

The risky business of risk management

2nd SINO-FRENCH FINANCIAL FORUM

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Table of contents

1. Risk measurement
2. Beware models and probabilities
3. Beware one's greed
4. How to tame risks
5. Conclusion

Interpreting probability and risk

- Rare disease affects 1 in 10'000 people
- But there is a good test:
 - 99% accurate
 - and no false negatives
- Suppose your test is **POSITIVE**
- What is the chance that you have the disease
 - (a) 1%, (b) 50%, (c) 99%

Interpreting probability and risk

- Test 10'000 people
- Test is 99% accurate, so 1% false positives:
 - 100 people will test positive but be healthy;
 - 1 person will test positive and have the disease;
 - 101 positive results.
- Probability of having the disease is $1/101 \gg 1\%$

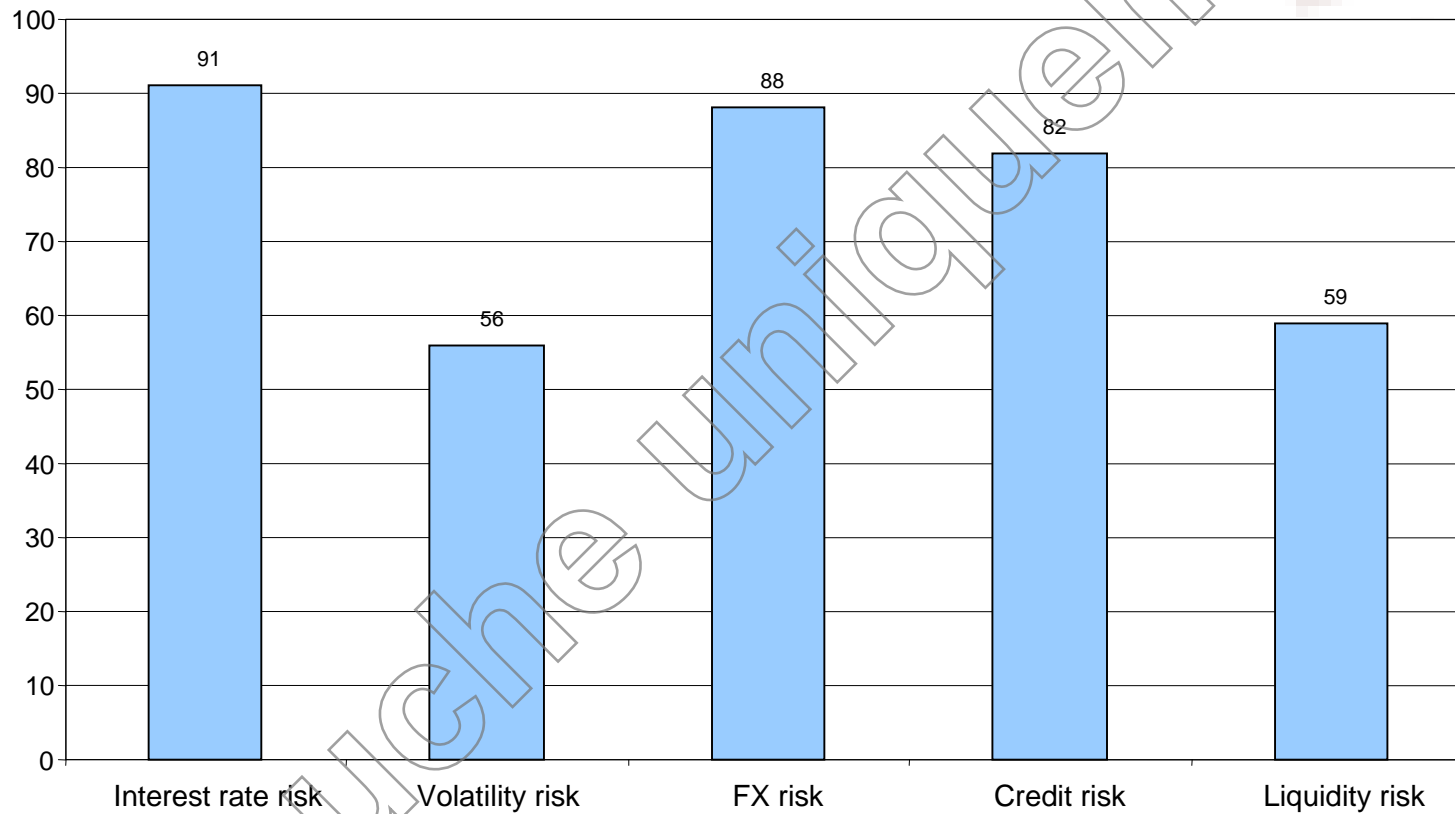
**Our intuition does not always serve us well in assessing risk and probability.
Human beings have difficulty in assessing risk rationally.**

1. Risk Measurement



Tools and techniques currently in marketplace

Which financial risks do you take into account when analysing portfolio exposure?

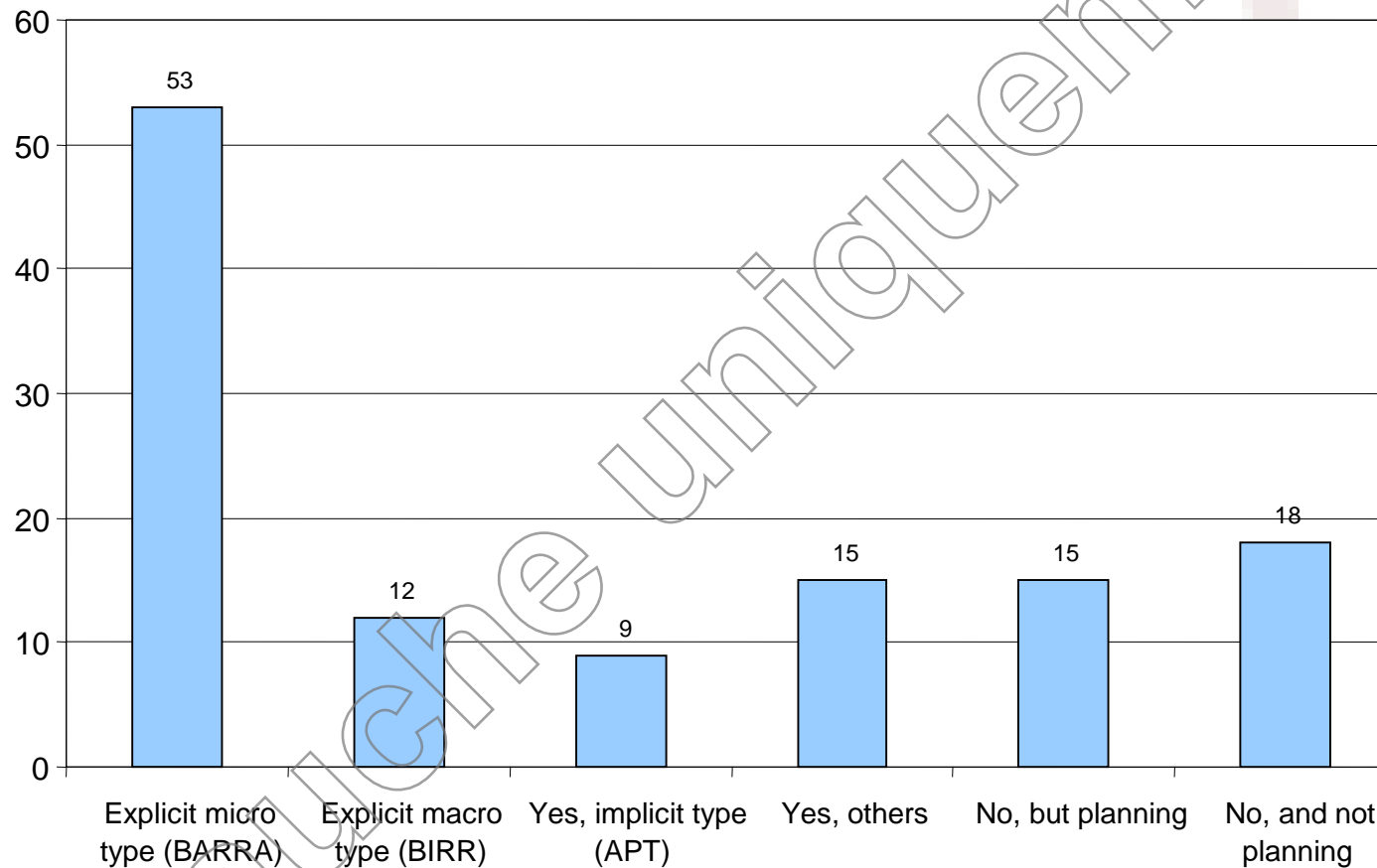


(% of respondents, European institutional investors)

Source: Edhec Risk Mgt Survey

Tools and techniques currently in marketplace

Do you base your portfolio risk analysis on a multi-factor model?



(% of respondents, European institutional investors)

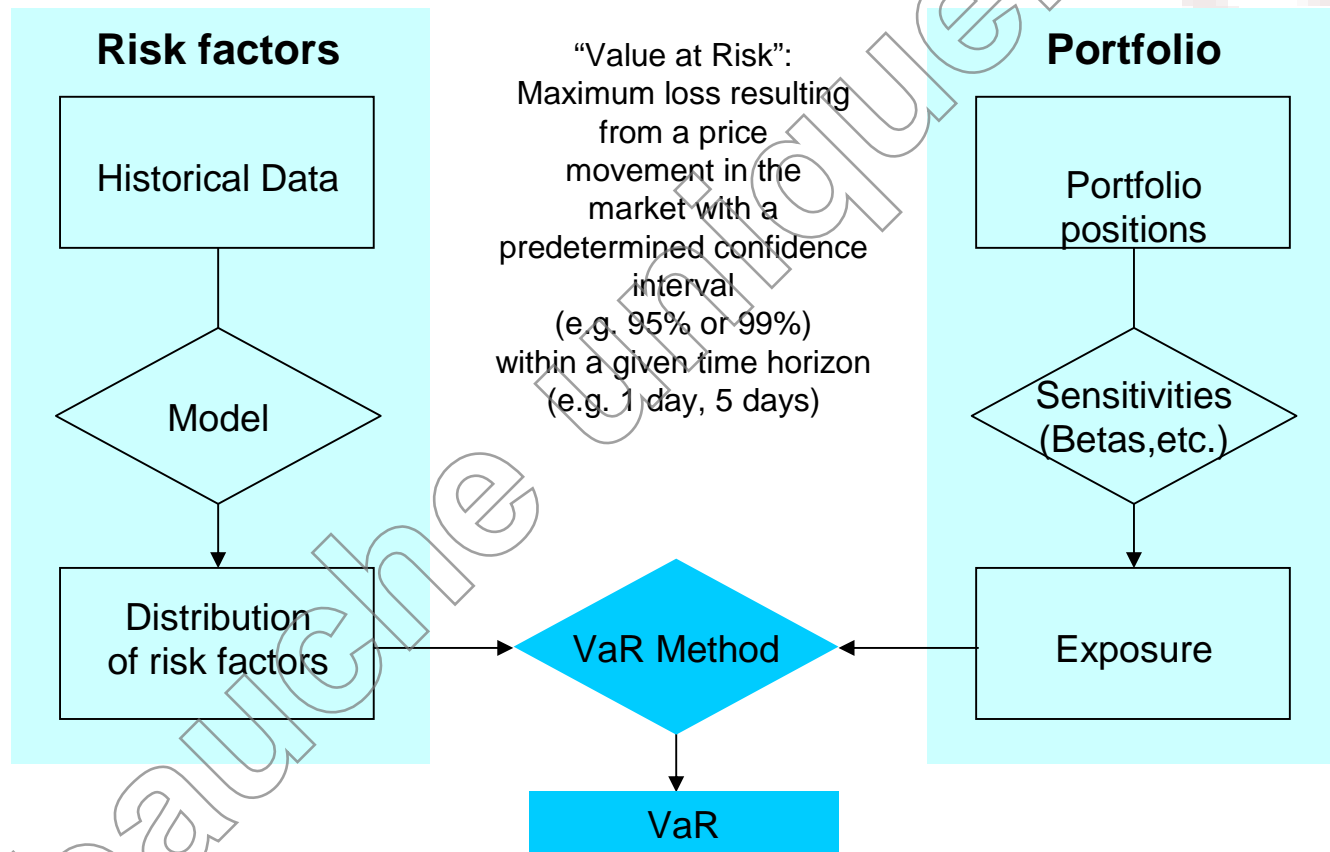
Source: Edhec Risk Mgt Survey

2. Beware models and probabilities



VaR in investment management tools

VaR is a must in risk management, and is becoming more and more sophisticated



Value at risk: a sophisticated risk control tool

- Measures the maximum loss that a portfolio is likely to sustain over a particular period, given specific assumptions about the behaviour of security prices, confidence level and distribution models.
- Developed as a risk control tool for traders and trading desks.
- Widely applied in financial institutions for risk assessment, risk-based capital controls and risk-adjusted performance measurement.

VaR 99%, daily prices

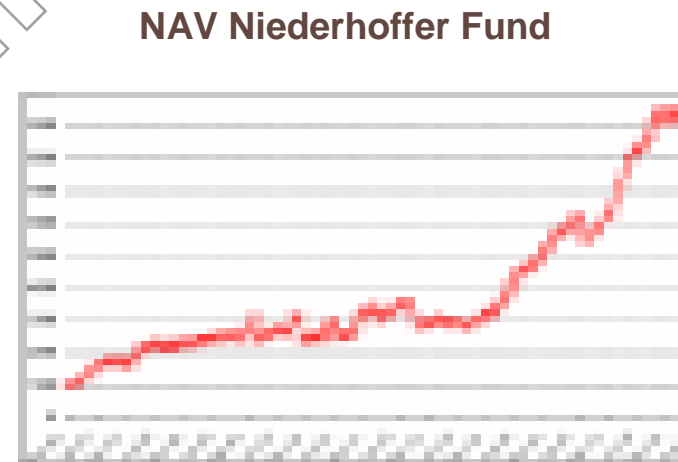
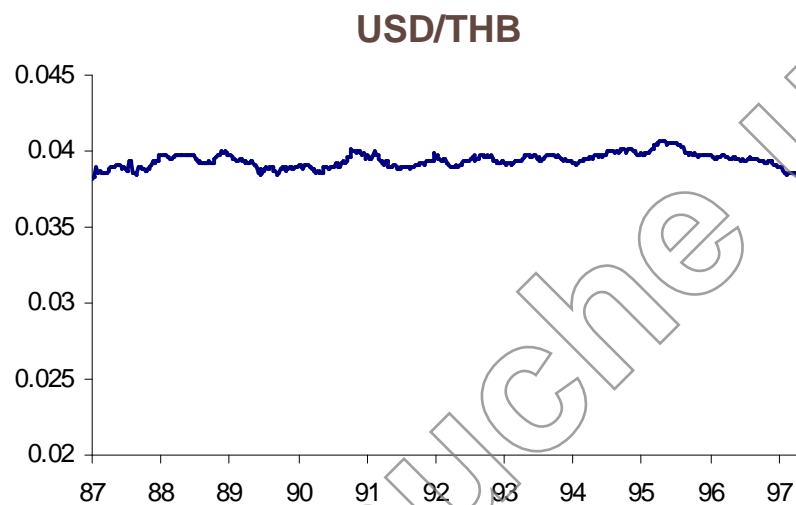
	Standard Deviation	VaR 99% (Gauss)
MSCI World Sovereign (Index)	0.27%	-0.85%
Foreign Exchange (USD/GBP)	0.52%	-1.21%
Daily Hedge Fund Index	0.77%	-1.71%
Dow Jones Industrial	1.08%	-2.48%
Brazilian Stock Index	2.96%	-6.59%

Source: Euromoney

Uncovering concealed risk: leverage and models

Dr Niederhoffer's assumption:

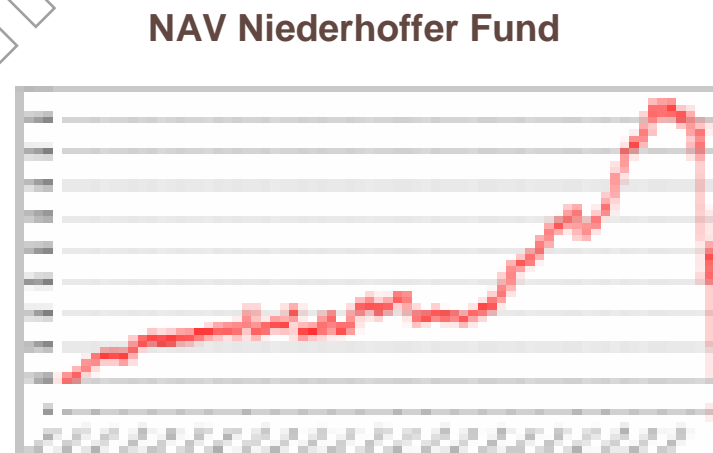
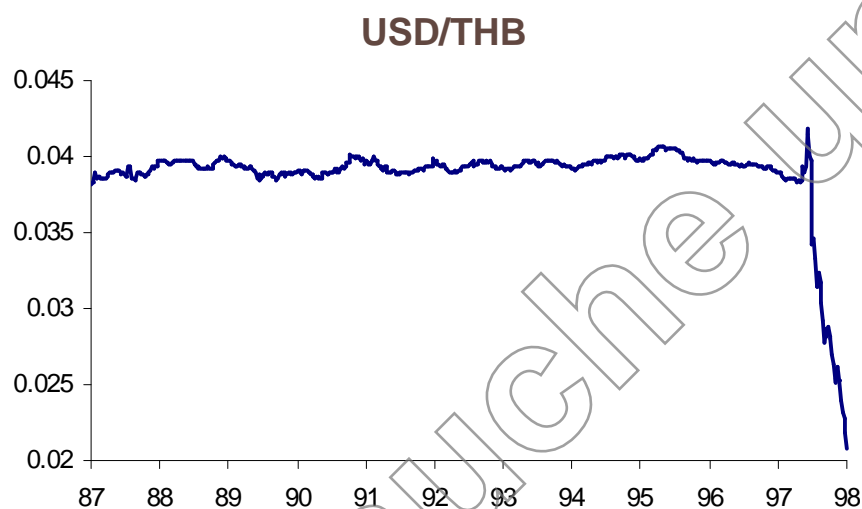
- He bet the market would never drop by more than 5% in a single day;
- Worst daily loss was never more than 3.1% in the previous 5-year period.



Uncovering concealed risk: leverage and models

Dr Niederhoffer's assumption:

- He bet the market would never drop by more than 5% in a single day;
- Worst daily loss was never more than 3.1% in the previous 5-year period;
- The Baht lost 19% on 02/07/1997 !!



Lessons to be learned:

No model can precisely quantify political and country risk, such as currency exchange controls and restrictions on foreign ownership, nationalisation or expropriation. Beware of easy money.

Uncovering concealed risk: liquidity and models

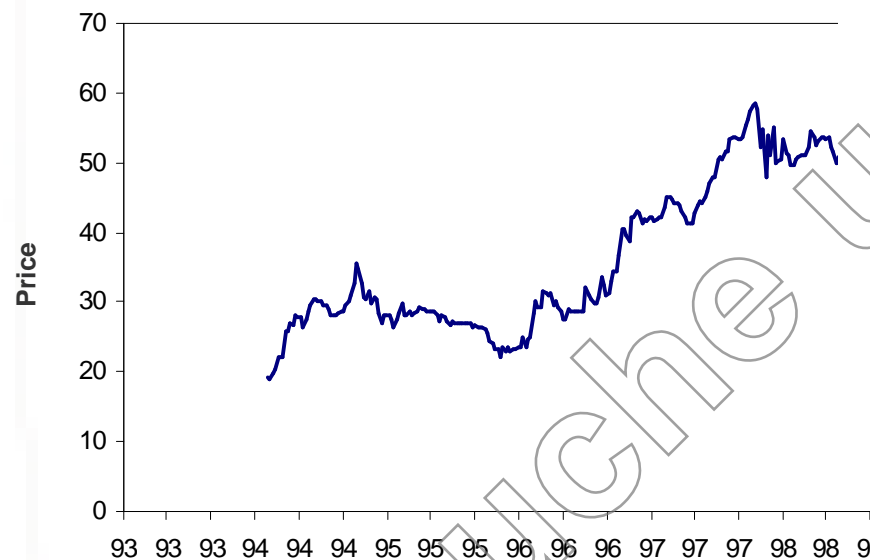
LTCM in July 1998: monthly standard deviation \$206m (5% of Fund's value)

1 standard dev. = losses more than \$206m, once every 6.5 months

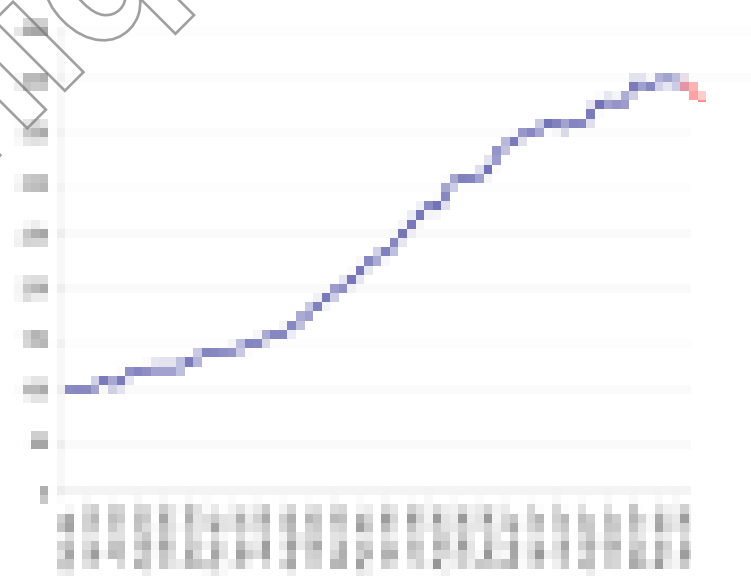
2 standard dev. = losses more than \$412m, once every 44 months

4 standard dev. = losses more than \$824m, once every 31'559 months

Russia bonds, maturity 2008



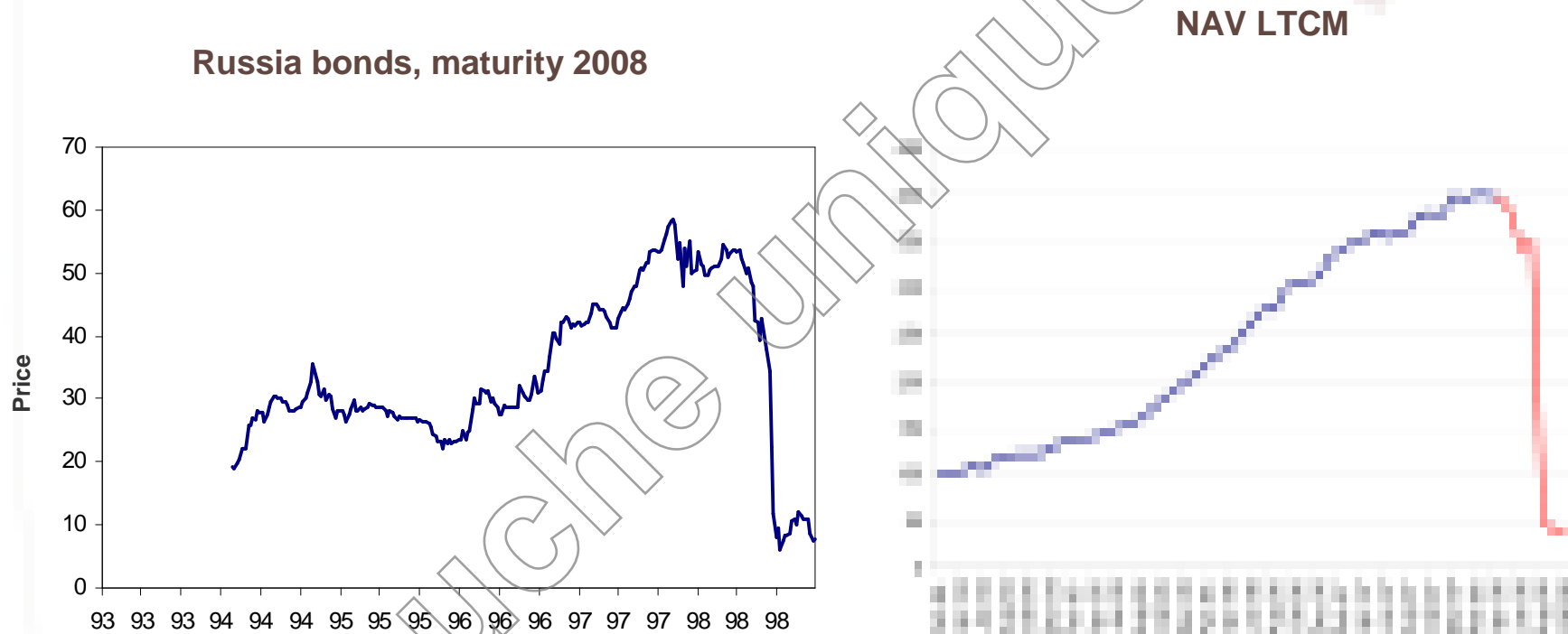
NAV LTCM



Uncovering concealed risk: liquidity and models

In August 1998, LTCM lost \$1,710m. This represents:

8.3 standard dev. => should happen once every 800 trillion years, or 40'000 times the age of the universe !!

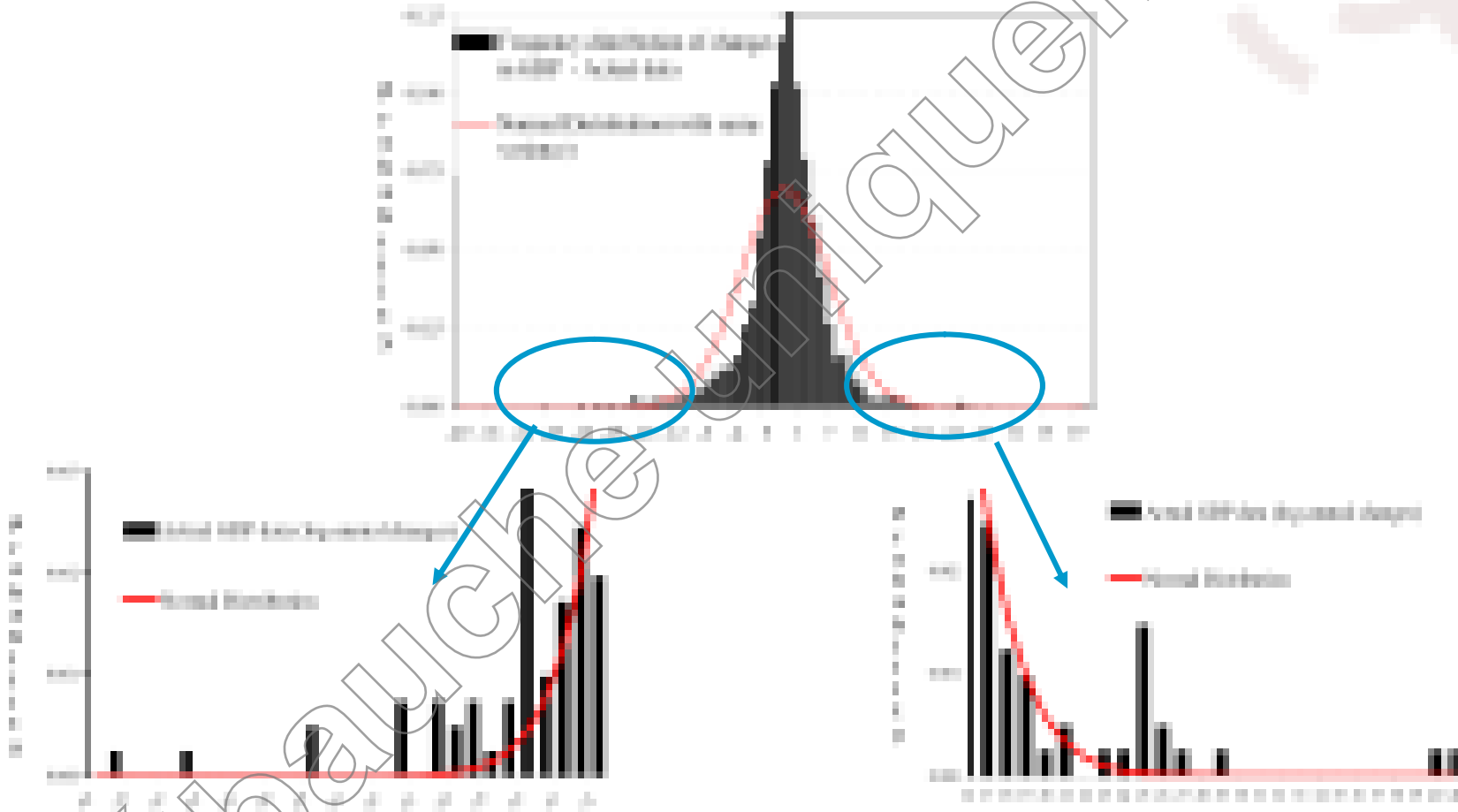


Lessons to be learned:

Market values matter for leveraged portfolios, liquidity itself is a risk factor, models must be stressed and financial institutions should aggregate exposure to common risk factors.

Extreme values are difficult to model

Large falls in GDP do happen more often than predicted by models, hence the « fat tail »



Source: Morgan Stanley

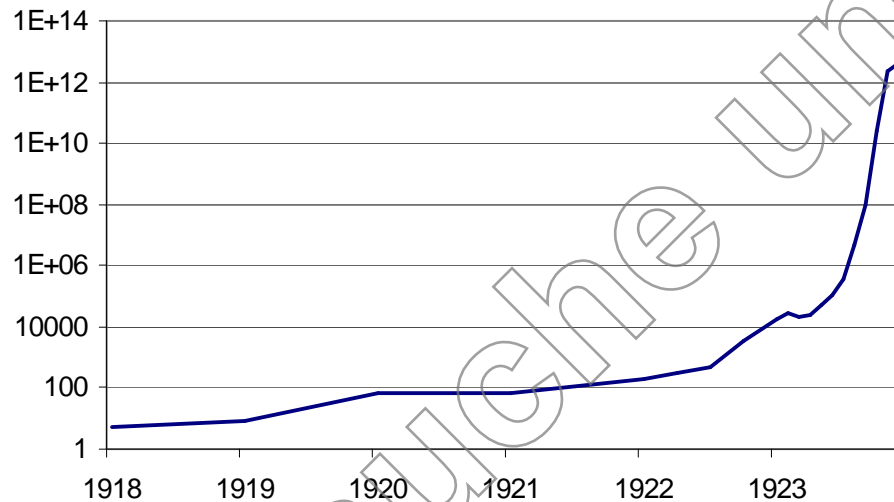
Exceptional risks?

Less exceptional and more risky than you may think

Example of economic risk: devaluation

Jan 1918: 1 USD = 5.21 Marks

Dec 1923: 1 USD = 4,200,000,000,000 Marks



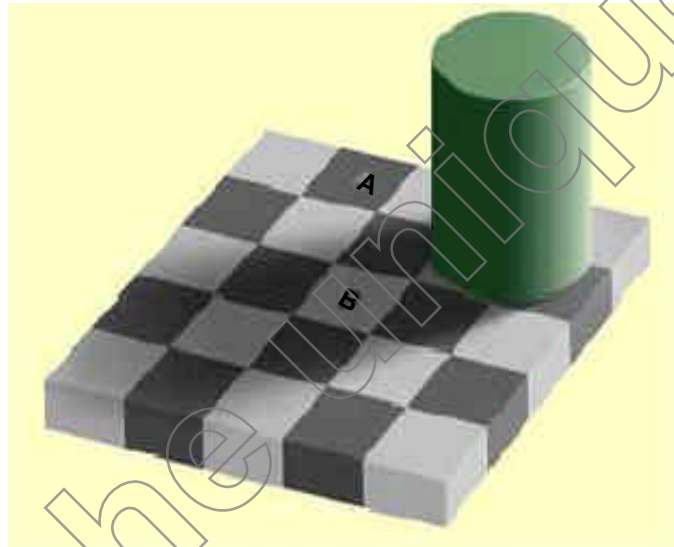
Devaluation happens rarely, but hurts a lot.

Contemporary examples of Argentina, Bolivia, Brazil, Peru, Ukraine or Zimbabwe

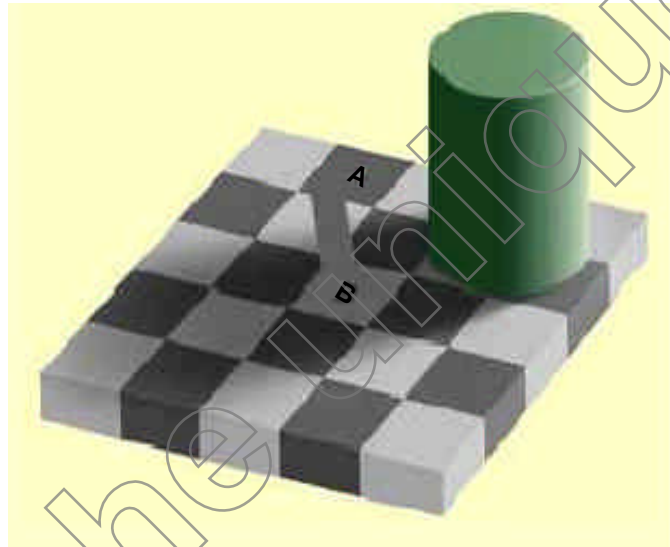
3. Beware one's greed



Which square is the darkest: A or B

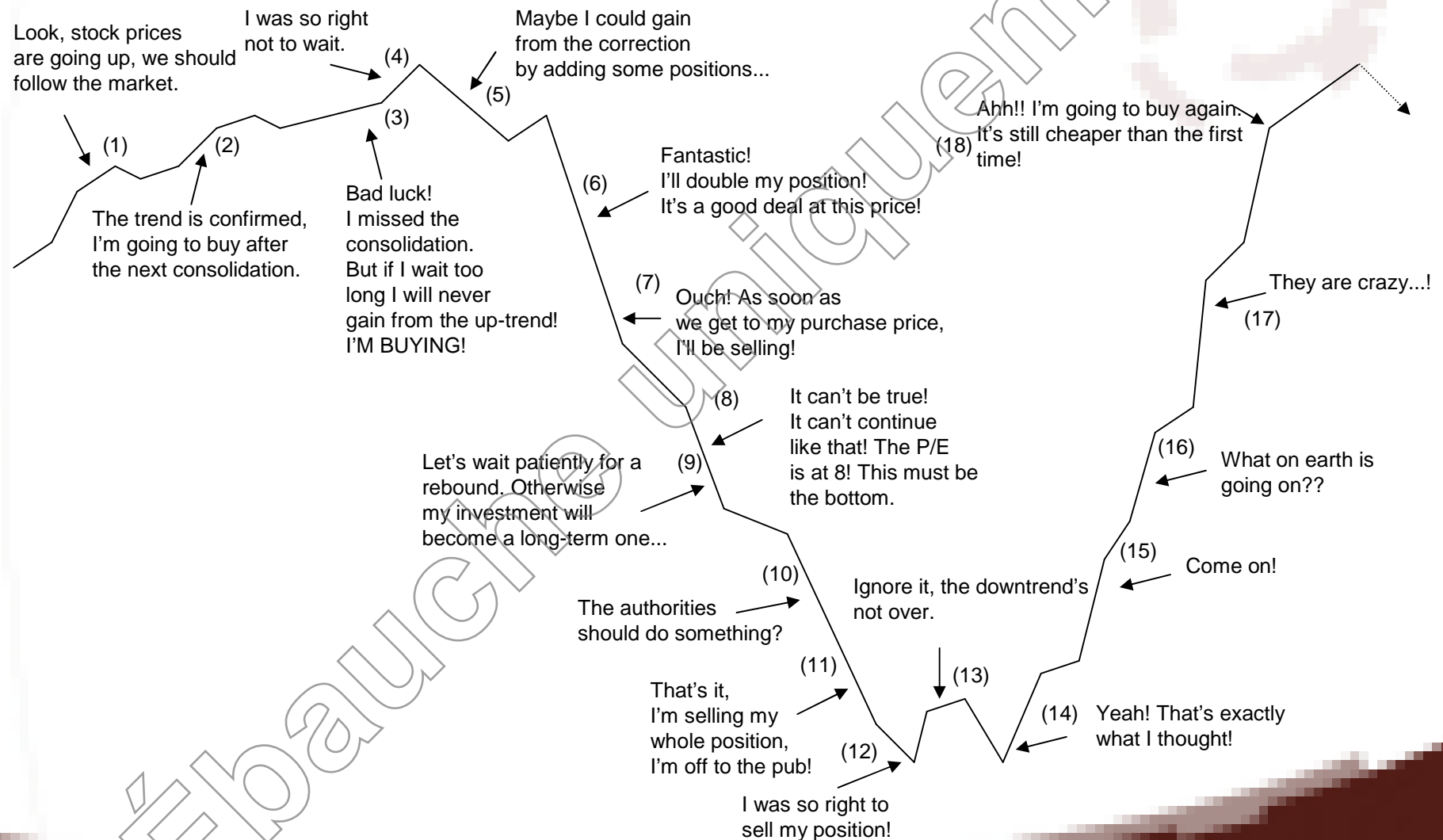


Beware of oneself



- Our brain is programmed to react quickly, NOT precisely.
- It creates mental artefacts to provide us positive vision of the world.
- Knowing these pitfalls allows better decision-making and encourages humility regarding exceptional risks.

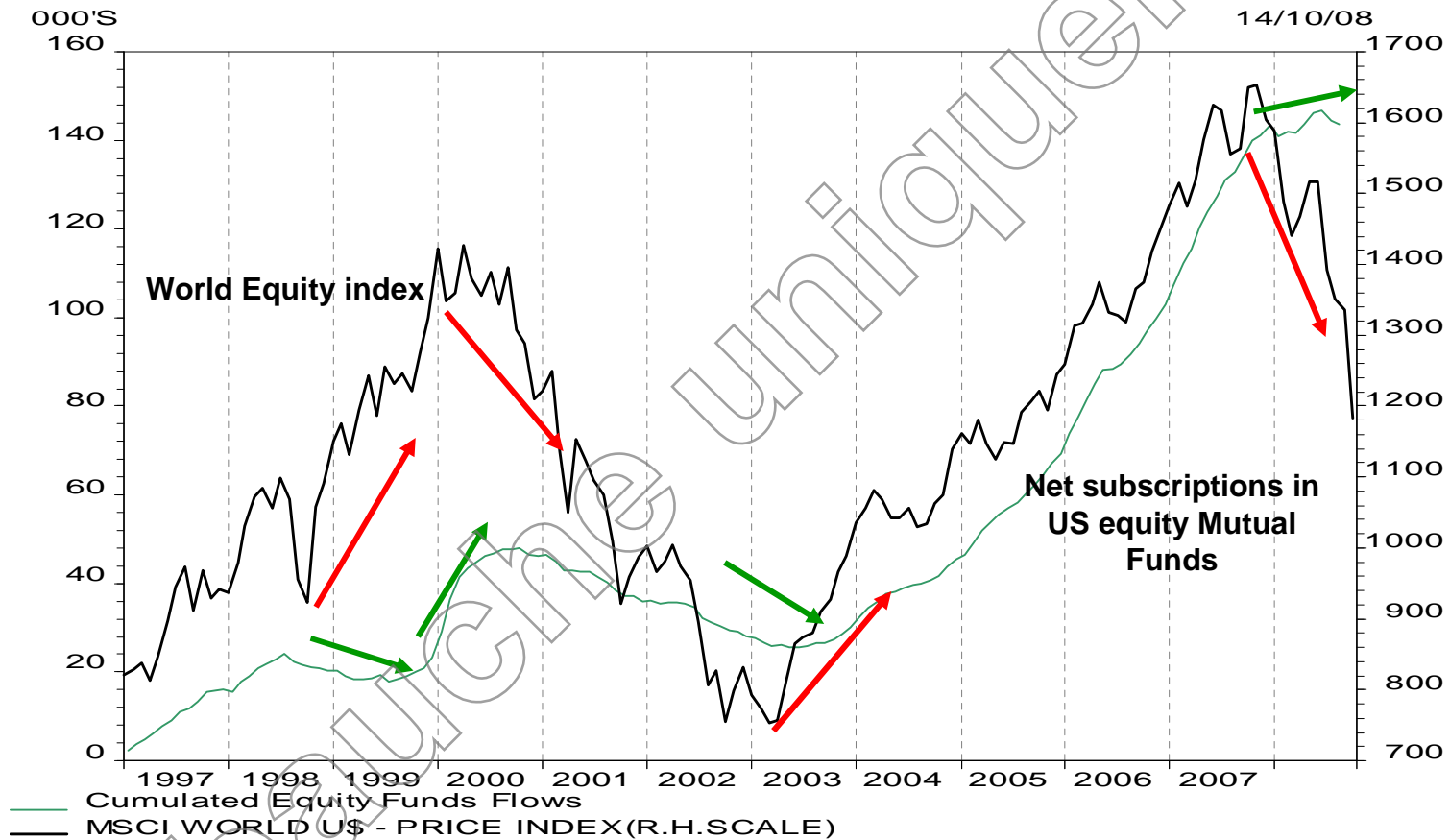
Greed and fear: a typical investor's behaviour...



Greed and fear

At extremes, human beings are often wrong.

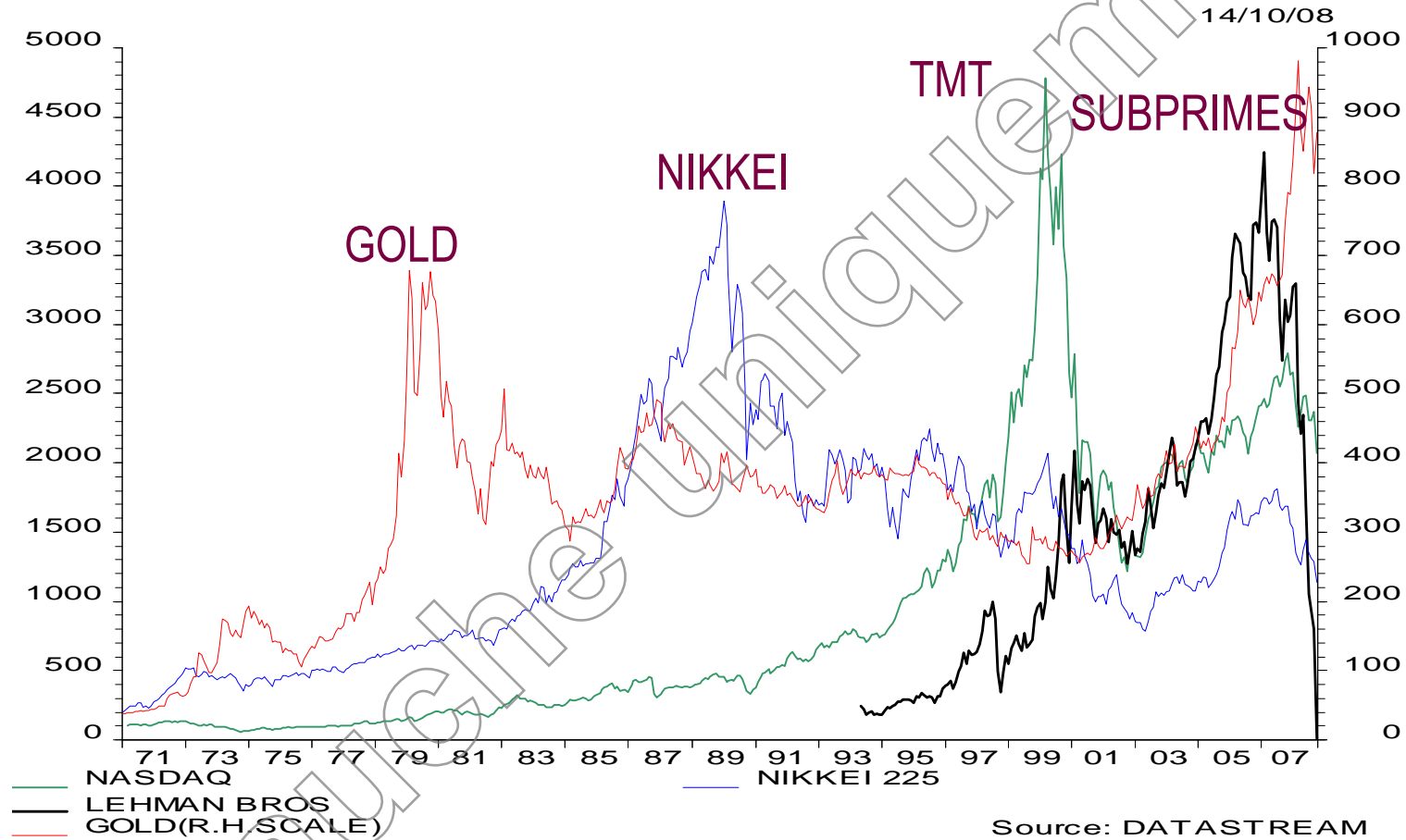
Evidence from retail investors fund flows



Source: DATASTREAM

Beware of fashionable investments

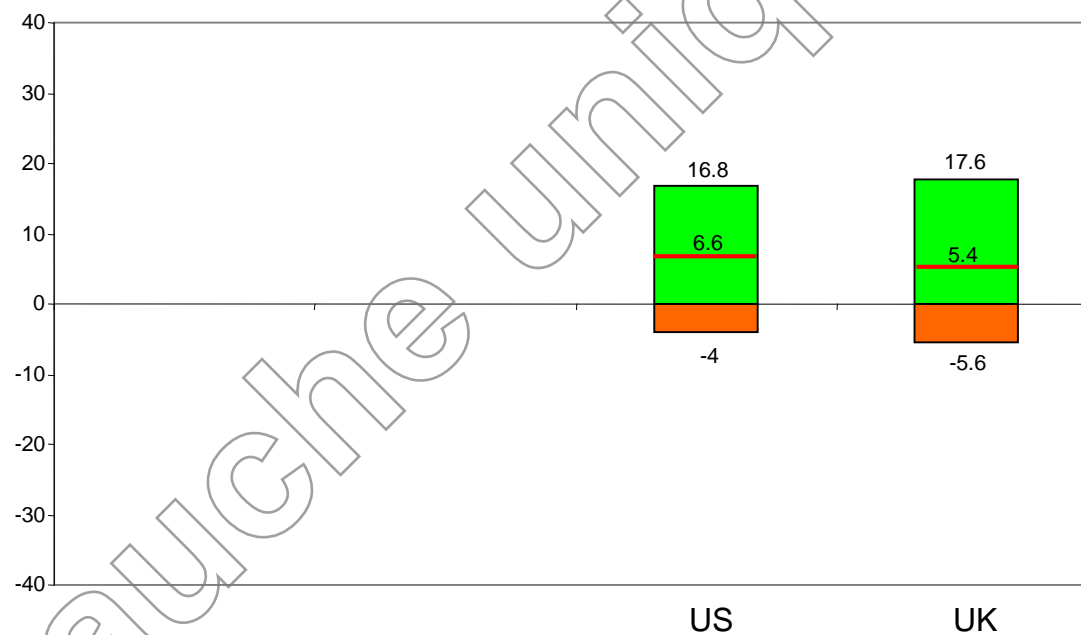
Too good to be true is not good



Beware of the past as guide for the future

You can only win in the long run...

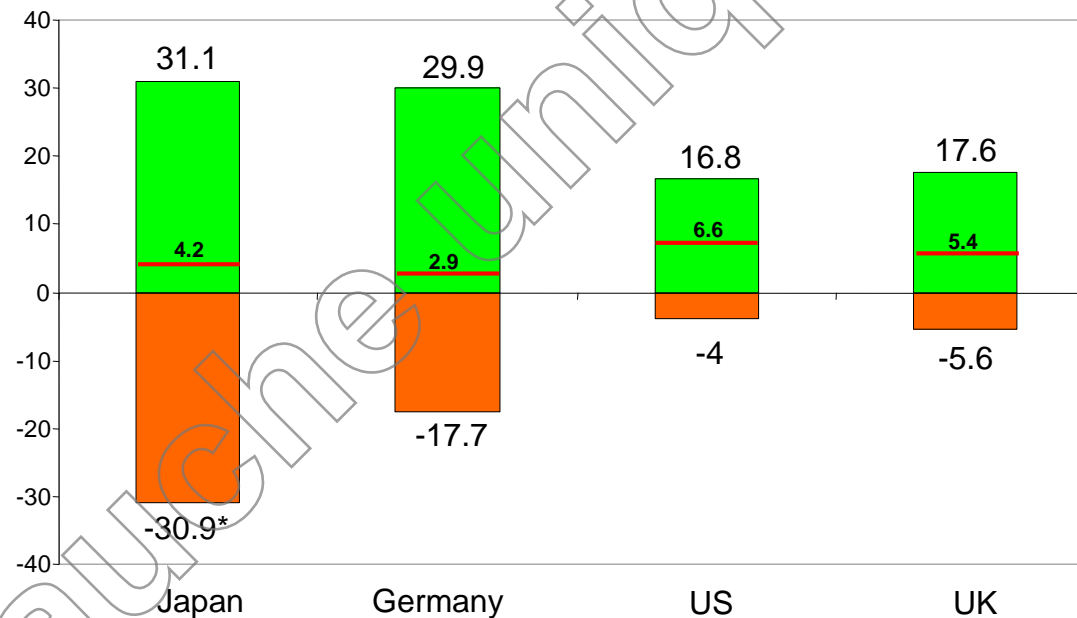
Min - Max real equity performance, 10-year period, p.a.
(%) (1900-2004)



Beware of the past as guide for the future

The future is often more uncertain than usually thought

Min - Max real equity performance, 10-year period, p.a.
(%) (1900-2004)



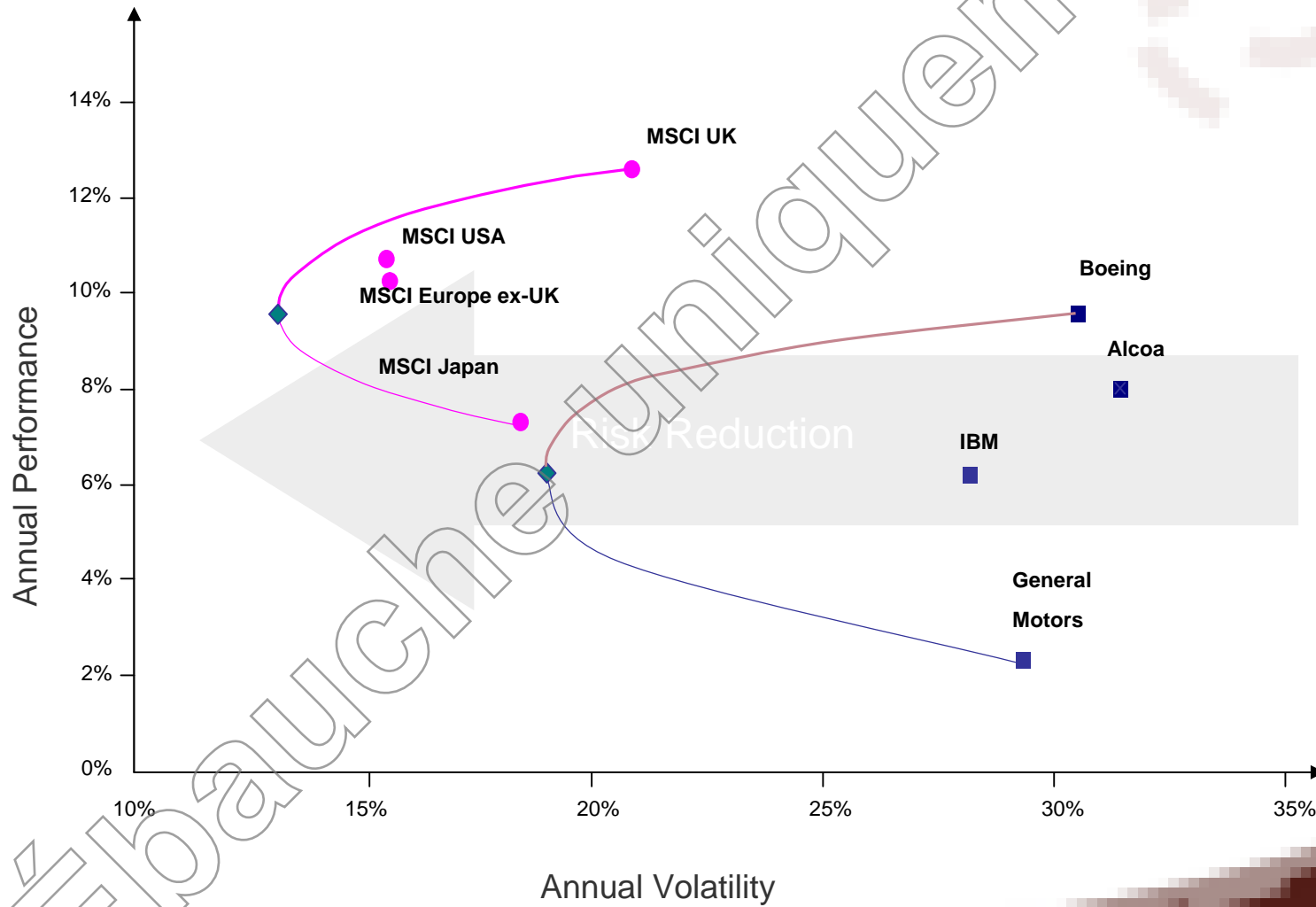
***Reminder: -30.9% p.a. is equivalent to -97.5% over a 10-year period!!!**

4. How to tame risks



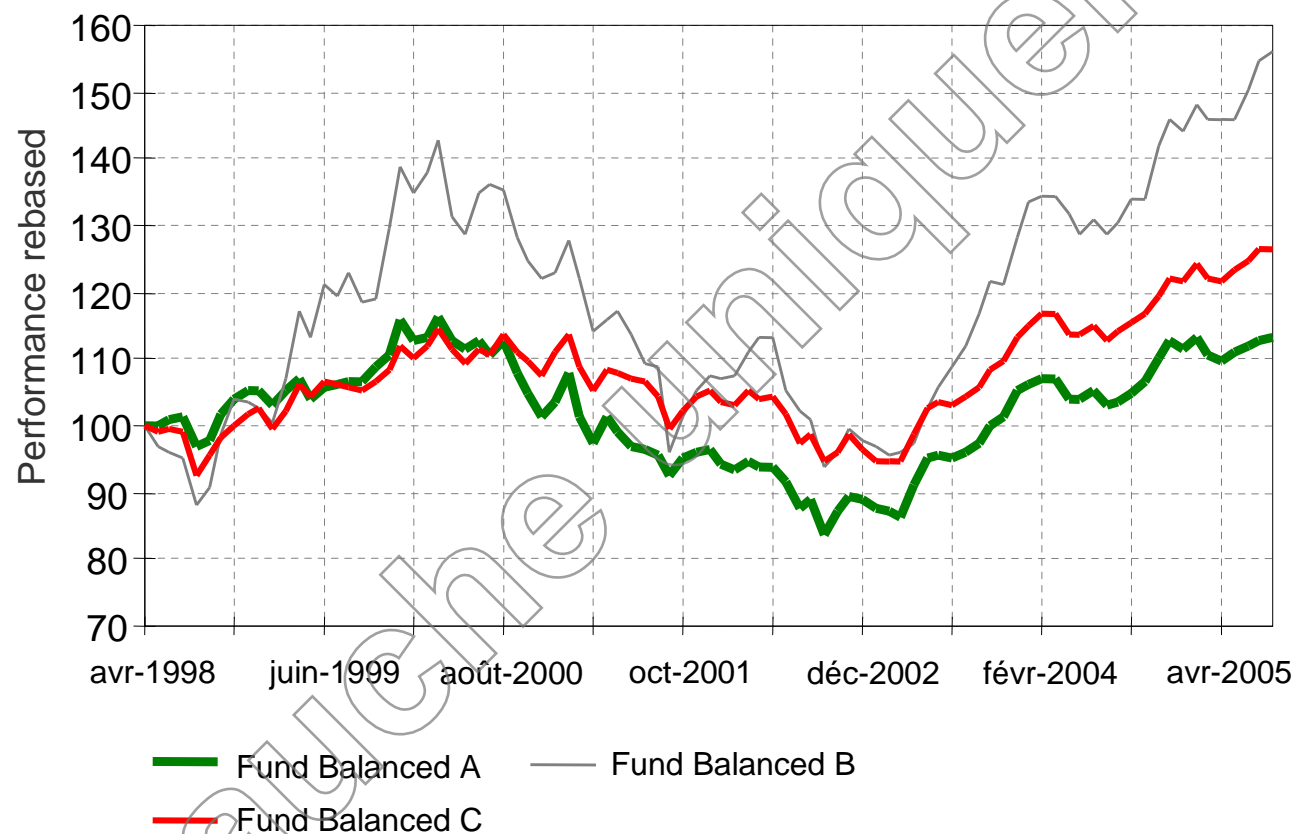
Diversification

Don't put all your eggs in one basket...



Diversification

...and preferably in different baskets



How to get more return (and limit risk)?

Non-traditional asset allocation: David Swensen's Yale portfolio

- Risk control requires regular re-balancing.
- Strategic asset allocation and market timing usually don't work. Focus on inefficient markets and index efficient ones.
- Accept illiquidity for premium returns, and approach markets with value orientation.
- Add on weakness and trim on strength.
- Sensible investment strategies requires long time horizons, successful decisions may often appear foolish in the short term.

Asset Allocation at Yale's endowment fund

	Current Target (%)	Actual Alloc. (%)	Avg. Alloc. (%)	Expected Real Rtn. (%)	Std. Dev. (%)
Domestic Equity	15.0	14.8	43.3	6.0	20
Fixed Income	7.5	7.4	23.1	2.0	10
Foreign Equity	25	26.1	12.4	7.0	25
Absolute Return	15	14.8	9.1	7.0	15
Private Equity	17.5	14.5	6.1	12.5	25
Real Assets	20	18.8	2.8	5.5	15
Cash	0	3.5	3.2	-	-

Source: Endowment fund's annual report

5. Conclusion

Épauche Uniquement



Conclusion

- Modern investment theory and tools are essential for constructing efficient strategies and portfolios.
- However, they only tell part of the story and only address part of your exposure to risks.
- Real risks are by definition unexpected, but are often bigger and closer than thought.
- Common sense, wide experience and the ability to think laterally are an essential overlay to any risk management process.
- Beware greediness. Beware models. Beware oneself.

“It's better to be approximately right than precisely wrong.” Keynes

Risky risk measures



Source: FT