRisk LLP

Problems with VaR

		Normal Distribution		ACTUAL Distribution	
# of Standard Deviations from the Mean	Daily Return Range	Predicted	Percentage	Observed	Percentage
+6σ or more	Above +7.17%	0	0.00%	26	0.13%
+5σ	5.97% to +7.17%	0	0.00%	16	0.08%
+4σ	+4.78% to +5.97%	1	0.00%	32	0.15%
+3σ	+3.58% to + 4.78%	27	0.13%	99	0.48%
+2σ	+2.39% to + 3.58%	445	2.14%	297	1.43%
+1σ	+1.19% to +2.39%	2825	13.59%	1502	7.23%
0σ	-1.19% to +1.19%	14192	68.27%	16907	81.33%
-1σ	-1.19% to -2.39%	2825	13.59%	1394	6.71%
-2 σ	-2.39 % to -3.58%	445	2.14%	331	1.59%
-3σ	-3.58% to -4.78%	27	0.13%	101	0.49%
-4σ	-4.78% to -5.97%	1	0.00%	43	0.21%
-5 σ	- 5.97% to - 7.17%	0	0.00%	18	0.09%
-6 σ or more	Below -7.17%	0	0.00%	22	0.11%
Total	~	20,788	100%	20,788	100

Market According to VaR



What actually happened: Risk Clusters

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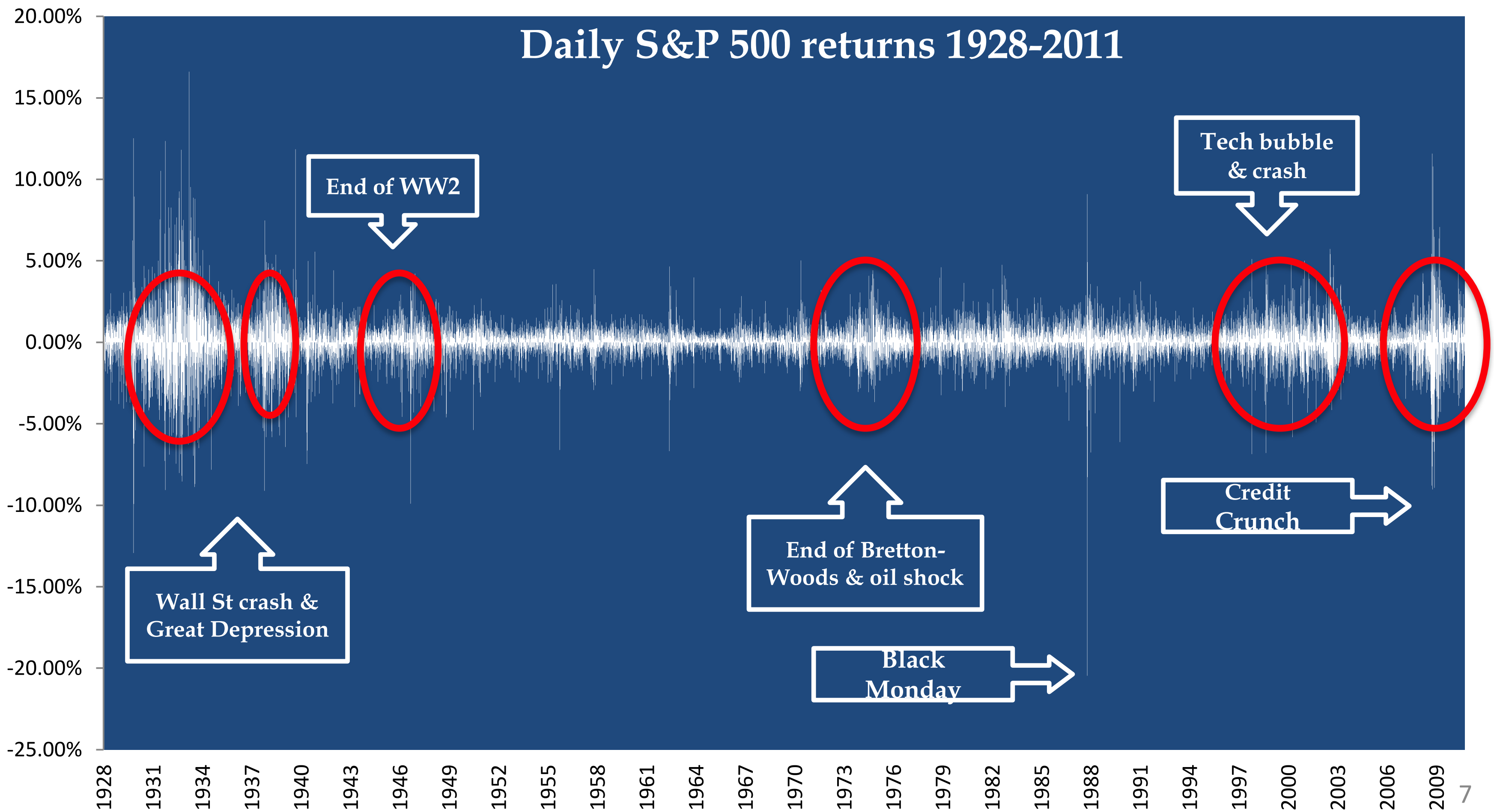
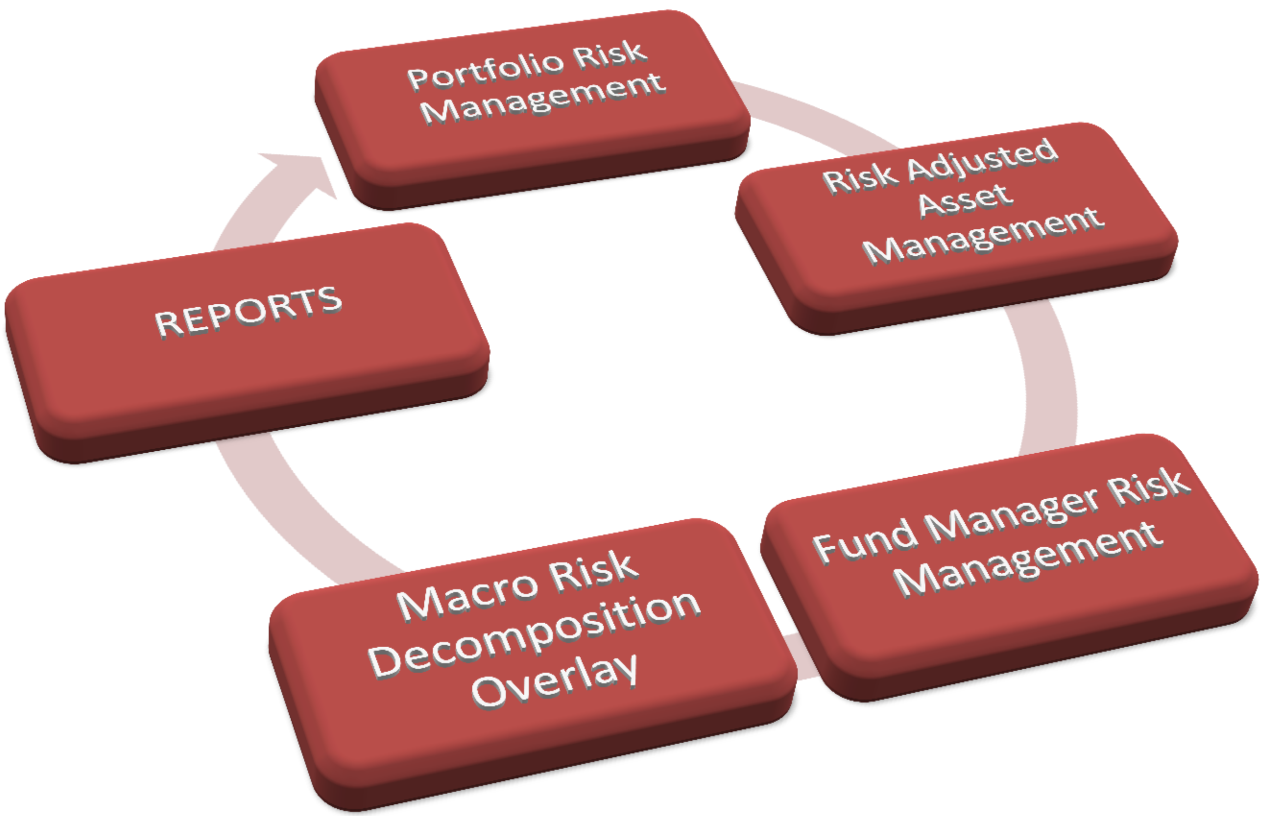


What a complete system should look like



A new approach to risk management

- **KEY WORDS**

  POSITIONAL AWARENESS

  ARE YOU BEING PAID TO TAKE RISK?

  ARE YOU OVER PAYING FOR RISK TAKEN?

  NETWORK RISKS

A new approach to risk management

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- **TOTAL RISK MONITORING SYSTEM**

PRMS: Portfolio Risk Monitoring System (Positional Awareness)

RAAM: Risk Adjusted Asset Management (Paid or not)

FMRMS: Fund Manager Risk Monitoring (Fit for Promise)

MRDO: Macro Risk Decomposition Overlay (Tail Risks)

Four Active Risks for 2014

1. **Interest Rate Shock Risk & QE**

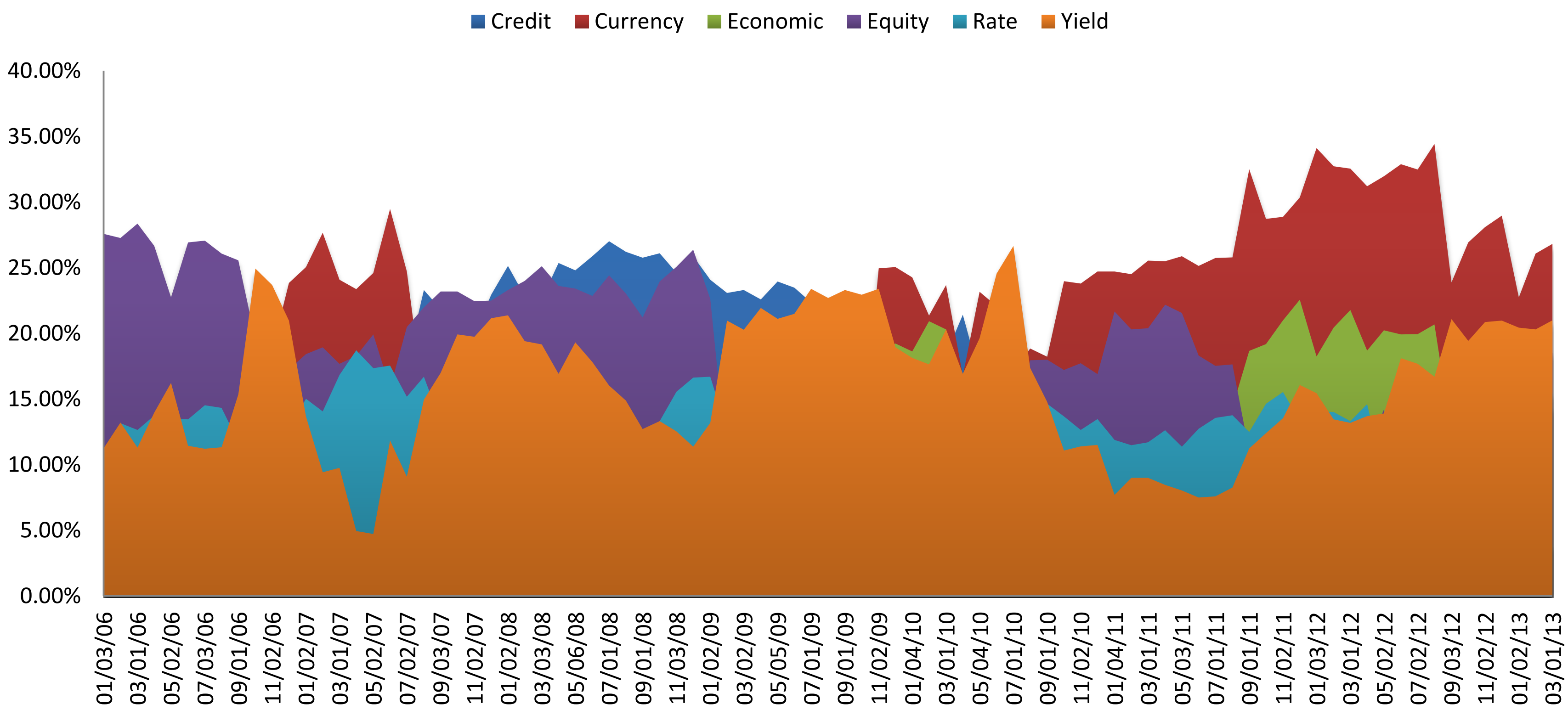
2. **Valuation Risk**

3. **Currency Wars**

4. **Sovereign Debt Risk**
   - **Tapering**
   - **Portugal Spain Italy France**
   - **EU/ECB Time Line**

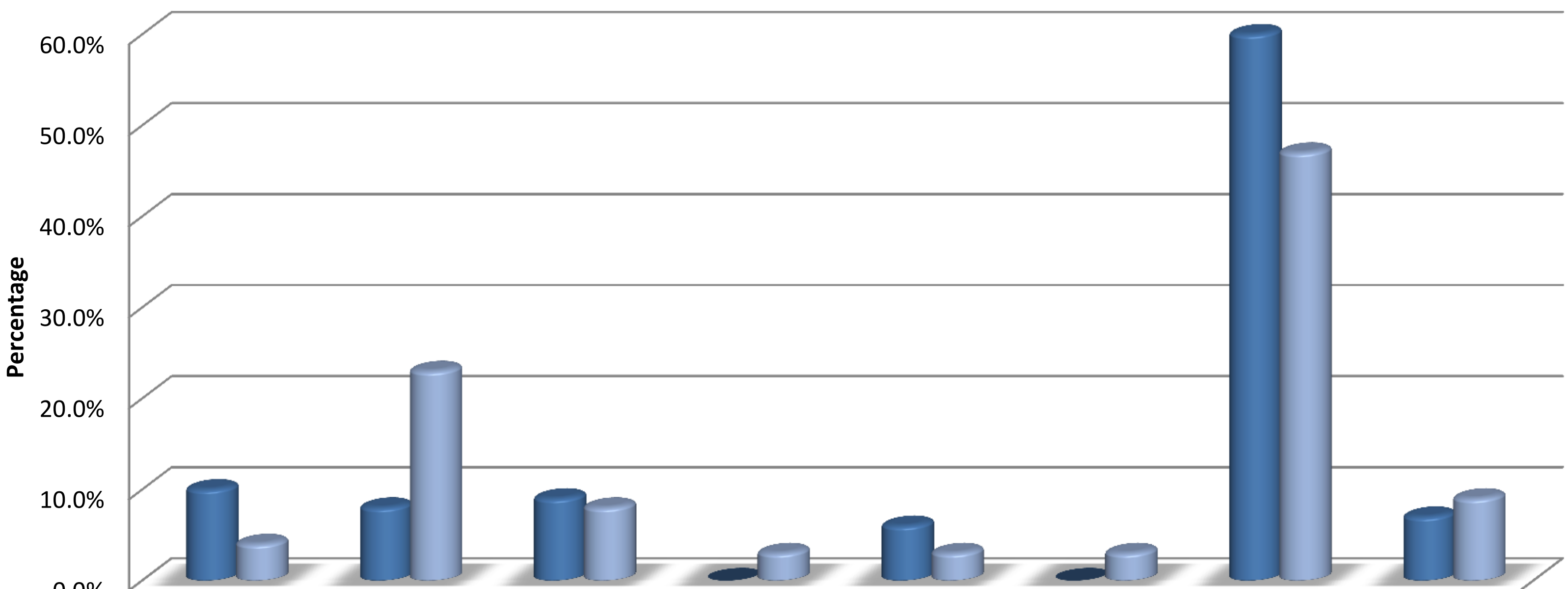
Segregating risk and recognising change

Historic Global High Yield Portfolio Risk Components



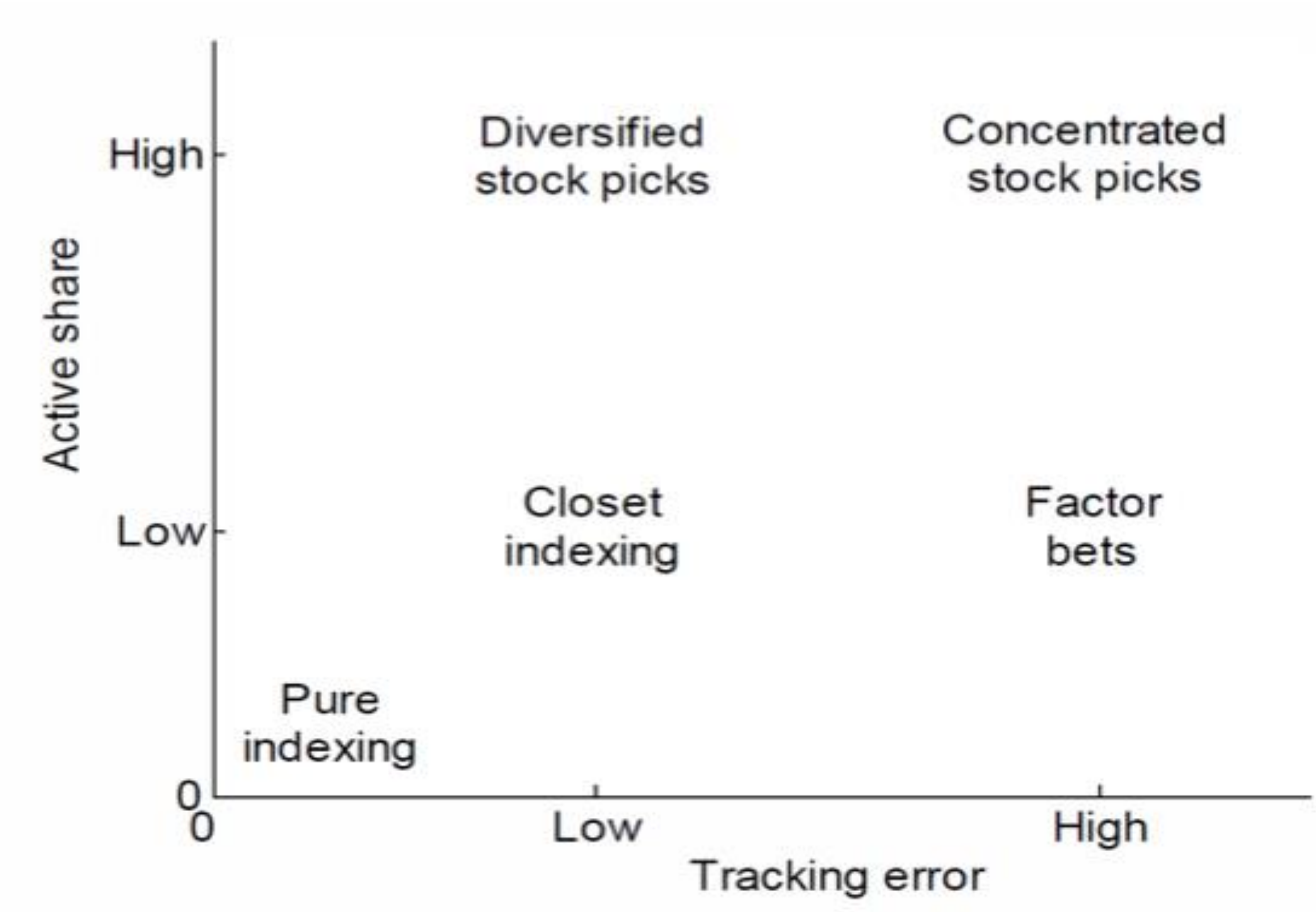
Risk Budgeting and Risk Appetite

RAAM Balanced Overweight/Underweight



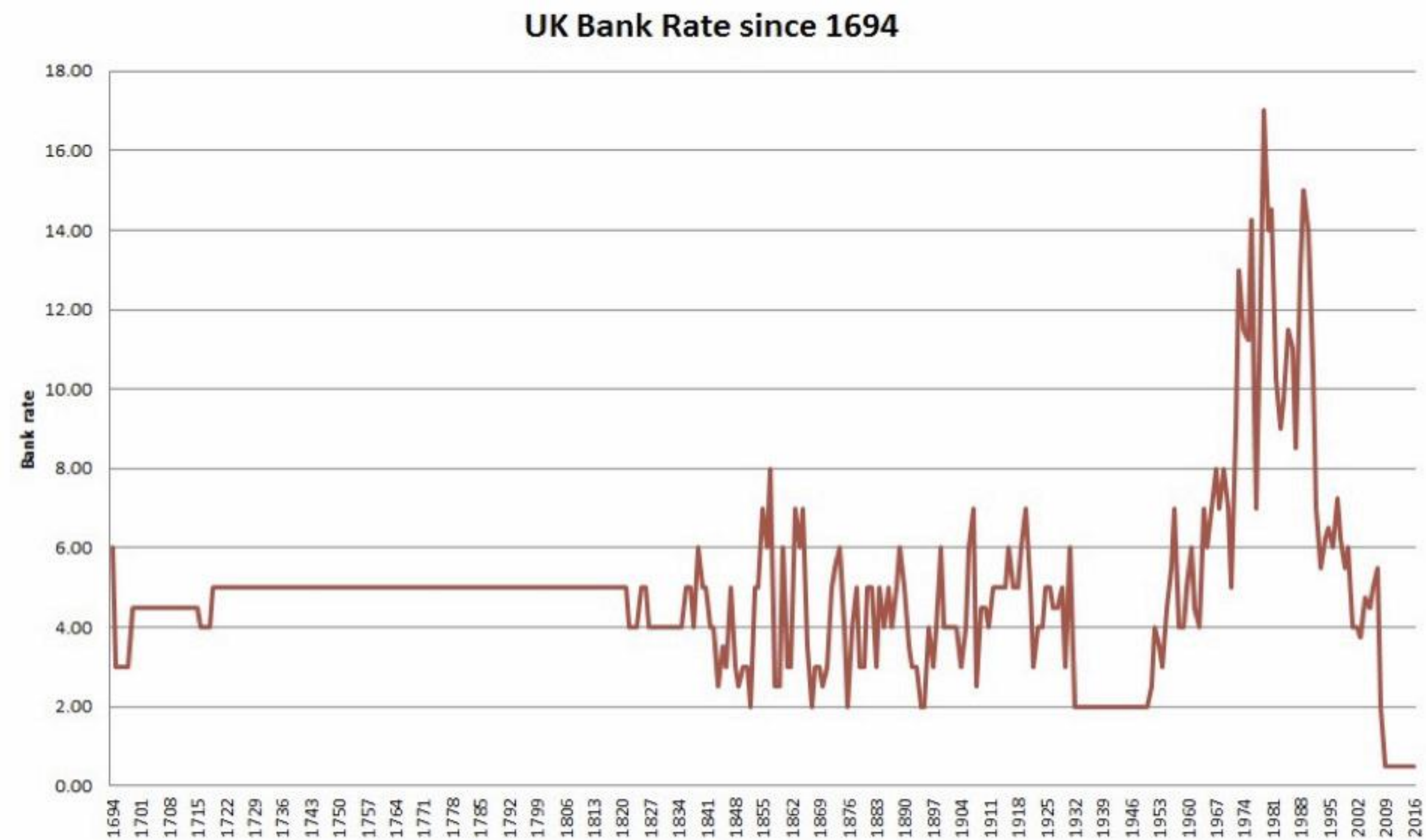
	Cash	Developed Government	Corporate Bond	EM Bond	High Yield	Global Inflation	Equities	Alternatives
RAAM	10.0%	8.0%	9.0%	0.0%	6.0%	0.0%	60.0%	7.0%
BL	4.0%	23.0%	8.0%	3.0%	3.0%	3.0%	47.0%	9.0%

Active Share & Tracking Error (ROC)



Interest Rates have never been so low

- **A GLOBAL PHENOMENON: UK BANK RATES SINCE 1694 RATES HAVE NEVER BEEN SO LOW**



Cyclically Adjusted Price Earnings S&P

Average Real Returns from Starting P/E

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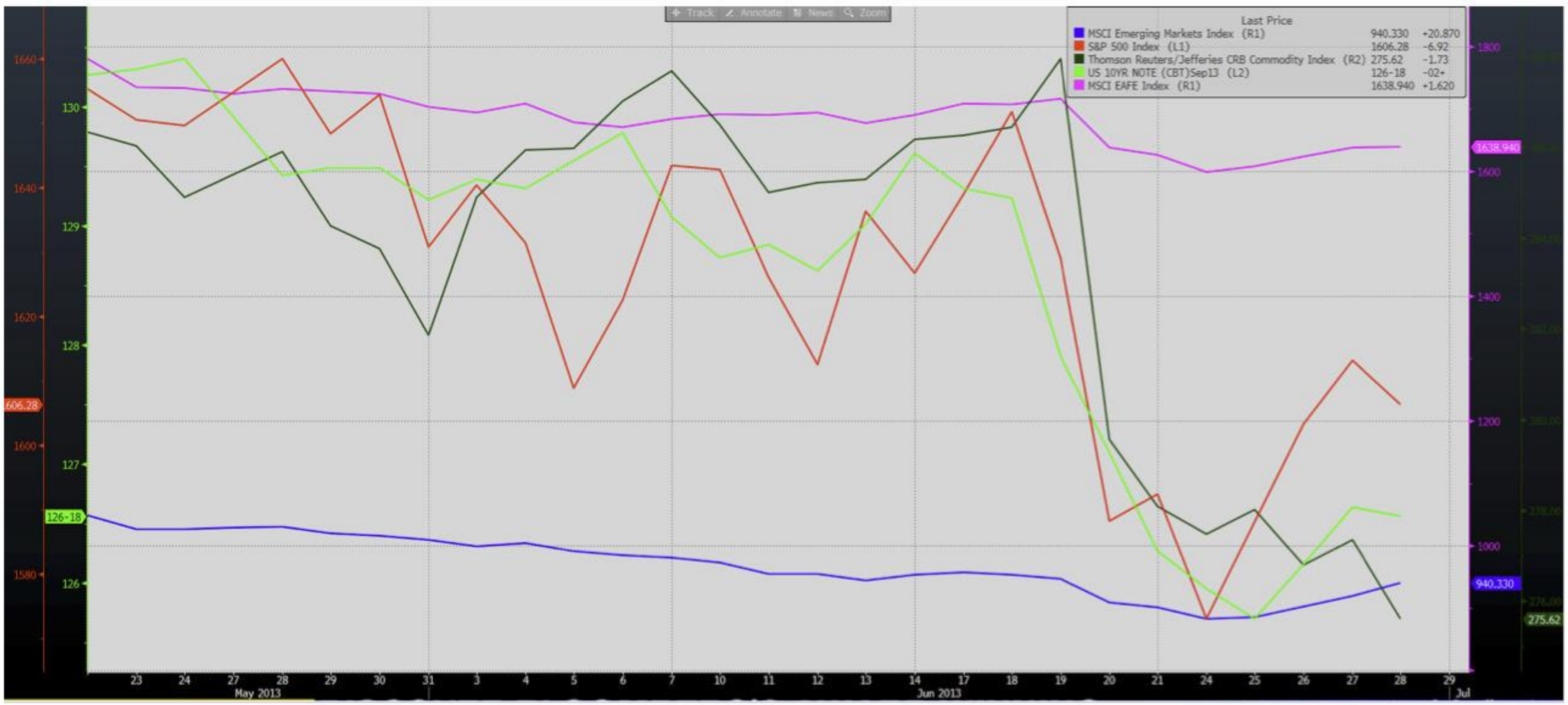
Starting P/E Low	High	Avg. Real 10 Yr Return	Worst Real 10 Yr Return	Best Real 10 Yr Return	Standard Deviation
5.2	9.6	10.3%	4.8%	17.5%	2.5%
9.6	10.8	10.4%	3.8%	17.0%	3.5%
10.8	11.9	10.4%	2.8%	15.1%	3.3%
11.9	13.8	9.1%	1.2%	14.3%	3.8%
13.8	15.7	8.0%	-0.9%	15.1%	4.6%
15.7	17.3	5.6%	-2.3%	15.1%	5.0%
17.3	18.9	5.3%	-3.9%	13.8%	5.1%
18.9	21.1	3.9%	-3.2%	9.9%	3.9%
21.1	**25.1**	**0.9%**	**-4.4%**	**8.3%**	**3.8%**
25.1	46.1	0.5%	-6.1%	6.3%	3.6%

Diversification as a protection from risk?

Bonds, Equity, and Inflation linked Assets all correlate in time of stress



Summary: Risk Systems

- **Legacy Risk Models have limitations**
- **A Total Risk System Approach provides a better solution**
- **Risk Budgeting and Risk Appetite statements**
- **Target Risk rather than Expected Return**
  - **Particularly in non benign risk clusters**

Summary: Macro Risk environment

- QE has set up a false market negative real rates are a significant problem
- Interest Rate Shock Risk & QE, Valuation, Sovereign Debt and Currency Risk
- Beware Supercorrelations. Volatility hedging a solution
- Ask yourself everyday: Am I being paid to take this risk?

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