

R-Squared Ltd



Is Quant Dead?

Jason MacQueen

R-Squared Risk Management Ltd

June 2009

Leonard Cohen saw it coming . .

“Things are gonna slide,
slide in all directions,
Won't be nothing,
nothing you can measure any more”

from 'The Future'

The Death Throes of Quant?

- Quant meltdown, August 2007
- Massive failure of 'risk systems' used by banks - mostly based on VaR
- Regime shift in volatilities and correlations from October 2008 to the present

I Don't Think So . . .

- August 2007 was mainly driven by liquidity and deleveraging by the investment banks
- Value at Risk is possibly the most stupid risk measure ever invented
 - you can't adequately represent the risk structure of a portfolio by a single number
- Regime Shift : as Bob Dylan said - 'Things Have Changed' - but Quant still works.

The Growth of Quant

- The first successful Quant managers soon attracted a host of competitor/imitators
- The assets under management exploded
- But as August 2007 demonstrated clearly, most fund managers on this bandwagon were doing essentially the same things
- It seemed as if all Quant models consisted mainly of the 'Usual Suspect' factors

Maybe this is the Only Answer?

- Most Quants trawl through the same stock databases with basically the same tools
- Surprise! - they get very similar results
- The academic literature has long since identified the most common anomalies
 - Using the same databases and analytical tools
- Is that all there is?

Probably Not

- The standard methods for testing stock selection factors were fixed in the 1980s
- We first built a 5-factor stock selection model for the S&P500 for Citibank in 1983
- Despite the enormous increase in the number of Quants, the stock selection factor testing methodologies haven't changed very much

New Directions - New Factors?

- It is, of course, always possible that new factors will be discovered
- However, given the huge numbers of Quants and Academics who have trawled through the data, this seems unlikely
- Vendors are creating 'better' (usually proprietary) databases, which does at least raise the possibility of new results

New Directions - New Analytics?

- In our view, a lot of the analysis done so far is very simplistic, and offers a lot of scope for improvement
- Such improvements might include :
 - Sector-based local currency models
 - Non-linear factor models
 - Different investment horizons
 - Other stuff we think is quite valuable - Sorry

And then there is Risk . . .

- . . . which is observed mainly in the breach
- The reality is that most investment managers pay only lip service to Risk
- In most fund management firms, Risk and Performance departments are the same
- This tells you that 'risk monitoring' is regarded as a box-ticking, *ex post* activity

Performance = Return and Risk

- Successful investment strategies do not just consist of a good stock selection model
- **Remember Markowitz** - Expected Return is supposed to be traded off against Risk to create and maintain efficient portfolios
- **Remember Ben Graham** - “The essence of investment management is the management of risks, not the management of returns”

What are Risk Models for?

- A standard, widely recognised risk model, such as Northfield's, makes it easy to report risks and tracking errors to clients
- But if a manager is using their own multi-factor stock selection model, it will be harder to manage the risk structure of the portfolio using a risk model that doesn't incorporate the same factors

Portfolio Risk Management

- Whatever your investment process, you need to be able to identify and quantify the bets you are making in your portfolio
- It is just as important to be able to see the bets you did not intend to make, in order to be able to hedge them or diversify them
- You cannot run an efficient portfolio without being able to manage its risks

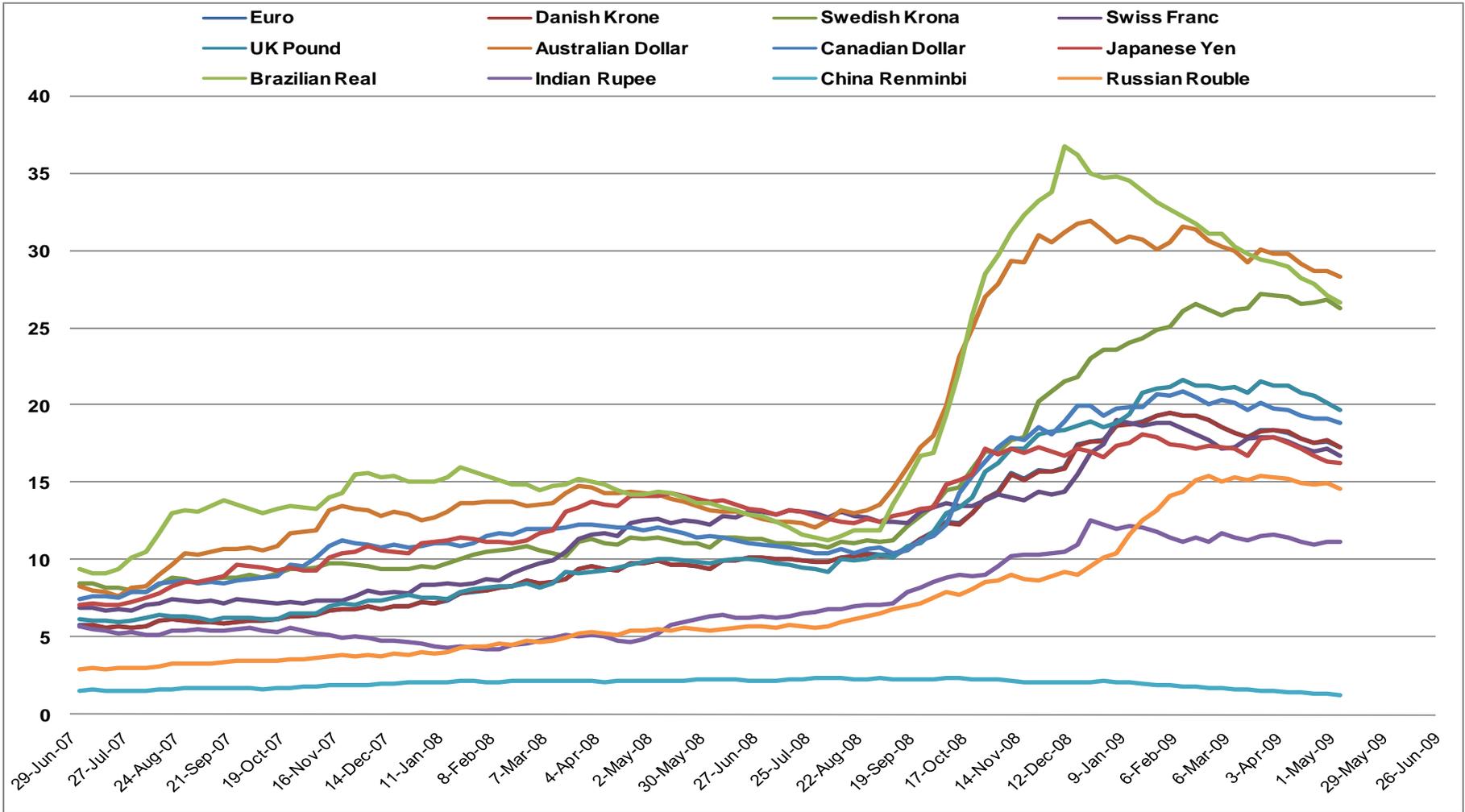
Skill vs Noise

- We used to be told that markets were so efficient that it was impossible to outperform
- Any run of outperformance was down to luck
- We were also told that it might take 30 years of data (a career lifetime) to demonstrate statistically that a manager actually had Skill
- But this assumes that all the performance is due to Skill, and none to Noise

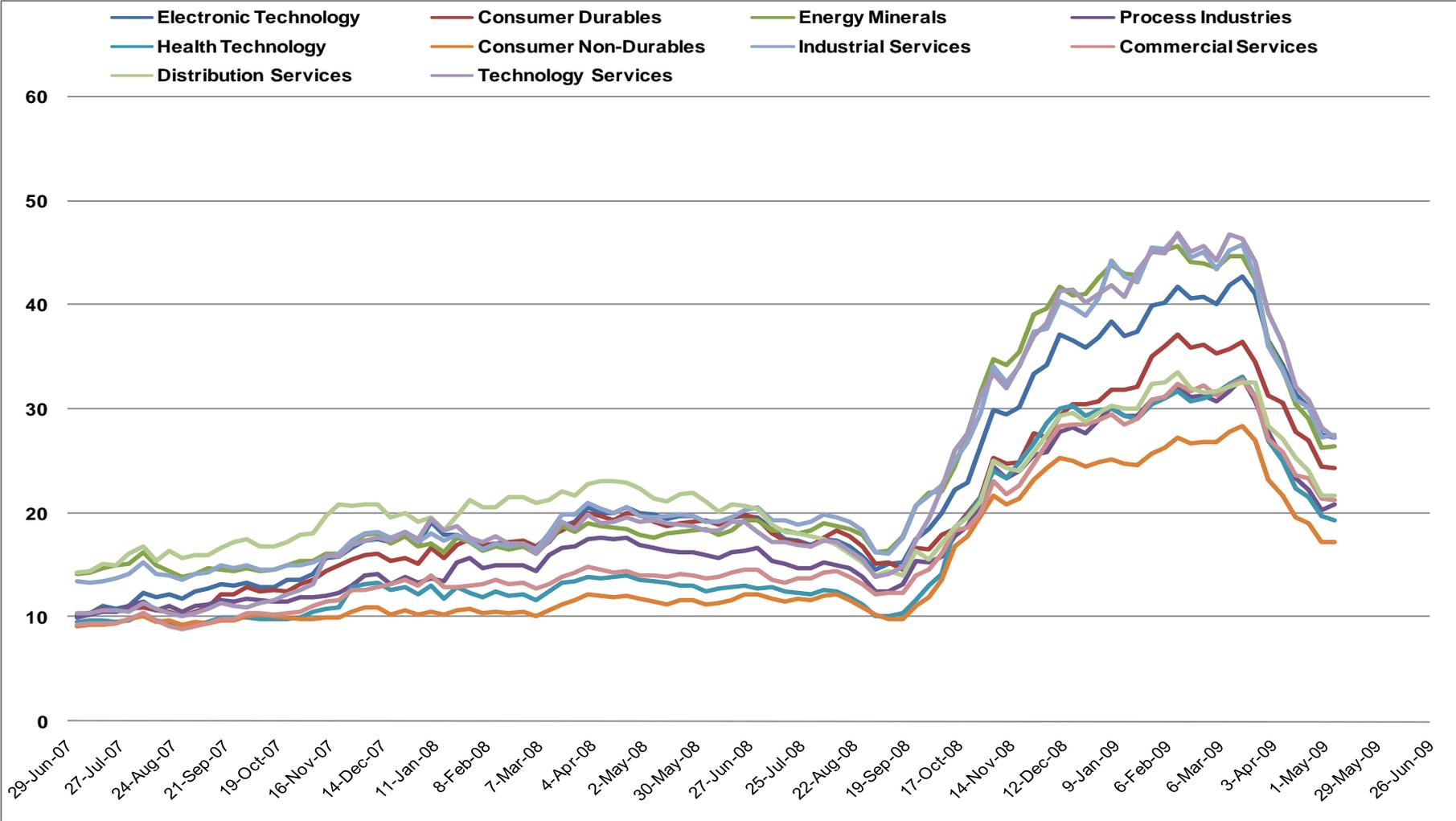
Regime Shift

- We have been developing a number of different risk models recently
- Techniques that worked perfectly well in stable times turn out to have strange side effects when volatilities and correlations increase dramatically
- We have therefore had to develop some new techniques .. (e.g. the FactSet CHRM)

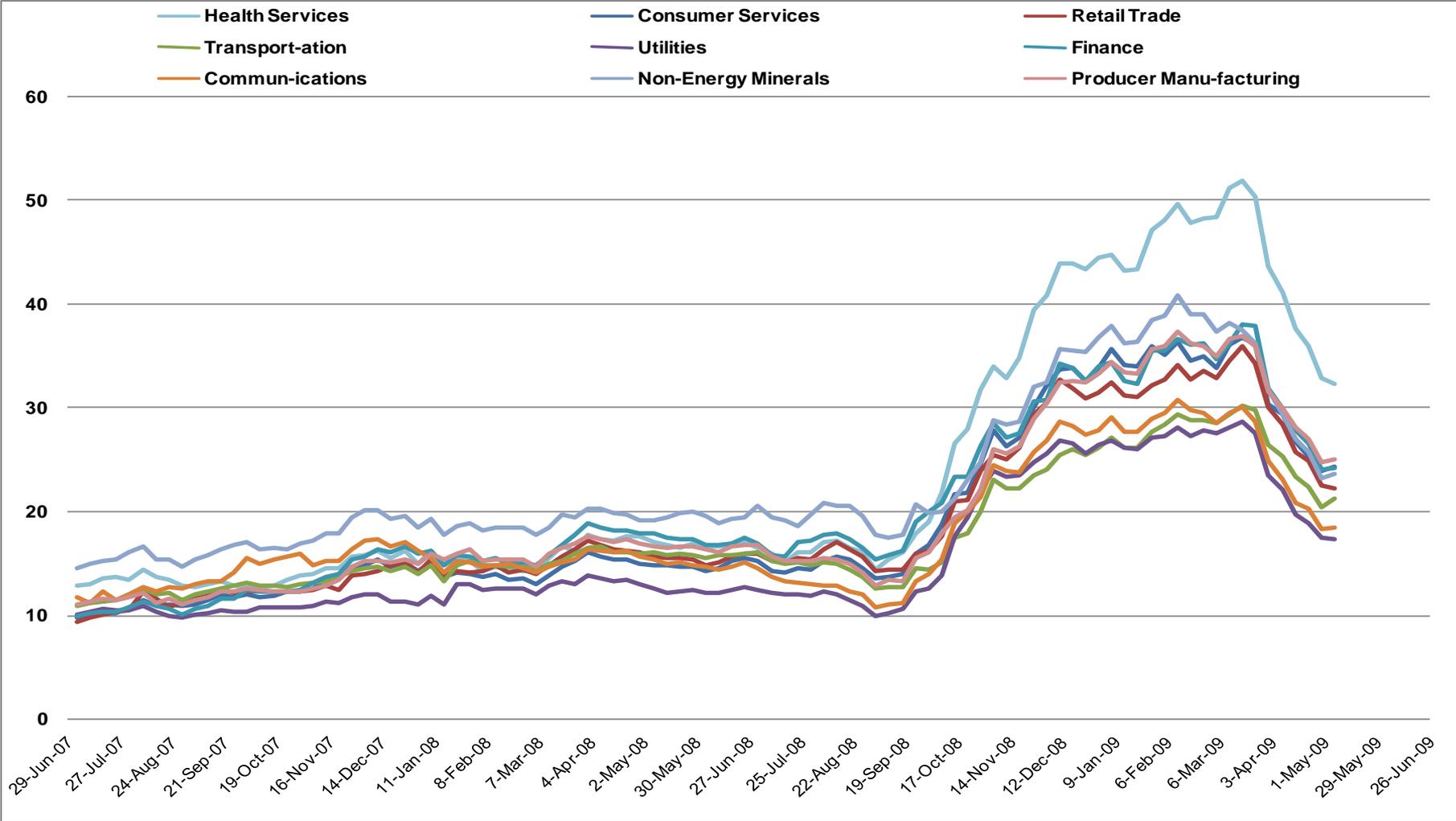
Currency Risks



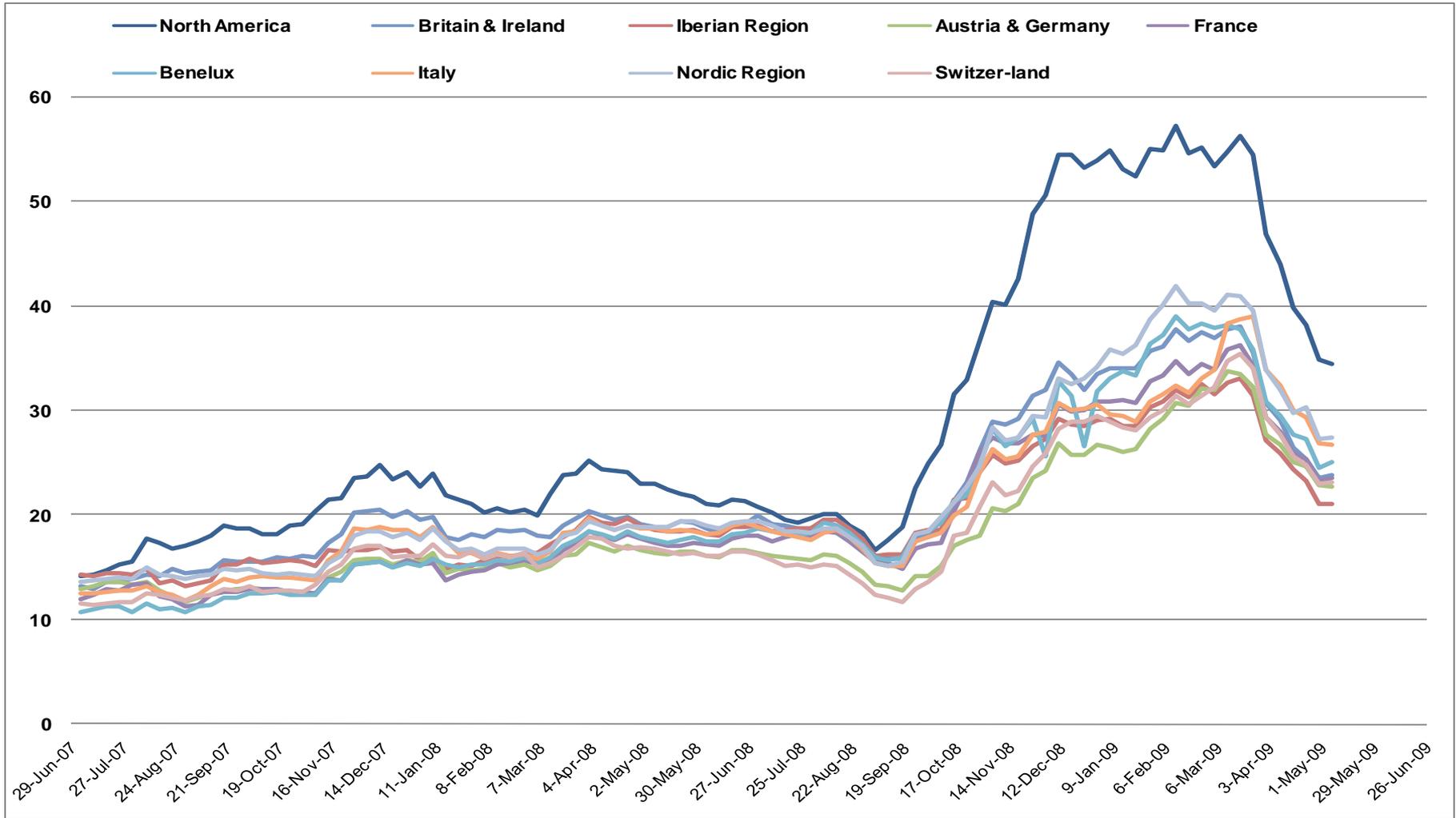
Sector Risks - 1



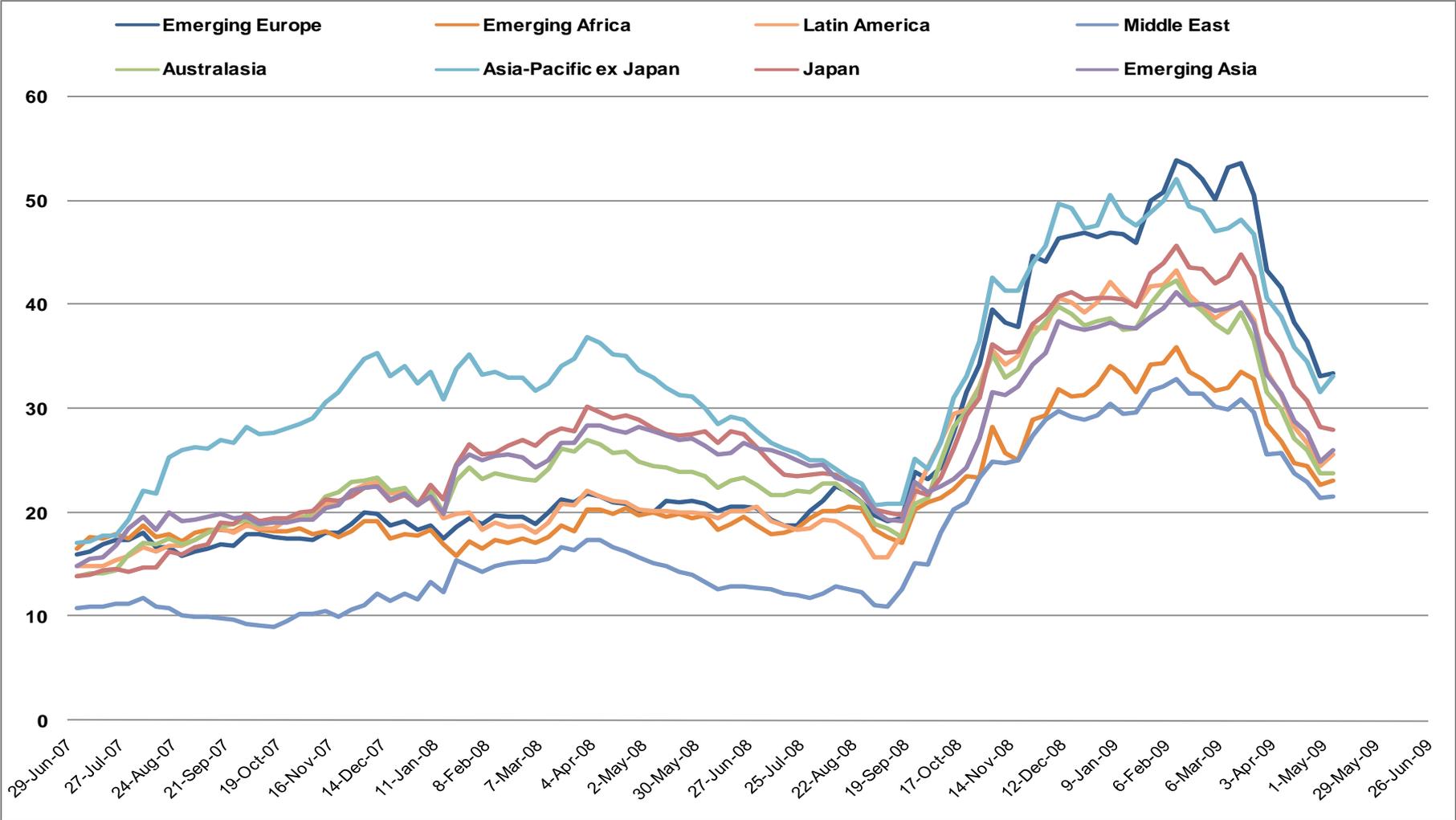
Sector Risks - 2



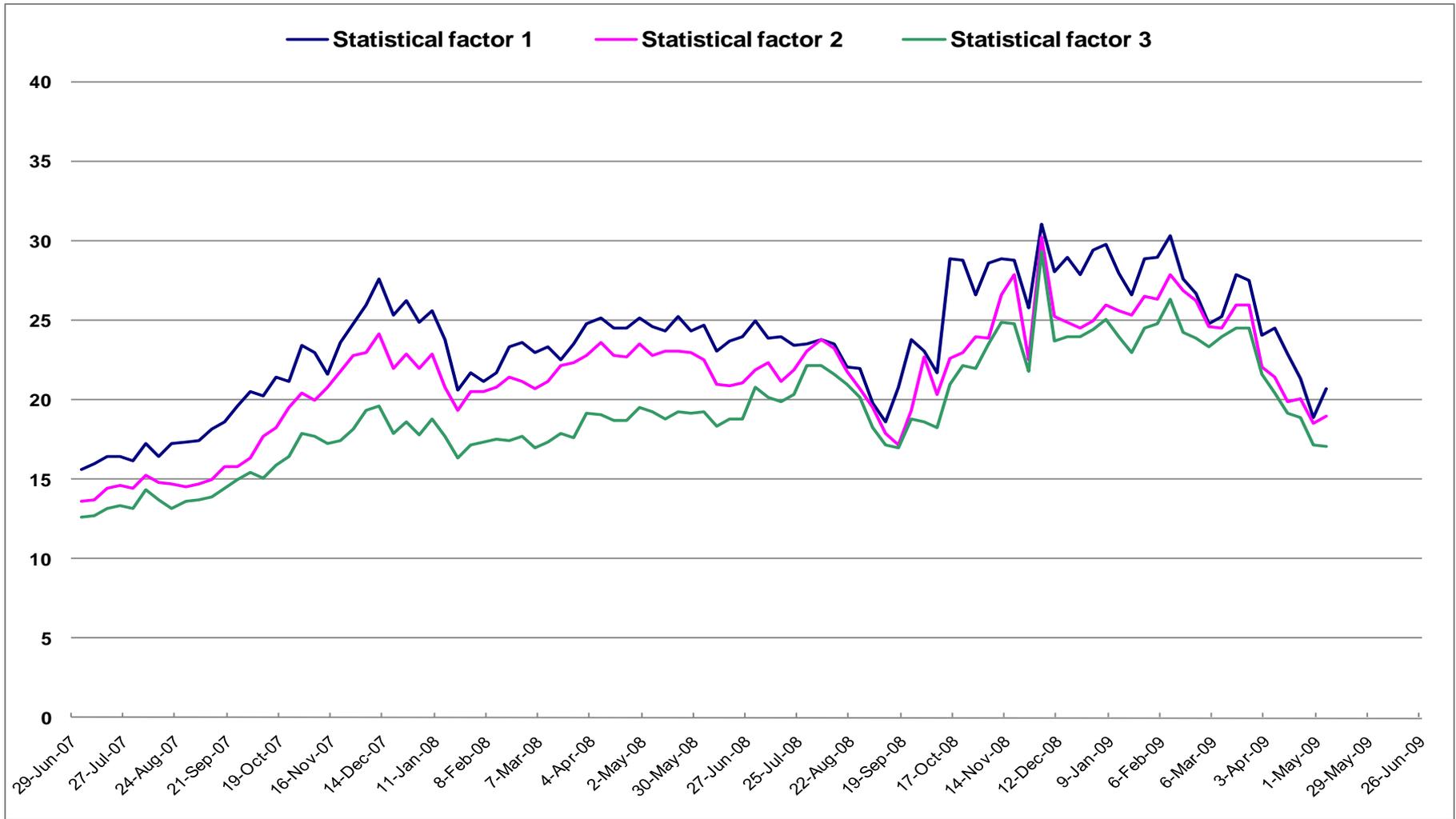
Country Risks - 1



Country Risks - 2



Statistical Factor Risks



The Future of Quant - 1

- Quant models are very useful when the underlying relationships can be clearly articulated and measured
- However, there are many aspects of fund management where this is not the case
- We may have a Quant multi-factor stock selection model, but take sector bets based on more fundamental views

The Future of Quant - 2

- Similarly, a model can be good at ranking a universe into deciles, but the (non-Quant) managers may know things about different stocks that are not captured by the model
- This is often reflected in the managers 'cherry-picking' from the top few deciles
- We need to blend Quant and Fundamental approaches into a Hybrid approach

The Future of Quant - 3

- In essence, consider ways in which Quant techniques could enhance a Fundamental manager's portfolio performance
- A simple Case Study will illustrate this idea
- US Small Cap manager, good long-term track record, about \$3 billion AUM, very Fundamental approach

Case Study - 1

- The first task was to understand what the managers were doing to generate their performance
 - Screening on over 50 fundamental variables
 - Taking views on 26 customised sectors
 - Idiosyncratic knowledge of particular stocks
- The screening process can be turned into a Quant multi-factor stock selection model

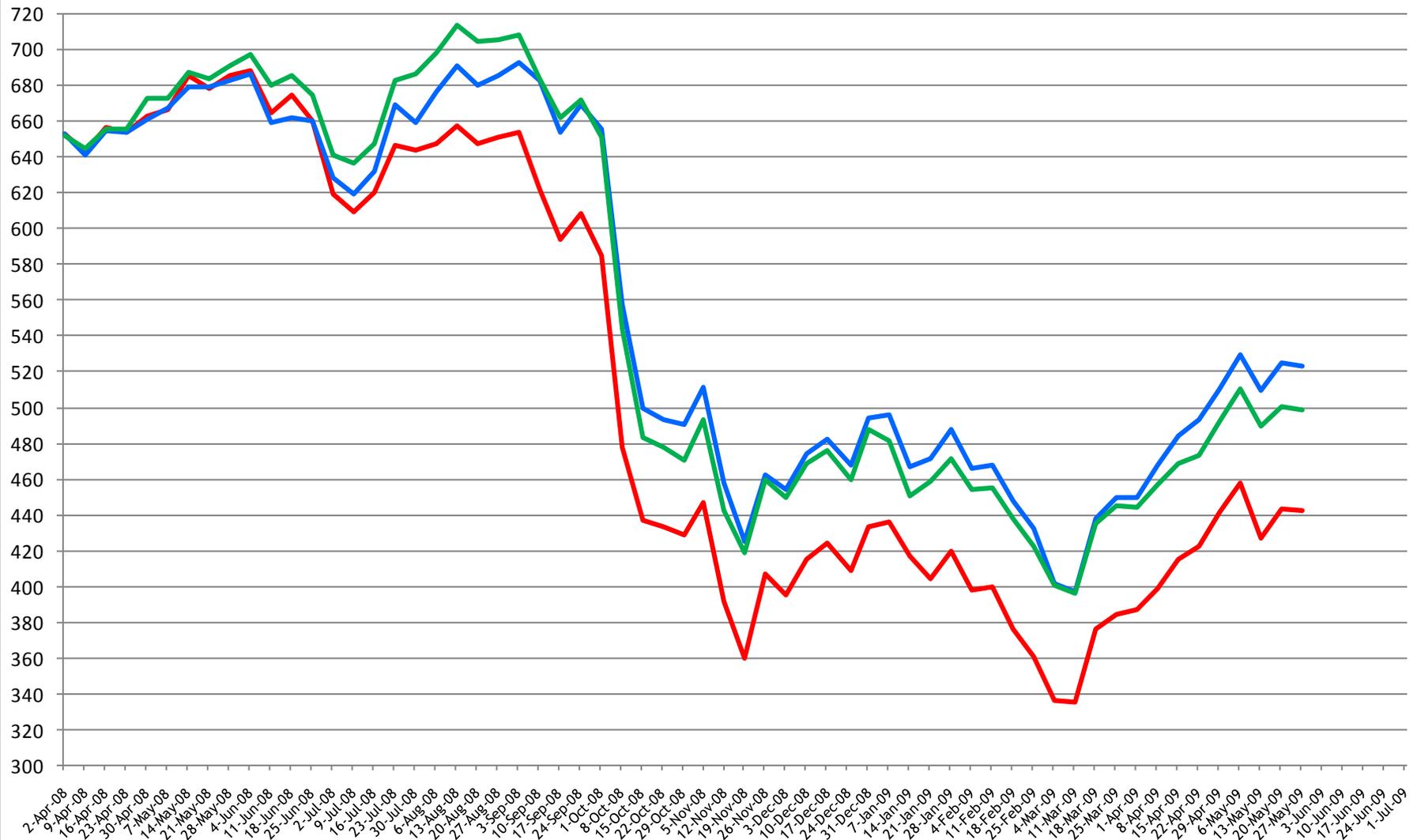
Case Study - 2

- Although it is hard to model how the managers arrived at their sector views, it is possible to build a risk model with the 26 sector factors in it, to identify and quantify the sector bets being made
- The idiosyncratic selection of particular stocks from the Buy List of the stock selection model was stock specific risk

Case Study - 3

- We developed a stock selection model, using about half of the variables the managers had been using for screening
- We then built a customised risk model, and helped them to design an appropriate portfolio implementation strategy
- The resulting 130-30 fund was launched with a small amount seed capital last year

R2500 benchmark CIPOF Active SMID



Performance Data

	US QSC	US SC	R2500
Return	-23.29	-30.25	-40.15
Relative	+16.86	+9.90	
Risk p.a.	35.75	35.96	41.16
T.E. p.a.	10.76	11.15	

These are actual returns since 25th June 2008

Comments on Results so far

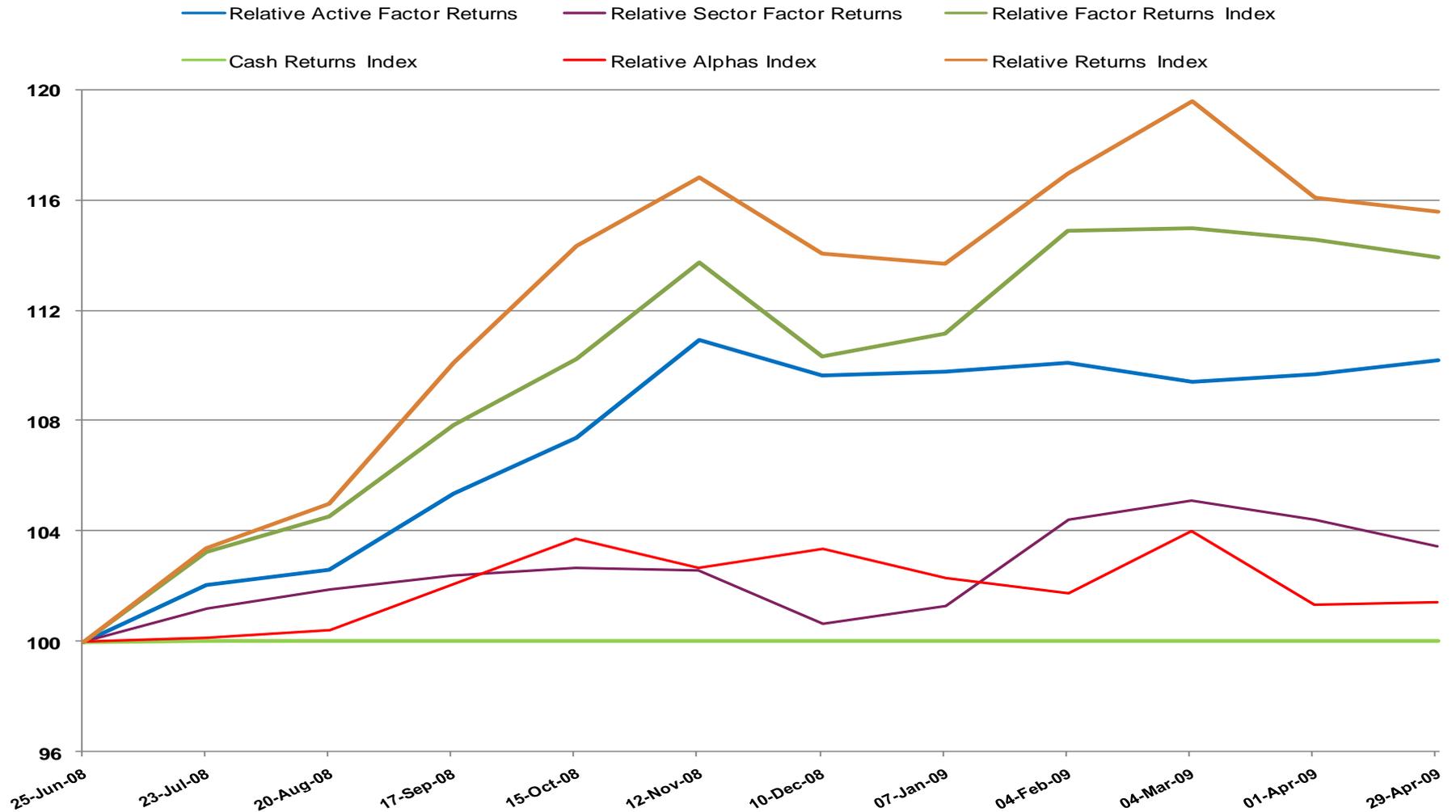
- The Quant-enhanced fund has slightly lower risk, but significantly higher return
- The manager's flagship fund is long only
- Both funds are always over 95% invested
- In the 130-30 Quant fund, we use a small number of sector ETFs to manage the risk exposures of some of the sectors
- We can also run Performance Attribution

Performance Analysis

Factor	Total Return	Average Return	Standard Deviation	Information Ratio	Serial Correlation
Relative Active Factor Returns	9.684	0.880	1.382	0.637	0.134
Relative Sector Factor Returns	3.370	0.306	1.269	0.241	0.233
Relative Factor Returns	13.054	1.187	2.051	0.579	-0.024
Cash Returns	0.017	0.002	0.004	0.372	-0.161
Relative Alphas	1.422	0.129	1.392	0.093	-0.336
Relative Returns	14.493	1.318	2.521	0.523	0.294

- The table above covers the eleven 4-week periods from 25 June 2008 to 29 April 2009

Performance Analysis



Conclusion

- The point of the Case Study is to illustrate the principles of using Quant to enhance a Fundamental manager's investment process
- Most managers do not use their insights into expected returns very efficiently, and most do not actually manage portfolio risk at all
- There is much scope for improvement, and Quants can provide this for them

Contact Information

Jason MacQueen,
455 Lakeland Avenue, Grosse Pointe, MI 48230.

US telephone = 1 646 280 9598

Hamilton House, Mabledon Place, London WC1H 9BB

UK telephone = 020 7554 8614

Email : jasonmacqueen@msn.com