Risk Management in Emerging Markets

Seminar on Risk Management

25-29 May 2009

Dr. C. Coskun KUCUKOZMEN

Agenda

- **THE NATURE OF EMERGING MARKETS (EMs) with Special Reference to PREDICTION, RISK & PROBABILITY**

- **CULTURE AND LANGUAGE**

- **RISKS IN EMERGING MARKETS with Special Reference to BASEL-II**

- **PHYSICAL, SOCIAL, ECONOMIC AND POLITICAL RISKS**

- **MEASUREMENT AND MANAGEMENT OF RISKS in EMs a REGULATORY APPROACH**

- **CONCLUSION**

- **ILLUSTRATION**

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The Nature of Emerging Markets

The designation "emerging market" is associated with the World Bank.

A country is deemed "emerging" if its per capita GDP falls below a certain hurdle that changes through time.

The Nature of Emerging Markets

World Bank classifications	
Classification	GDP per head USD
Low	< 755
Lower Middle	755 < 2,995
Upper Middle	2,995 < 9,265
High	>= 9,265

Source: World Bank

The Nature of Emerging Markets

Income level groups		
Classification	GDP per head USD	Sample countries
Low	< 755	Bangladesh, Ethiopia, Ghana, India, Indonesia, Kenya, Nigeria, Pakistan, Tanzania, Ukraine, Vietnam, Zimbabwe
Lower middle	755 < 2,995	Bolivia, Bulgaria, China, Colombia, Cuba, Egypt, Jordan, Morocco, Russia, Sri Lanka, Thailand, Turkey
Upper middle	2,995 < 9,265	Argentina, Bahrain, Botswana, Estonia, Korea, Malaysia, Mexico, Poland, Saudi Arabia, South Africa, Uruguay
High	>= 9,265	Hong Kong, Qatar, Singapore, United Arab Emirates

Source: World Bank

Emerging Markets

Groupings by indebtedness	
Classification	**Sample of countries**
Severely indebted	Argentina, Brazil, Indonesia, Jordan, Nigeria, Peru, Tanzania, Vietnam
Moderately indebted	Bangladesh, Chile, Colombia, Ghana, Kenya, Malaysia, Philippines, Russia, Thailand, Turkey, Uruguay
Less indebted	Botswana, China, Egypt, Iran, Korea, Libya, Mexico, Poland, Saudi Arabia, South Africa

Source: World Bank

Emerging Markets

Share of emerging markets in world market	
Factor	Percentage
Population	83
Geography	77
Commodity production	63
GDP	23
Stock market capitalization	15

Source: Risk management and analysis

Pecularities of Emerging Markets

Financial risks in general and banking risks in particular in emerging markets (EMs) **differ** in nature and magnitude from those in developed markets due to the nature of EMs' domestic financial markets and the limited access to international capital markets.

DISCUSS: Is above statement valid today? Make your choice and justify.

Pecularities of Emerging Markets

- Market Integration Leads to Higher Correlations with the World

- Contagion Might Easily and Rapidly Occur

- Emerging Markets are Relatively Inefficient (prices/rates, accountancy, transparency, disclosure) Fama & EHM

- Faster reaction to unexpected events (mainly political)

- Emerging Market Returns are **not** Normally Distributed

Why Studying Emerging Markets?

- Research on EMs provides an opportunity for testing the robustness of well-established empirical regularities that have been found in other developed markets.

- EMs is a vast area that new tools and approaches can be developed and implemented to further assess and discover interesting properties of those markets.

- **DISCUSS: Which probability distribution(s) better fit to EM financial data? Extremes or Normal?**

Forecasting and Emerging Markets

✓ **"If you have to forecast, forecast often."**

(Edgar R. Fiedler)

DISCUSS : WHY?
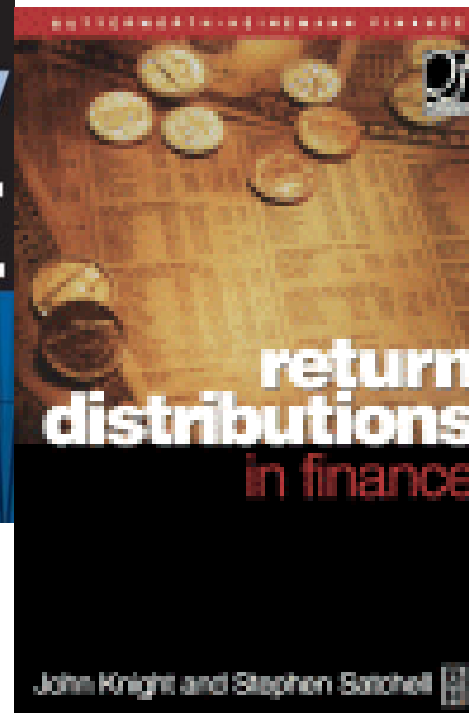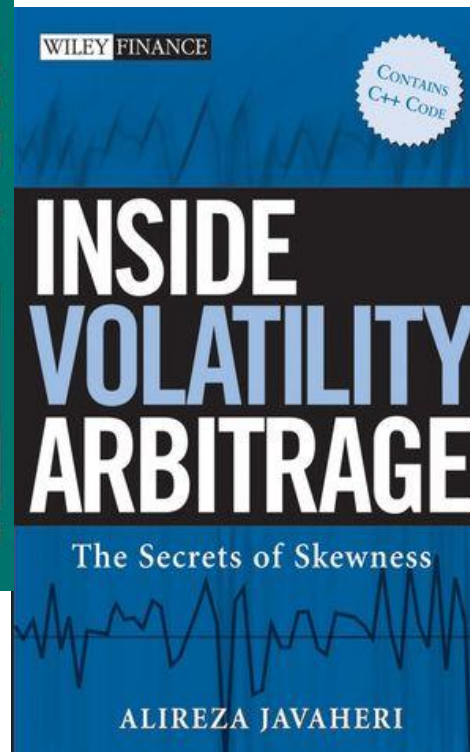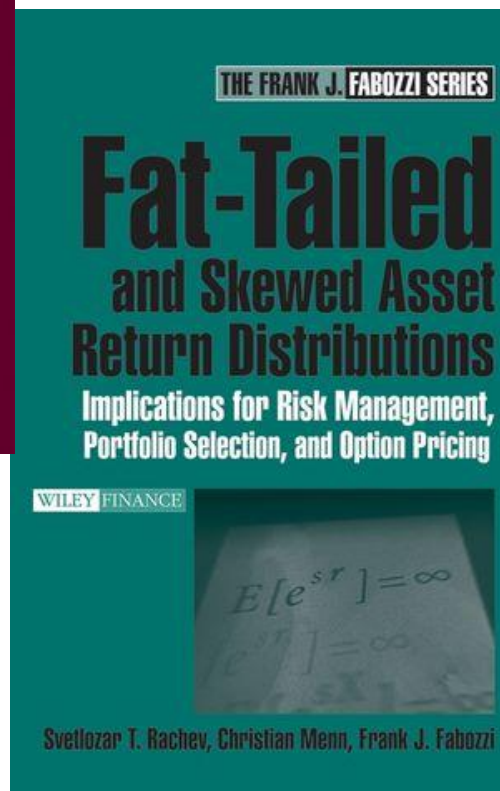
Forecasting and Emerging Markets
FAT TAILS & EXTREMES

- **Why Study Extremes?**

- **Does developed or developing matter? NO!**

  – The calculation of market risk based capital requiremets attracted enormous academic interest.

  – Financial institutions are now expected to quantify and manage financial risk in a more realistic (?) and accurate (?) way (see Berkowitz –How Accurate are VaR Models Used by Banks?).

  – The factors behind the new dynamic market structure are complex.

  – Traditional risk management and measurement tools became insufficient to deal with the risks inherent in complex portfolios that are composed of many instruments displaying both linear and non-linear characteristics.

  – Most are based on strong statistical assumptions.

Forecasting and Emerging Markets FAT TAILS & EXTREMES

The correct specification of the conditional distribution of returns is important for a number of reasons:
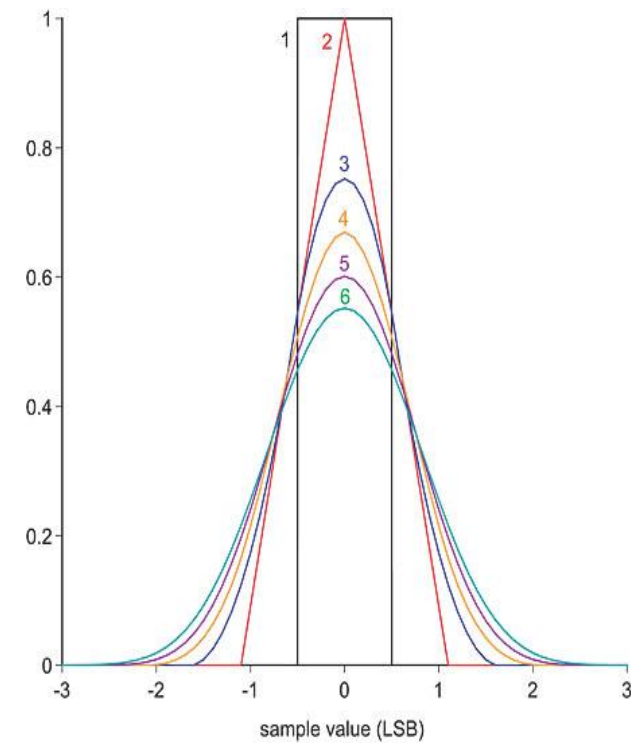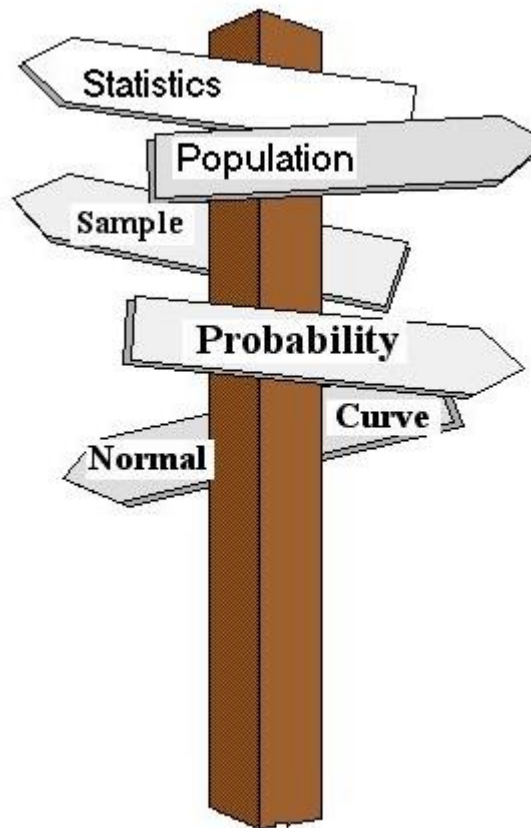
Misspecification of conditional distribution leads to estimates that are **inefficien**t (Bollerslev, 1986)

Engle and Gonzalez-Rivera (1991) show that the **inefficiency of QML** may be substantial when the true distribution is **skewed (or leptokurtic)**.

Effective risk management critically depends on true distribution of portfolio returns (for value-at-risk- for example)

The correct specification of the conditional distribution of asset returns is also important for **asset pricing** and for the **valuation of contingent securities** such as options.
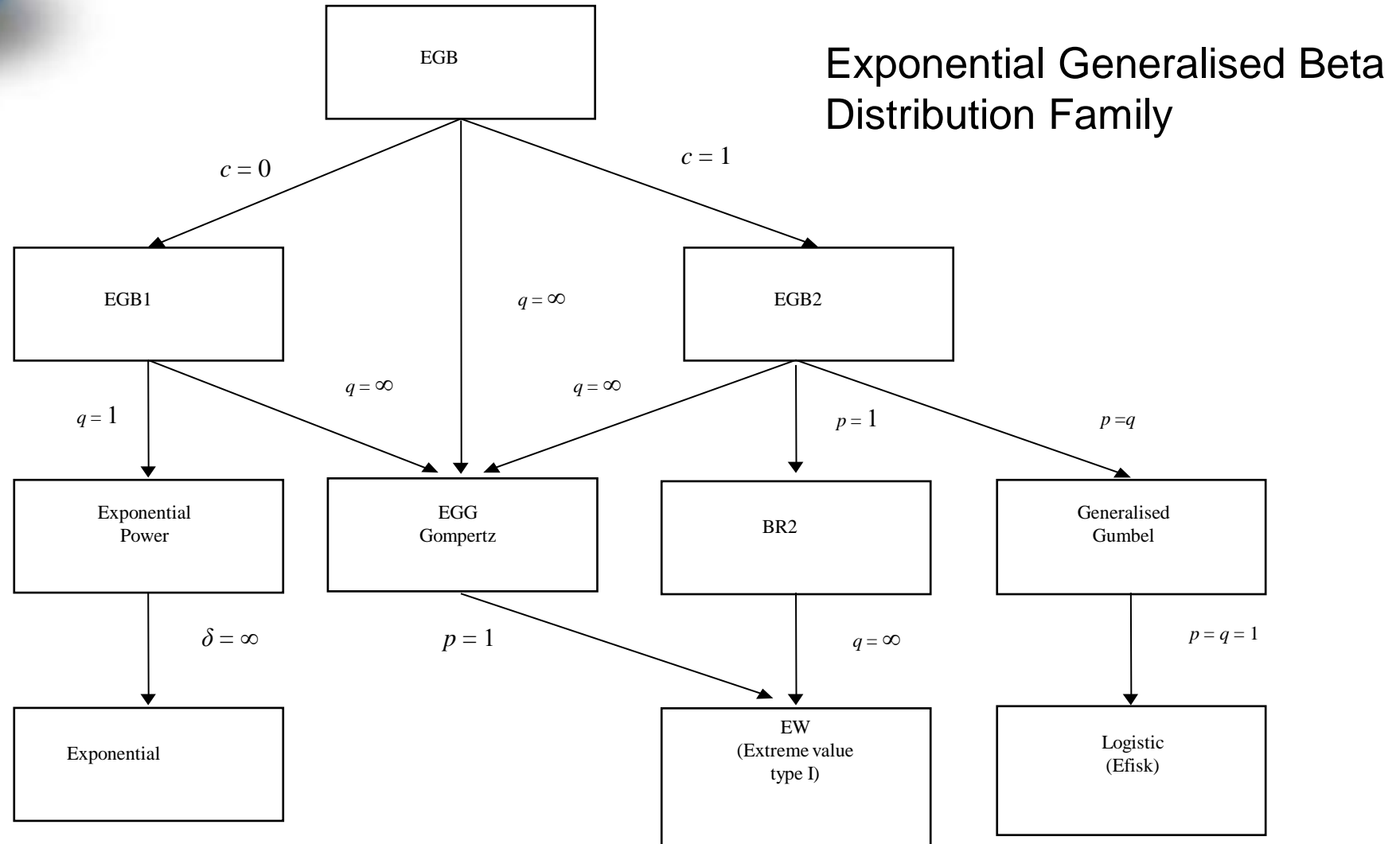
Exponential Generalised Beta Distribution Family

Skewed Generalised-t Distribution Family

Extreme Value Theory (EVT)

- EVT studies the tails of distribution and deals with the asymptotic behaviour of the extreme order statistics of a random sample (such as the min/max order)

- The basic rationale behind EVT is to model the tails of the distribution by using extremes instead of modelling the entire distribution by using all available data

- Tail index calculation (Hill estimator, regression, bootstrapping, ad hoc selection)

- EV Distributions: Gumbel, Frechet, Weibull

- See BCBS (2000, 2001)

Quantifying Risks with FAT TAILS & EXTREMES via PROBABILITY DISTRIBUTIONS

Harris, R.D.F. and Küçüközmen, C.C. (2001a). **The Empirical Distribution of UK and US Stock Returns,** *Journal of Business, Finance and Accounting*, Vol. 28, pp. 715-740.

Cited 2 Times in EBSCO Database

Harris, R.D.F. and Küçüközmen, C.C. (2001b). **Linear and Non-linear Dependence in Turkish Equity Returns and its Consequences for Financial Risk Management,** *European Journal of Operational Research*, Vol. 134, pp. 481-492.

Cited 1 Times in Elsevier-Science Direct Database

Harris, R.D.F. and Küçüközmen, C.C. (2001c). **The Empirical Distribution of Stock Returns: Evidence from an Emerging European Market,** *Applied Economics Letters*, Vol. 8, pp. 367-361.** Cited 7 Times in EBSCO Database

Harris, R.D.F., Küçüközmen, C.C. and Yılmaz, F. (2004). **Skewness in the Conditional Distribution of Daily Equity Returns,** *Applied Financial Economics*, Vol. 14, pp. 195–202.

Cited 9 Times in EBSCO Database

Still difficult? Don't worry! Top people thinks te same!

Fighting over a formula

$$E^* = \max\left\{0, \left[\left(\Sigma(E) - \Sigma(c)\right)\right]\right\}$$

For — Against

Jaime Caruana, Governor of the Bank of Spain

Roger W. Ferguson, Jr., Vice Chairman, Federal Reserve System

John Hawke, Comptroller of the Currency

Sir George Mathewson, Chairman, Royal Bank of Scotland

Pictures by Colin Beere; Bloomberg News

Future stability at stake as bankers debate Basel creed

FINANCIAL TIMES TUESDAY APRIL 24 2007
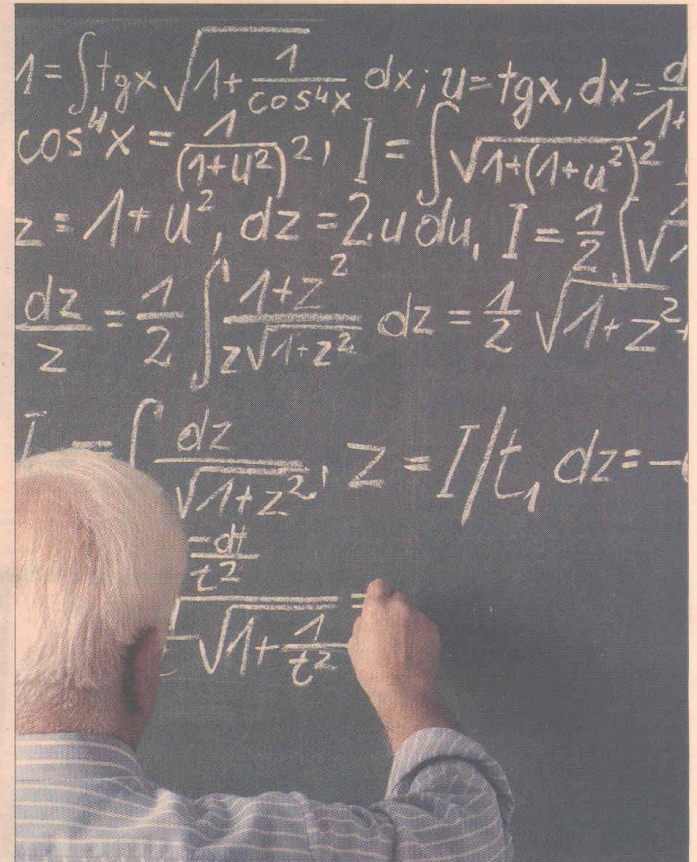
Strategy: calculations are often sensitive to assumptions about the drawdowns of capital

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Culture & Language

What is culture?

There are a variety of definitions but one of the most useful one for RM purposes is given by Fons Trompenaars: *Culture is the way a group of people solve problems.* Culture drives behaviour. It is something we learn, not something we born with.

Culture & Language

Types of culture

Nation: Britain, China, India

Region: East or West Coast USA, North or South India

Company: IBM, Microsoft, McDonald's, GE

Profession: Lawyers teachers, bankers

Society: Masons, the Scout Movement, Salvation Army, sports clubs

Religion: Christians, Buddhists, Muslims

Family: Nuclear, extended, disparate

Culture & Language

Nature of culture:

1. *Outer layer - explicit products: Dress, speaking, act,shape of buildings*

2. *The middle layer – norms & values: Norms define what is right/wrong for the group (business dress, head office rules). Values are more aspirational (how do I desire to behave rather than how do I behave)*

3. *The core – assumptions about existence: How different groups have organized themselves to deal with the environment that they live in (groups living in icy wastelands, agricultural settlers, etc)*

Culture & Language

Business cultures are based on three pillars:

(i) **Assumptions about existence-fundamentals** i.e. survival, prosperity, environment, protected monopoly.

(ii) **Norms and Values:** Companies with strong culture usually have clear and well known values and norms often driven by the values of the founding father of the business (such as customer focus, rewarding staff).

(iii) **Explicit products:** Such as corporate signage, well recognised colour schemes, office layouts, uniforms.

Culture & Language

By taking this model we can see how senior management and the board influence corporate culture by:

- *Choosing the playing field in which the company will operate*

- *Setting down the values of the company*

- *Reinforcing values with actions which then define and reinforce norms*

- *And enhancing the explicit products of the culture*

Culture & Language

Q: What happens though, if the current opportunities are such that results cannot be achieved due to internal or external factors? What do managers do?

A: Possible **external reasons** might be

i. the market has changed (strategy needs to be revisited),
ii. the strategy was wrong (possibly more focus on results rather than strategy is given)
iii. there was no strategy or it was poorly communicated (weak cultural environment, managers managing in accordance with their own interests)

Internal reasons for an inability to achieve results usually include:

i. Lack of resources – people, physical assets, time
ii. Delays of one kind or another – new products not ready, expansion of capacity not on stream, etc.

FAILURE TO UNDERSTAND CULTURAL ISSUES MEANS THAT THEY WILL NOT BE MANAGED!

Culture & Language

CULTURAL CHANGE

Culture builds up over a long period of time. It will continue over a long time-frame only if there is a stable environment and it is strong enough to resist outside influences.

But what about current situation?

- There is more exchange of people between emerging and developed markets
- The Internet, satellite broadcasting and 3G mobile technology has exposed people to world new and lifestyles
- More people are being educated in Western universities
- Trade levels are rising as barriers are lowered (Doha Talks, WTO)
- Companies are setting up in emerging markets or acquiring companies, bringing new technology and business techniques

Culture & Language

Language

Language is not simply about the communication of ideas but influences how people actually think.

Language has an influence on culture but also brings its own problems:

- Acquiring language skills is an important part of education process
- Conducting negotiations may require interpreters to be used, who may or may not translate faithfully (and correctly) – Digital Translators CHALLENGE!
- Requirements to produce company documents in several languages due to regulatory requirements (e.g. foreign banks)
- Non-local managers are unlikely to know the local language fluently and may cause offence unwittingly
- People may pretend to understand what is said to them as they do not wish to lose face by admitting their lack of knowledge (RISK of RISK or RISK SQUARED).
- Is English an easy (or not easy) language?

Culture & Language:
A Vacancy Announcement

Head of Economics of Financial Regulation

Circa £100,000 plus excellent benefits

Canary Wharf - London

Our regulatory philosophy holds that well functioning and efficient markets can be more effective than regulation itself. This makes the economic analysis of potential interventions critical to our policy development. Using leading edge economic research, cost benefit analysis, market failure analysis and policy advice, we seek to ensure the market is efficient, orderly and fair for all.

Probably with a background in consulting, Government or regulation, you will have a deep understanding of micro or regulatory economics and be able to champion our approach internally and externally at a senior level. If you can lead a large team and the development of our economic analysis tools, you will have the opportunity to contribute strongly to the success of the FSA's regulatory approach and our own impact upon the market.

Executive Focus

From Keynes to cobwebs. Analysing our impact on markets.
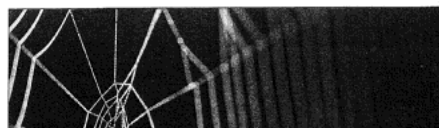
Head of Economics of Financial Regulation
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As Head of Department, you will lead the delivery of divisional and your departmental strategic objectives. In doing so, you will provide strategic leadership, management supervision and development for your 20-plus strong team of regulatory economists. You will also be responsible for the technical strategy of our cost benefit and economics-based policy advice and research. Working alongside FSA Senior Management, HM Treasury and within key policy fora, your exposure and experience will be unrivalled.

Probably with a background in consulting, Government or regulation, you will have a deep understanding of micro or regulatory economics and be able to champion our approach internally and externally at a senior level. If you can lead a large team and the development of our economic analysis tools, you will have the opportunity to contribute strongly to the success of the FSA regulatory approach and our own impact upon the market.

If you are an influential economist, accustomed to networking to create trust and rapport, and have the gravitas to lead and communicate creatively with presence, go to our website www.fsa.gov.uk/jobs and search using reference 23829 for more details and the option to apply before 18th March 2005.

FSA

another unique insight through the financial services authority

The Economist February 20th 2005

FSA

Drivers of Culture & Language

Drivers of Financial Risk Culture

We're all plugged

BCBS

IOSCO

FSF (now FSB)

IASB & IFRS

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Risk Galaxy can Easily turn out to be a Galaxy of Crisis

Business Risk

Credit Risk

Operational Risk

Political Risk

Liquidity Risk

Credit-Sovereign Risk

Systemic Risk

Country Risk

Accounting Risk

Market Risk

Reputational Risk

Industry Risk

Environmental Risk

Legal/Compliance Risk
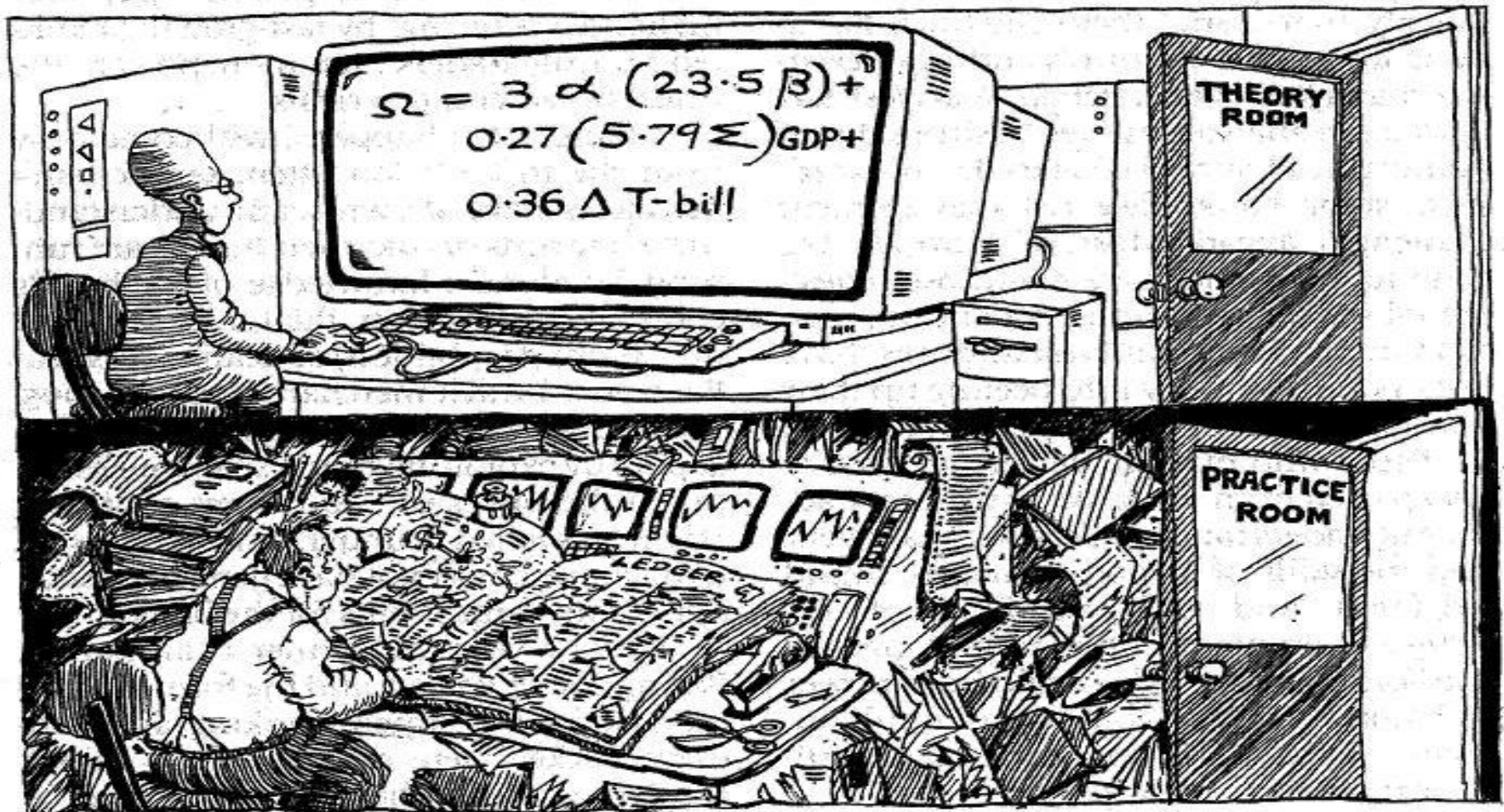
The Economist, October 4,1997

Designing & Implementing Risk Management Techniques in Emerging Markets

- Policy design in emerging markets **should** carefully consider the high volatility of international capital flows (volatility & adequate pricing).

- Due to various levels of <u>efficiency</u> of financial markets in EMs, it is not too easy to differentiate between alternative categories of risk and return.

  For example:

  – liquidity crises may not be easily differentiated from insolvency.

  – currency mismatches between the A&L of lenders and borrowers may increase exchange rate risks and quickly transforms them into credit risks.

  – high degree of <u>sensitivity</u> to political and geopolitical risks .

  – ENERGY, NATURAL GAS, OIL & NABUCCO and PIPELINES?

Designing & Implementing Risk Management Techniques in Emerging Markets

Due to significant differences between financial markets in industrial countries and developing countries, straight implementation of international methods of risk management and measurement techniques might **not** yield the desired results.

It is essential for bankers and supervisors to appropriately **ADAPT** risk management standards to the particular features of developing countries as well as to **DESIGN COMPLEMENTARTY POLICIES** (Suarez, 2003).

Designing & Implementing Risk Management Techniques in Emerging Markets

Global Financial Stability Report

September 2004

International Monetary Fund
Washington DC

The Basel Committee, as well as the IMF and World Bank, have reiterated in different fora that non-BCBS countries considering implementation of Basel II should do so at their own speed, and according to their own priorities, and neither the Bank nor the IMF is pushing countries to adopt Basel II.

On Basel-II

"We believe that Basel II ..will transform the landscape of Global Banking"
UBS Investment Research: "Basel II a new bank architecture"

IT spending on solutions that enable banks' capital adequacy - driven by new Basel 2 regulations - is expected to absorb about nine per cent of Western Europe's total banking IT spending in 2006

IDC, Basel 2 and CAD 3: The Impact on Western European Banking IT Spending, April 2003

On Basel-II

- Basel-II does not to be overhauled – it is adaptable to rapid financial and moreover is designed to help steer banks through extreme market conditions.

<div align="right">

Nout Wellink

</div>

RESPOND: It is true as long as the market players curb their appetite for greed and attempt to quarantine the desease called "infectious greed"!

<div align="right">

Alan Greenspan, Frank Partnoy

and Coşkun Küçüközmen ☺

</div>

Culture & Language

History of risk-based capital adequacy in the US
Source: Berger et al. 1995)
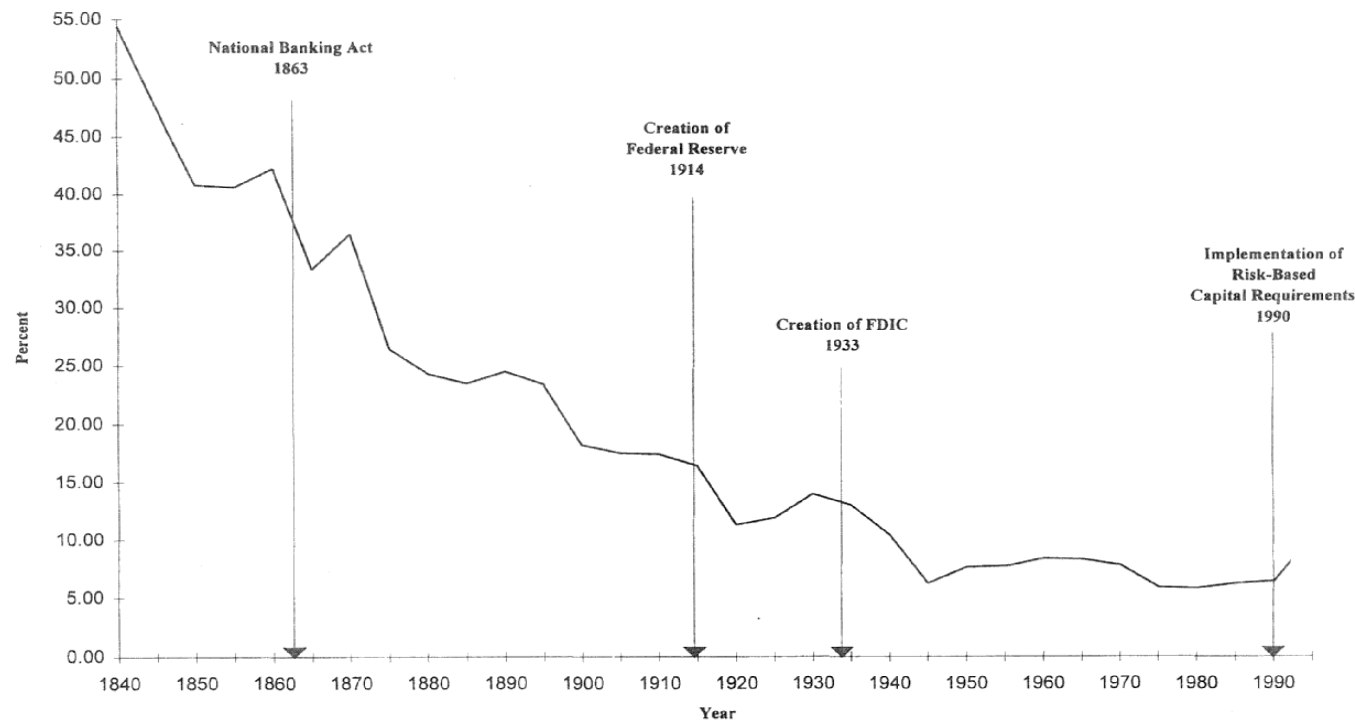
Fig. 1. Equity as a percent of assets, 1840–1993 for U.S. commercial banks. (Ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets.)

Source: Statistical Abstracts through 1970, Report of Condition and Income thereafter.

Culture & Language

A WORD OF CAUTION

- "Regulatory strategies that make sense for <u>industrial countries</u> may not be transferable, unchanged, to <u>developing countries</u>.

- (…)

- An unchanged transfer of the Basel framework to <u>developing countries</u> is economically <u>inappropriate</u> and politically <u>infeasible</u>" (Kane, 1995).

Risk Mis-measurement and Mis-management in Developed Countries! A BASEL Touch

- In January, 2007, Northern Rock Chief Executive <u>Adam Applegarth</u> had told shareholders that the bank was "on the cusp" of being able to pay out a big special dividend.

- Because under Basel II it was carrying more capital than it needed to be safe.

- It was a striking example of how badly banks can misjudge their own risks-and the danger for regulators of relying too heavily on those judgments.

April 17, 2008,
How New Global Banking Rules Could Deepen the U.S. Crisis
by <u>Peter Coy</u>

BusinessWeek

Basel's hand

Hands off
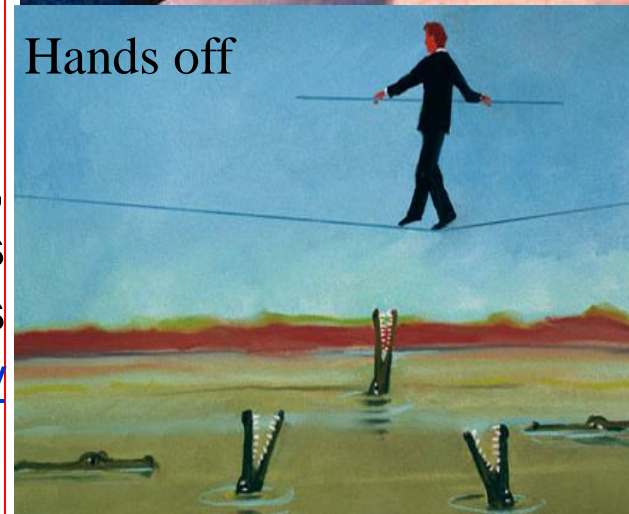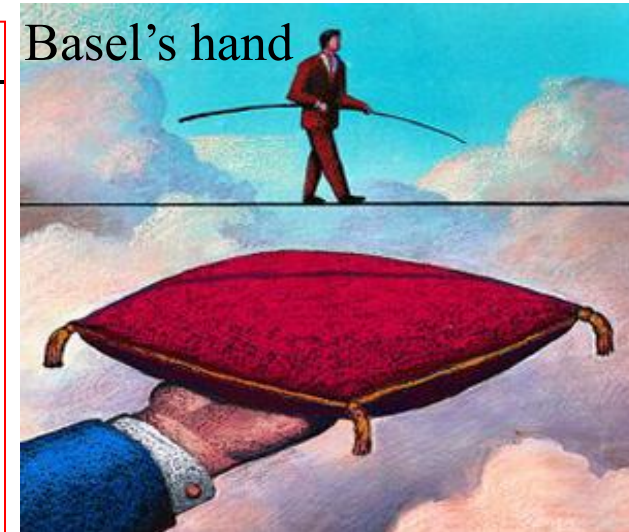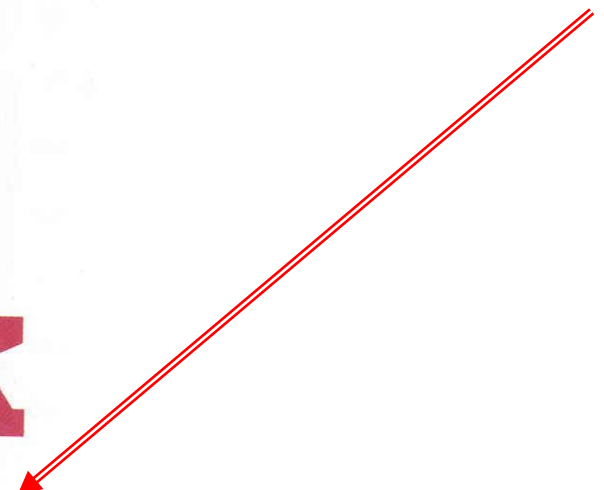
Inside Wall Street's Culture of Risk

Investment banks are placing bigger bets than ever and beating the odds—at least for now

BY EMILY THORNTON

Has anybody considered this statement
As an Early Warning Signal?

Risks in Emerging Markets

Normal Distribution vs. Empirical Distribution

Kurtosis, Fat-Tails

Empirical

Normal

Empirical

Fat Tails

μ
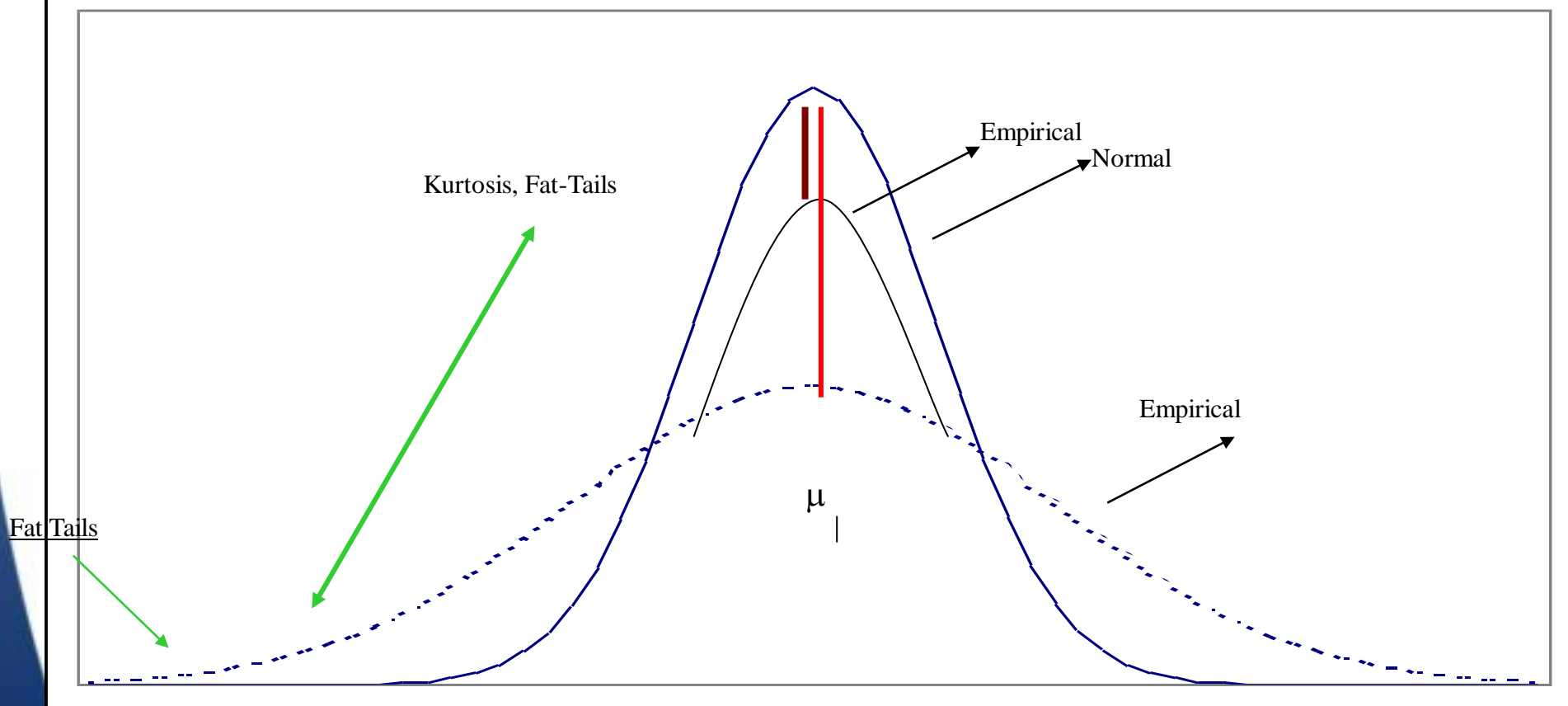
Risks in Emerging Markets

27 Feb 1991/5 Feb 2002

ISE Composite Return Index

(n=2854)

Return $ln(P_t/P_{t-1})$

* (Including dividends)

Risks in Emerging Markets

Financial Asset Returns

Descriptive Statistics

Mean	0.22%
Standart Deviation	3.13%
Kurtosis	3.02
Skewness	-0.03
Minimum	-19.45%
Maksimum	17.03%
Sigma Event	-6.21
N of Observations	2854

Risks in Emerging Markets

Istanbul Stock Exchange Composite Price Index
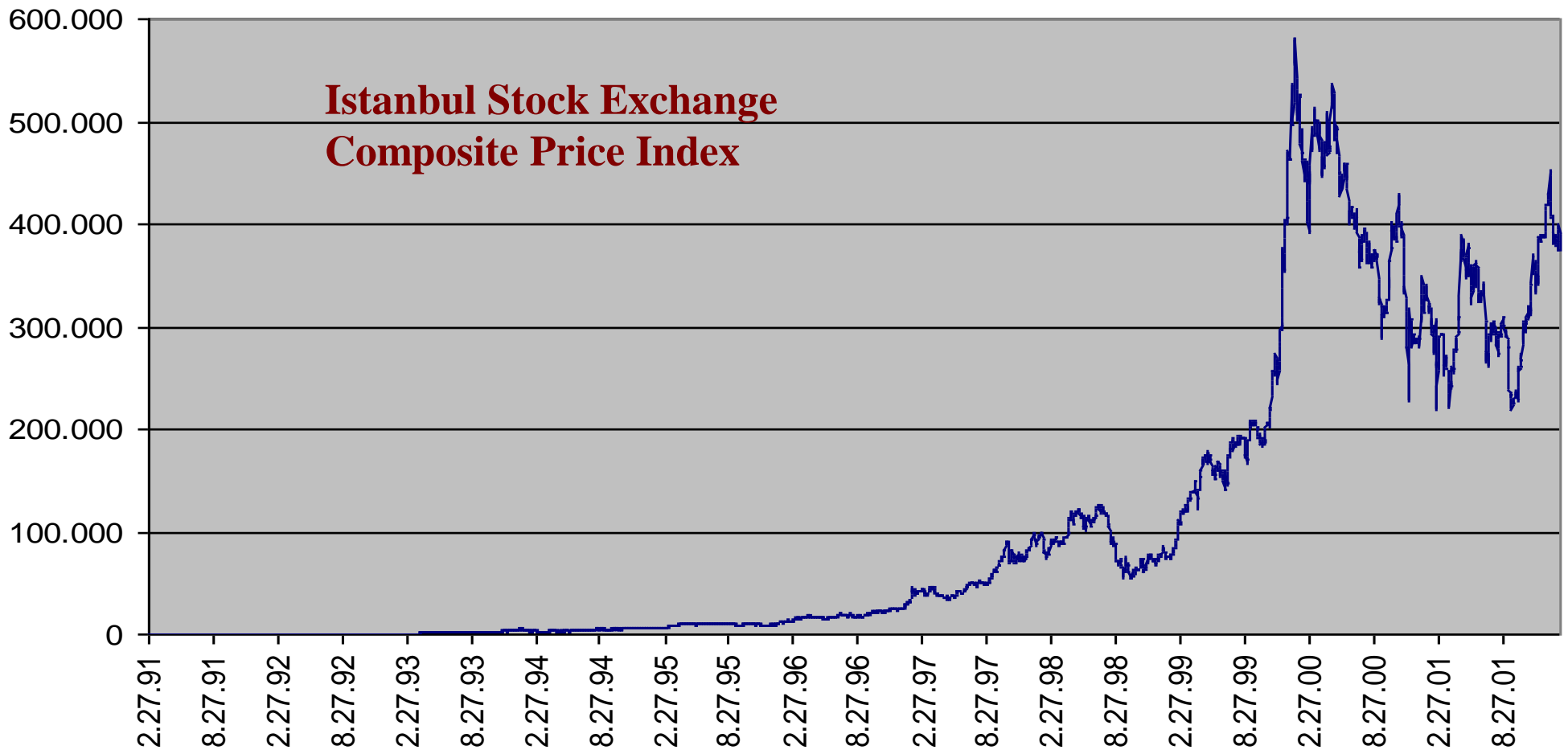
Risks in Emerging Markets
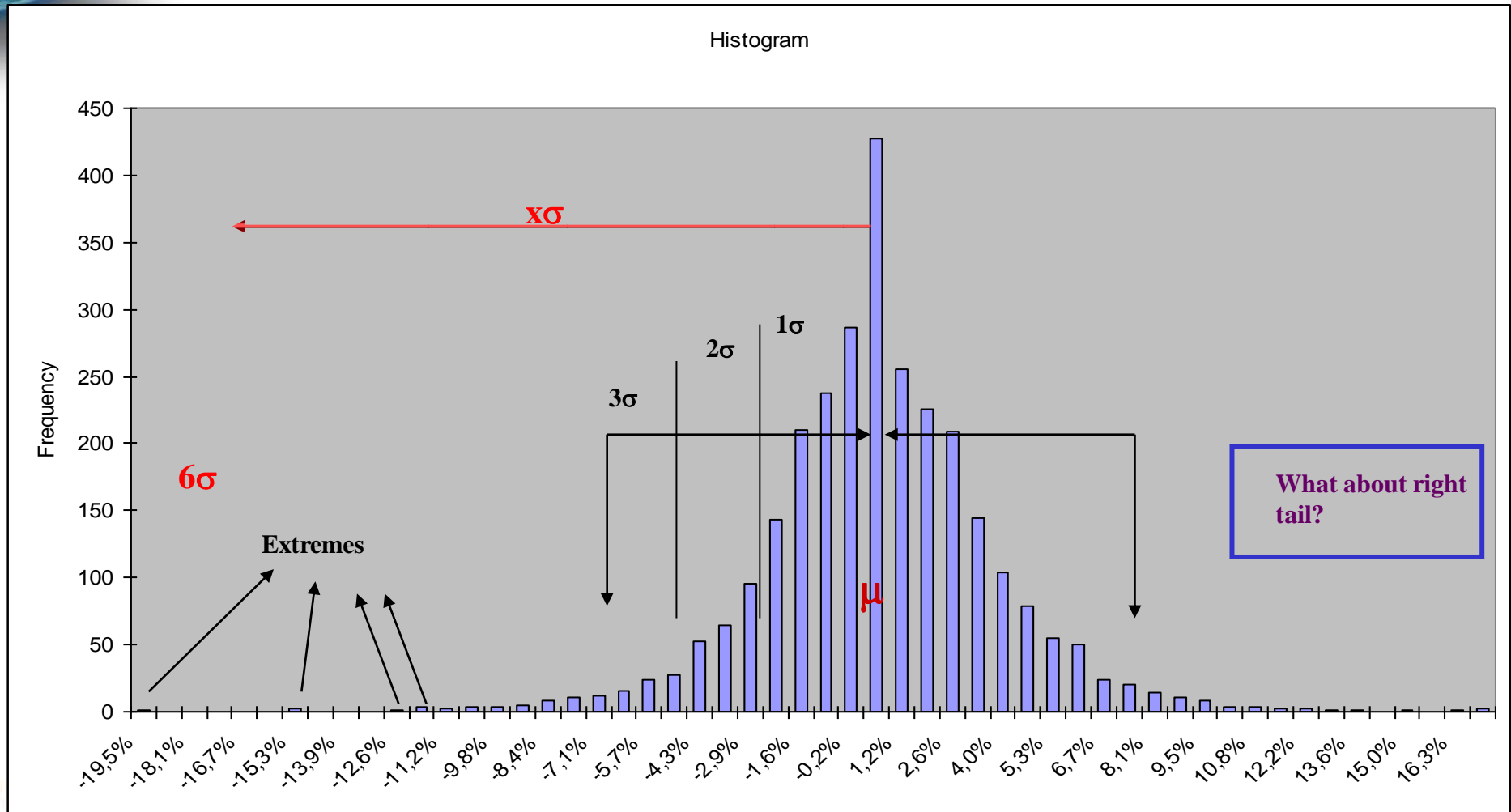
Risks in Emerging Markets
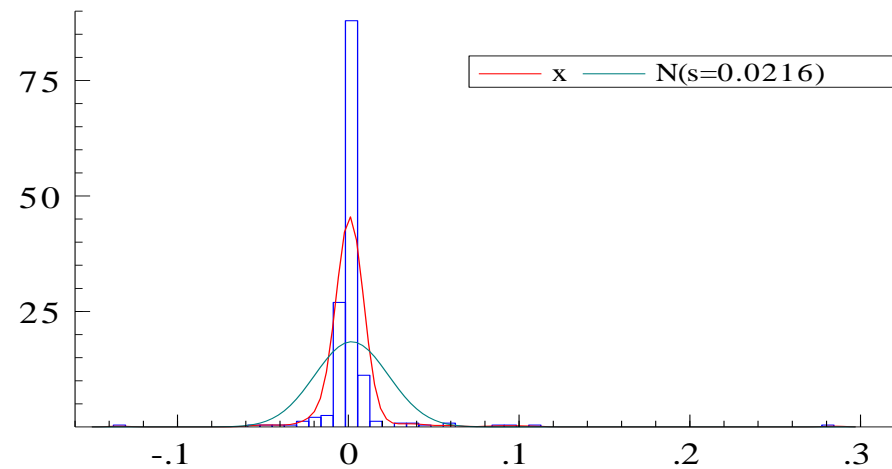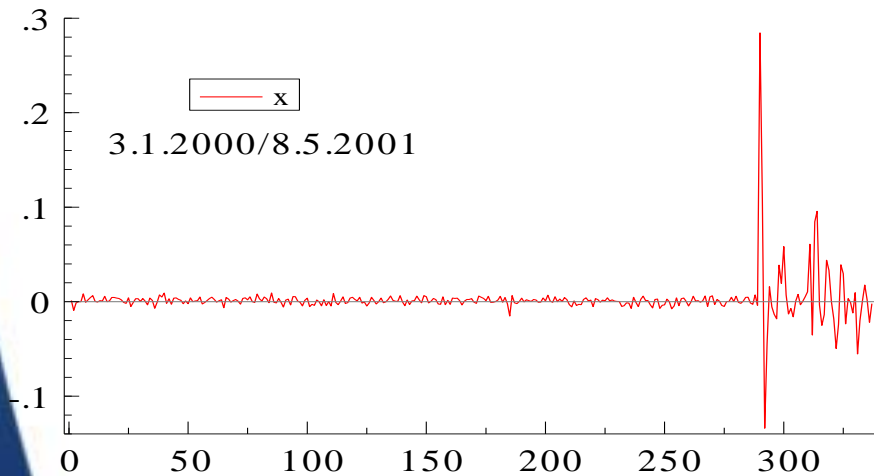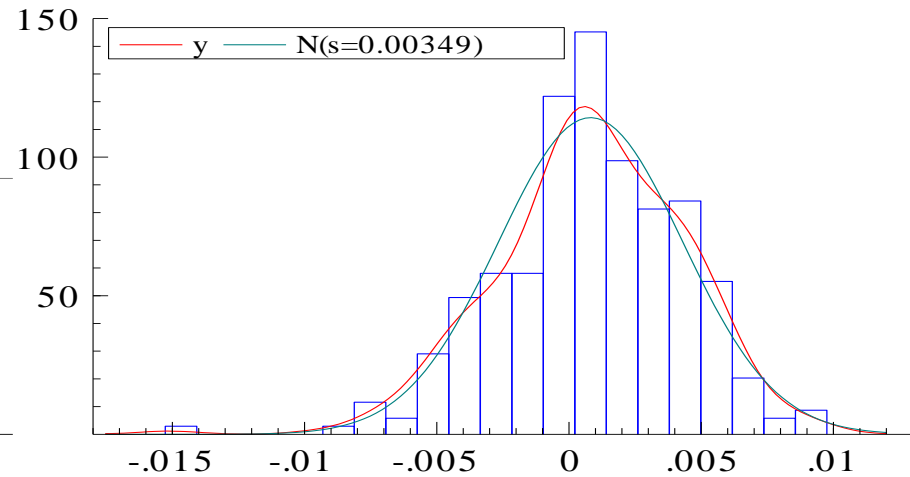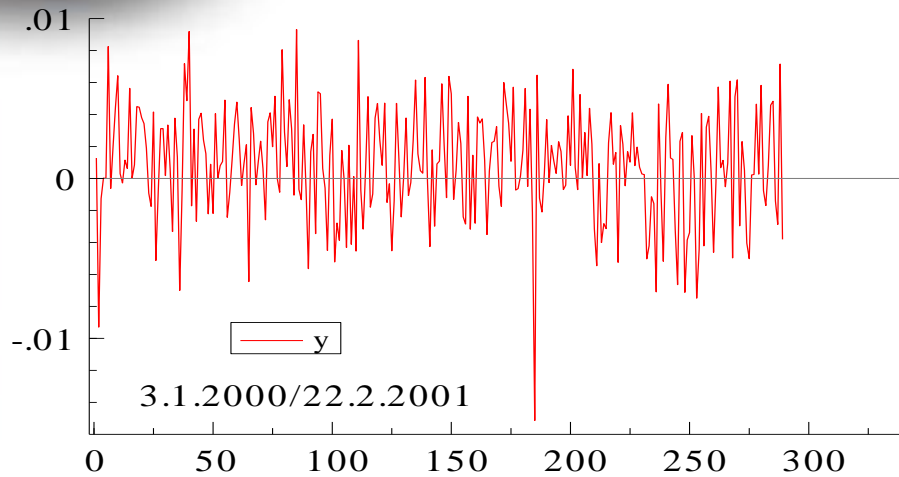
Risks in Emerging Markets

Change in volatility and other parameters: Before and after crises

<div align="center">

Before   **After**

</div>

Descriptive Statistics for x	Descriptive Statistics for y	
Sample size 289: 1 to 289	Sample size 337: 1 to 337	
Mean 0.000818	Mean 0.001933	
Std.Dev. 0.003492	Std.Dev. 0.021615	
Skewness -0.446097	Skewness 6.645897	
Excess Kurtosis 0.944340	Excess Kurtosis 92.382946	
Minimum -0.015135	Minimum -0.133870	
Maximum 0.009317	Maximum 0.284470	
Normality Chi^2(2)= 11.75 [0.0028] **	Normality Chi^2(2)= 789.96 [0.0000] **	
(asymptotic form of normality test: 20.324)	(asymptotic form of normality test: 1.2232e+005)	

1996 MRA & Opinions/Critics Received From Banks

- Will regulatory agencies provide a uniform set of data for calculations?

- What if we do not get data for specific instruments?

- Which external data sources will be recognised by the regulatory agencies?

- Why multiplication factor and square root of time?

- Cherry picking and differences in calculation methods!

- Regulatory arbitrage / regulatory capture?

- Off-off-shore? Securitisation heavens!

- Shadow banking!

1996 MRA & 1999 Basel-II

SOME IMPORTANT POINTS

- New generation regulations requires a new approach, thinking and understanding

- <u>Training</u> and awareness (Thanks FSI!) as well as the use of technology is the key

- Proper management including the efficient allocation of roles and responsibilities within an internal control environment in an institutions a must

- Market risk amendment has surprisingly been emerged as the intersection of many disciplines with banking (Q-finance, Statistics, Econometrics-Time Series-, Math, Scientific Computing, Programming, Engineering)

- Remember to test to measure the impact (QIS)

A very short cut & precise solution against "difficult to implement" type of regulation

112　　　　　　　　　　Brookings-Wharton Papers on Financial Services: 2001

Figure 2. Innovation Supports a Regulatory Flea Market
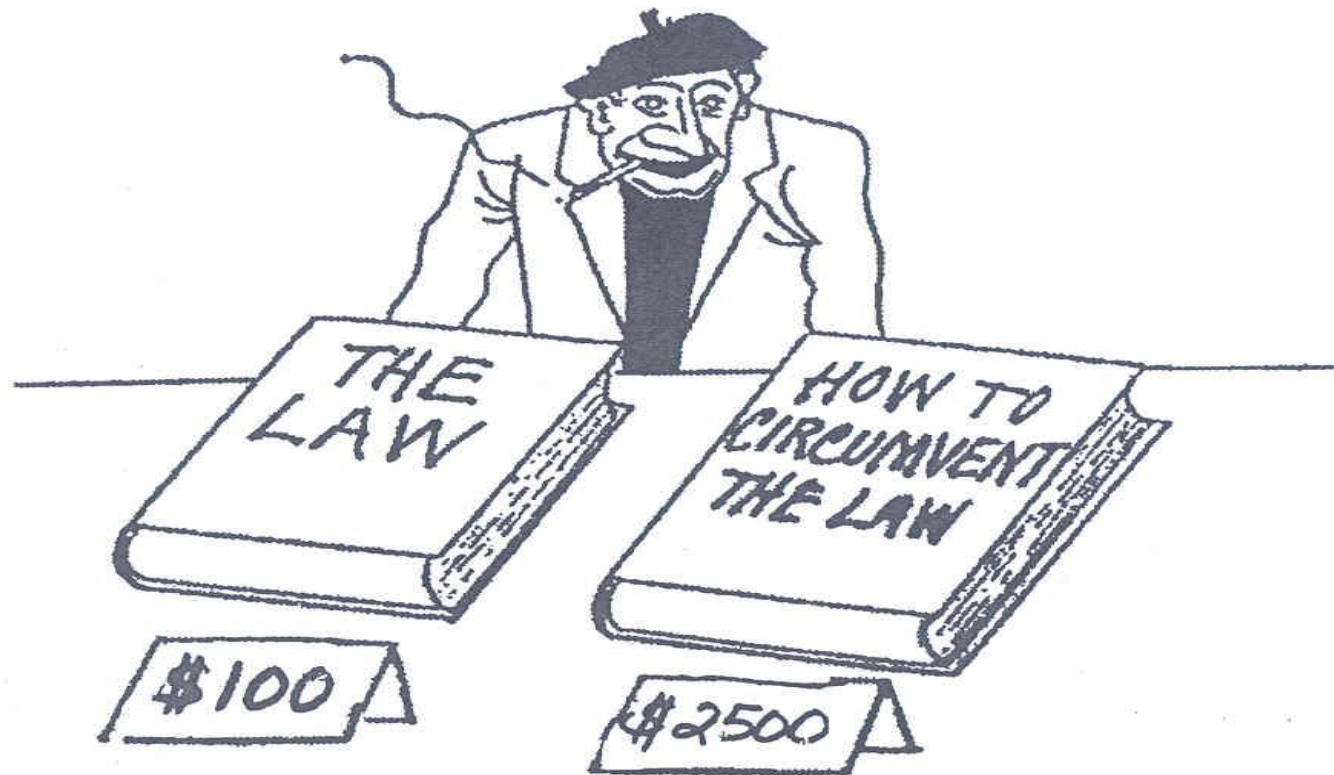
If you're still in trouble... We propose an Alternative "Market Discipline" Solution

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Physical, Social, Economic and Political Risks

Change is more likely to occur in emerging markets and the changes that occur happen more quickly and are more unpredictable!

DISCUSS: What about USA, UK and Crisis Hit Europeans?

Physical, Social, Economic and Political Risks

Some of the techniques used to manage risk may not be available or, where they are, they may not work as effectively as they do in developing countries.

high volatility

(jumps in volatility)

event risk

(unexpected events)

Physical, Social, Economic and Political Risks

Physical	Social	Economic	Political
Climate	Tribal divisions	State control	Power base
Natural disasters	Religion	Protection	Patronage and cronysim
Location	Population	Managed prices	Legal/regulatory framework
Natural Resources	Health	Poor Spending Decisions	Corruption
Utilities		Inadequate tax base	Lack of transparency
		Debt burden	Conflict
		Thin financial markets	
		No or small capital markets	

Physical, Social, Economic and Political Risks

The problem with "no or small capital markets"

- **Lack of depth**-too few stocks or a few stocks dominate the market index

- **Illiquidity**-family businesses often want to realise capital gains but often float only a small proportion of stock (10-20 per cent). Daily trading volumes are small and prices can be volatile as a result;

- **Lack of transparency**-stock exchange rules often do not require the level of disclosure seen in developed markets

- **Different accounting standards used**-accounting standards do not always met international standards (e.g. Consolidated accounts are not often available)

Physical, Social, Economic and Political Risks

Risk factors are interlinked

- **Lack of control** - cultural barriers create problems of understanding

- **Language** - simply not understanding what is said

- **Family stress** - unhappy wives (husbands?) and families increase stress

- **Boredom** - outside activities may be very limited

- **Focal point** - being a foreigner raises your profile, appearing to be privileged can provoke jealously (accommodation benefits for example)

- **Travel** - many positions require much travel within or between countries or back to Head Office, meaning families are left on their own

- **Time zones** - getting hold of people may be difficult so business calls at home in the evening are not uncommon

Agenda

- THE NATURE OF EMERGING MARKETS (EMs) with Special Reference to PREDICTION, RISK & PROBABILITY

- CULTURE AND LANGUAGE

- RISKS IN EMERGING MARKETS with Special Reference to BASEL-II

- PHYSICAL, SOCIAL, ECONOMIC AND POLITICAL RISKS

- **MEASUREMENT AND MANAGEMENT OF RISKS in EMs a REGULATORY APPROACH**

- CONCLUSION

- ILLUSTRATION

Measurement and Management of Risks in EMs

MEASUREMENT OF RISK

Putting a value on risk exposures is not that easy,

even in developed markets

✓**Sources of data**
  –Credit bureaux
  –Government statistics

✓**Quality and quantity of data**
✓**Accessibility**
✓**Timeliness**
✓**Culture**
✓**Customer identification**
✓**Reporting standards**
✓**Models**
✓**Language**

Measurement and Management of Risks in EMs

- *MANAGING IN IGNORANCE OR UNCERTAINTY*
    - **Minimising the impact**
    - **Ensure that contingency plans are in place and they work**
    - **Train managers in crisis management**
    - **Offset risks internally**

- *Reducing uncertainty*
    - **Improving your radar**

- *Risk and reward*
    - **Having the right strategy**
    - **Investing in risk management**
    - **Being flexible**

SI-6   Old NWS Radar unit

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Models & Model Risk

- Models support the decision making process

- Models support accurate (not always) analysis of portfolios

- Models help to conduct sensitivity and scenario analysis

- Models help to define and compare risk parameters across bank

- Models can help to enhance better understanding and communicating risks within a financial institution

- Models cannot be expected to make correct decisions, so they cannot be blamed

- Models play an important role in:

  – Pricing & valuation and provides realistic measures of exposure to unexpected catastrophic losses

Models & Model Risk

- Data (inaccurate, unfiltered, dirty, digit error etc)

- Model Specification (misspecified)

- Black box (of tricks) particularly in derivatives business

- Changing environment requires changing models (updates/upgrades)

- Comparison of models (vendors Marshall&Siegel, '97)

- Comparison of models across business lines (observe performance)

- Documentation and Reporting Skills (output)
  - Model development
  - Testing and review
  - Audit

- Back testing

Model Review & Validation

- Validation
  - Third party (proprietary issues) another expert view
  - Internal (requires expertise)
  - External auditors (by regulation)

  Supervisory Authority (not responsible for the outcomes but assessment should aim the operating and control environment, -i.e.licensing/validate the driver not the car)
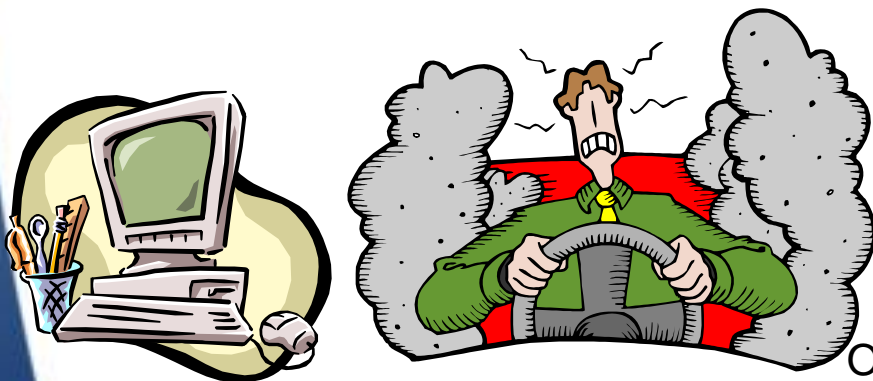
Oversight by senior management and board

Bank-wide modeling policy

Model standards

Model review

Backtesting

- "Banks implementing internal model approach will calculate their market risk based capital requirements based on their VaR figure.

- Therefore the calculation and testing the quality and accuracy of VaR has a crucial importance to banks.

- While underestimation of VaR imposes a penalty, the overestimation of VaR induces an extra cost to banks in the form of holding excess-capital.

EMs Innovate Clever Solutions when Managing Unique Risks: A Balanced RM Approach

Risk Manager of the Year

Balancing Factor

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- **CONCLUSION**

- ILLUSTRATION

Conclusions

➢ **Emerging markets are different from developed economies** and this gives rise to new risks;

➢ Risks, which have a low probability of occurring in developed countries, have a **higher likelihood** of occurring in emerging markets;

➢ Risk management is more **problematic** because identifying and measuring risk can be more difficult and some of the **techniques** used to manage risk may not be available, or work as effectively as they do in developed countries (for example GARCH models with extreme observations/outliers are generally expolsive in variance; convergence problems).

Conclusions

➢ Political and economic instability is both the cause and result of higher risk.

➢ Some studies argue that prudential standards these can perversely effect by, creating volatility (perception of crisis during normal times due to mis-practice), reducing diversification (instruments display higher volatility are not included), triggering contagion (herding behaviour).

➢ Never ignore the prerequisites for the implementation of risk regulations in emerging markets.

Conclusions

- **Find out what it is really like (data, models, facts)**

- **Ensure that your strategy is appropriate**

- **Do not underestimate cultural issues**

- **Take a long-term view**

- **Employ good people**

- **Remember emerging markets are not all the some**

- **Price adequately for the risks that you take**

- **Consider your exit strategy**

Conclusions

Do not forget that risk is not always downside. Unexpected change can produce circumstances which will benefit your business.

Investing in emerging markets need NOT mean lots of sleepless nights.

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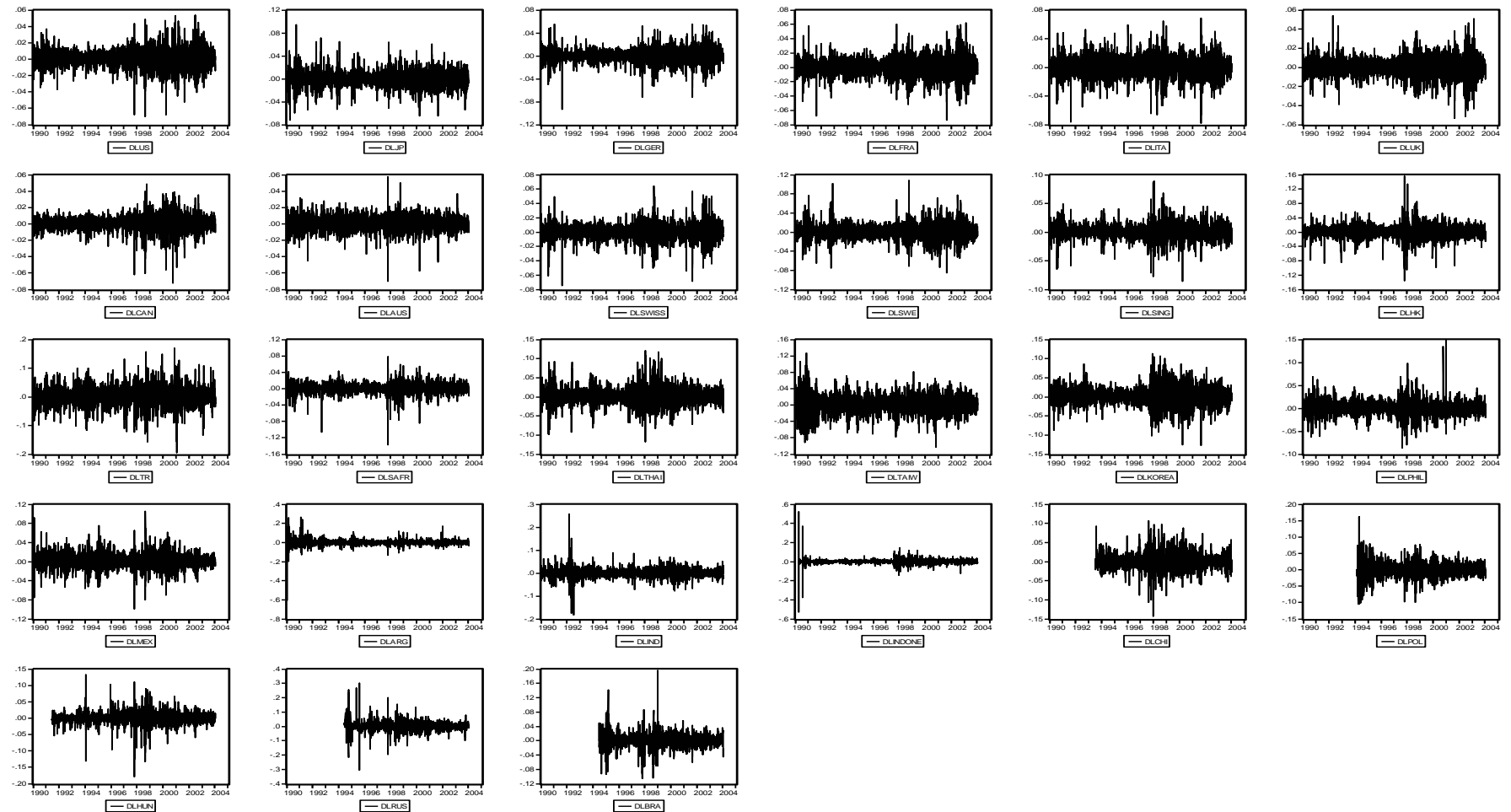
- **ILLUSTRATION**

Illustration

- Stock market data of 27 countries are analysed

- Data received from DATASTREAM

- Stock market total return index

- Covers the period of 01/01/1990-31/01/2004 (in total 3675 observations for each series)

- Returns are calculated by ln transformation

- Descriptive statistics and correlation matrix are calculated in Excel

Illustration

	Max	Min	Max-Min	St Dev	Kurtosis	Skewness
US	5.37%	−7.03%	12.39%	1.03%	4.03	−0.13
JP	9.39%	−7.21%	16.60%	1.25%	3.76	0.12
GER	5.55%	−9.29%	14.84%	1.17%	4.16	−0.40
FRA	6.17%	−7.36%	13.53%	1.20%	3.08	−0.15
ITA	6.90%	−7.79%	14.69%	1.32%	2.59	−0.16
UK	5.41%	−5.37%	10.78%	0.95%	3.23	−0.14
CAN	4.86%	−7.25%	12.10%	0.82%	7.13	−0.64
AUS	5.76%	−6.99%	12.75%	0.82%	4.27	−0.24
SWISS	6.43%	−7.41%	13.84%	1.04%	5.41	−0.43
SWE	10.86%	−8.50%	19.36%	1.47%	4.13	0.17
SING	8.89%	−8.56%	17.45%	1.17%	6.21	−0.06
HK	15.54%	−13.60%	29.14%	1.58%	9.55	−0.13
TR	17.03%	−19.46%	36.49%	3.03%	3.05	−0.02
S AFR	7.85%	−13.68%	21.52%	1.14%	12.82	−1.09
THAI	12.12%	−11.83%	23.95%	1.96%	5.02	0.43
TAIW	12.74%	−10.30%	23.04%	2.03%	2.87	0.06
KOREA	11.34%	−12.69%	24.03%	2.08%	3.58	0.11
PHIL	14.81%	−8.56%	23.37%	1.39%	9.54	0.60
MEX	10.60%	−9.93%	20.53%	1.39%	4.62	0.09
ARG	26.15%	−60.76%	86.91%	2.79%	72.00	−1.65
IND	25.72%	−18.25%	43.98%	1.74%	23.44	0.30
INDONE	52.25%	−52.94%	105.19%	2.30%	191.17	−0.11
CHI	10.71%	−14.29%	25.00%	1.96%	4.83	0.07
POL	16.27%	−10.43%	26.70%	2.04%	5.40	−0.16
HUN	13.24%	−17.95%	31.19%	1.63%	14.49	−0.75
RUS	30.17%	−30.62%	60.79%	2.97%	19.77	0.40
BRA	19.53%	−10.55%	30.08%	1.75%	11.80	0.29

Illustration

Illustration

	US	JP	GER	FRA	ITA	UK	CAN	AUS	SWISS	SWE	SING	HK	TR	S AFR	THAI	TAIW	KOREA	PHIL	MEX	ARG	IND	INDONE	CHI	POL	HUN	RUS	BRA
US	1.000																										
JP	0.102	1.000																									
GER	0.465	0.233	1.000																								
FRA	0.446	0.235	0.808	1.000																							
ITA	0.384	0.191	0.690	0.755	1.000																						
UK	0.423	0.244	0.731	0.806	0.679	1.000																					
CAN	0.701	0.159	0.481	0.471	0.399	0.447	1.000																				
AUS	0.093	0.400	0.313	0.265	0.239	0.287	0.188	1.000																			
SWISS	0.397	0.233	0.751	0.769	0.685	0.749	0.419	0.275	1.000																		
SWE	0.391	0.249	0.706	0.735	0.637	0.680	0.442	0.296	0.649	1.000																	
SING	0.137	0.343	0.301	0.285	0.239	0.296	0.186	0.386	0.274	0.277	1.000																
HK	0.132	0.393	0.368	0.314	0.260	0.346	0.215	0.483	0.304	0.314	0.579	1.000															
TR	0.087	0.114	0.192	0.186	0.175	0.176	0.143	0.139	0.168	0.188	0.142	0.154	1.000														
S AFR	0.205	0.288	0.436	0.385	0.356	0.409	0.281	0.414	0.406	0.400	0.337	0.437	0.202	1.000													
THAI	0.056	0.215	0.182	0.160	0.148	0.174	0.116	0.255	0.164	0.162	0.412	0.366	0.165	0.254	1.000												
TAIW	0.065	0.211	0.149	0.141	0.108	0.117	0.073	0.213	0.143	0.128	0.276	0.265	0.087	0.182	0.174	1.000											
KOREA	0.106	0.296	0.201	0.195	0.160	0.217	0.127	0.296	0.170	0.205	0.305	0.336	0.136	0.247	0.274	0.239	1.000										
PHIL	0.055	0.191	0.127	0.089	0.075	0.133	0.098	0.269	0.114	0.084	0.347	0.347	0.049	0.207	0.296	0.150	0.195	1.000									
MEX	0.520	0.130	0.331	0.328	0.298	0.325	0.461	0.152	0.300	0.298	0.153	0.175	0.117	0.231	0.104	0.066	0.141	0.120	1.000								
ARG	0.326	0.092	0.220	0.242	0.233	0.243	0.306	0.097	0.222	0.209	0.134	0.144	0.079	0.171	0.095	0.047	0.092	0.100	0.457	1.000							
IND	0.049	0.137	0.112	0.124	0.112	0.113	0.105	0.136	0.095	0.150	0.191	0.192	0.065	0.162	0.141	0.108	0.181	0.100	0.092	0.046	1.000						
INDONE	0.019	0.196	0.147	0.128	0.109	0.124	0.083	0.239	0.150	0.107	0.339	0.328	0.083	0.194	0.314	0.126	0.170	0.305	0.054	0.043	0.130	1.000					
CHI	0.051	0.205	0.165	0.122	0.098	0.144	0.115	0.273	0.124	0.137	0.357	0.598	0.111	0.287	0.258	0.175	0.185	0.258	0.080	0.078	0.107	0.216	1.000				
POL	0.121	0.208	0.285	0.258	0.220	0.253	0.177	0.272	0.219	0.275	0.235	0.316	0.167	0.291	0.194	0.151	0.215	0.194	0.116	0.084	0.127	0.160	0.170	1.000			
HUN	0.196	0.219	0.409	0.383	0.363	0.383	0.255	0.316	0.389	0.386	0.278	0.349	0.245	0.434	0.174	0.115	0.216	0.167	0.190	0.152	0.133	0.197	0.204	0.354	1.000		
RUS	0.120	0.123	0.251	0.232	0.215	0.246	0.173	0.186	0.239	0.238	0.215	0.263	0.179	0.311	0.157	0.120	0.128	0.077	0.178	0.148	0.093	0.121	0.150	0.151	0.292	1.000	
BRA	0.379	0.119	0.278	0.282	0.255	0.274	0.338	0.135	0.258	0.250	0.143	0.155	0.157	0.211	0.101	0.083	0.114	0.086	0.474	0.522	0.078	0.042	0.075	0.134	0.189	0.182	1.000

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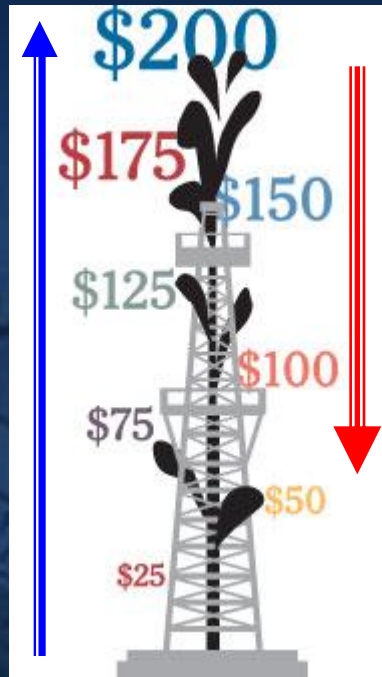
Learning Lessons

LEarning !

Learn from your mistakes

Learn from others' mistakes and experiences

But try to earn from them too …

OIL PRICE
PREDICTION

THE BIGGEST LESSON
TO BE LEARNT
BY EVERYONE

Thank you...