Exploiting Risks for Growth

Benchmarking Best Practice in Corporate Risk Thinking

The Many Components of Risk: Understand Your Threats and Opportunities

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General Table of Contents

Introduction:

Are senior managers up to snuff on risks?

Risk Assessment

Classics

Techniques Available

Threats

Risk Management: Hedges and Bets

Derivatives

Real Options

Lessons from Risk Structuring:

Increasing Value to and from Customers, Suppliers, Partners, M&As

2

Beyond Finance: Strategy, Organization, Culture

Risk Thinking: Picking your risks

Has SOx crippled risk thinking?

- **Risk thinking goes much beyond compliance!**
- Risk thinking is at the heart of running a business: choosing the risks
- Shareholder focus: Risk vs Return!
- Are some better than others at the game?
- How can corporations assess risks? 3

  Benchmark + Understand -> Good Governance

The Role of Senior Management re Risk

Senior Management's Role

1. **Monitoring** risk situation of the firm
2. Concurring with and influencing **risk appetite**
3. Reviewing **portfolio view** of risks
4. Evaluating how management has embedded **risk management**
5. Being apprised of **most significant risks**
6. Implementing **decision making** in major deals

4

FT article details some elements

My own work on Risk Reports to Board will follow

The evolution of the role of the CFO

The Rise in Complexity fosters the Need for Leadership

From control to decision

- Value thinking: Working Capital (PPR), Capital Awareness (Holcim)
- Benchmarking: Cost (Vodafone), Procurement (Aker Kvaerner)
- Budgeting vs Planning vs Financial Strategy: Vodafone/APMollerMaersk
- Risk thinking: Deal (Anadarko) / Processes (Aker Kvaerner)
- Business support: Schlumberger (Combined with risk thinking)
- Capital Allocation: HSBC (Combined with Basel II compliance)
- Fluent processes: Merrill Lynch Derivative Products, Saudi Aramco

From reporting to analysis to communication to leadership

The Four Steps of Risk Thinking

Good risk analysis consists in Four Steps:

1. Identifying risks:
   The baby step of risk thinking, still missed by many!
2. Assessing risks:
   Doomed to fail, this exercise is nonetheless necessary!

   "Plans are nothing, planning is everything" N.
3. Managing risks:
   Along with getting a good understanding of your risk aversion
4. Structuring risks:
   In order to share them and get the most value

– Keep in mind that **NOT** making a decision **IS** a decision

“If human nature felt no temptation to take a chance…there might not be much investment merely as a result of cold calculation.”

John Maynard Keynes

What is risk?

The chance of injury, damage, or loss; Dangerous chance; hazard (Oxford dictionary)

RISK IS NEGATIVE???

7

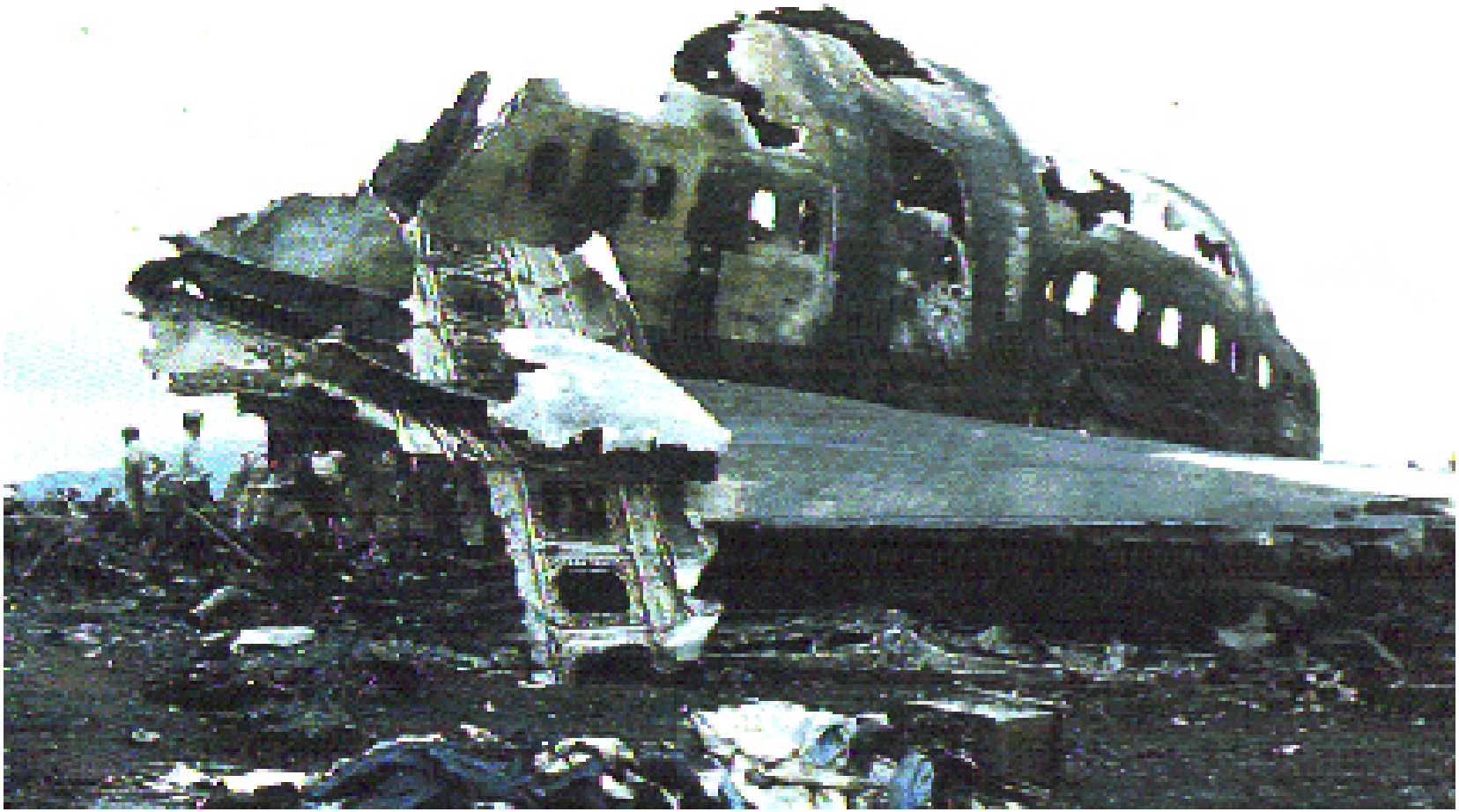
The word “hazard” comes from the Arabic “al-zahr” meaning “dice”

Where do you stand?

Tenerife, March 27, 1977, a Boeing 747 taking off collides with a Boeing 747 taxiing on the runway: 538 dead.

After is too late

Very much too late



September 11, 2001

11

1000 people shut down computer before they go.
Average time before attempting exit by survivors of 6 minutes after impact, with variance from 50 sec. to 30 min. (and more?).

We Love Risk and Gambling

Gambling is the fastest growing industry in the United States

A $40 billion business that draws more customers than baseball parks or movie theatres

It has been estimated that states pay $3 in costs to the criminal justice system for every $1 of revenue from gambling…

What are our Risk Preferences? [12]

Financial Risks Are the Most Familiar

Most of current finance thinking is about risk assessment

We have many theoretical results, and many new ones coming

Has led to huge growth in industry

Interestingly, markets seem to sometimes move faster than practice[18]

Galaxy of Financial Risks

Source: Capital Market Risk Advisors

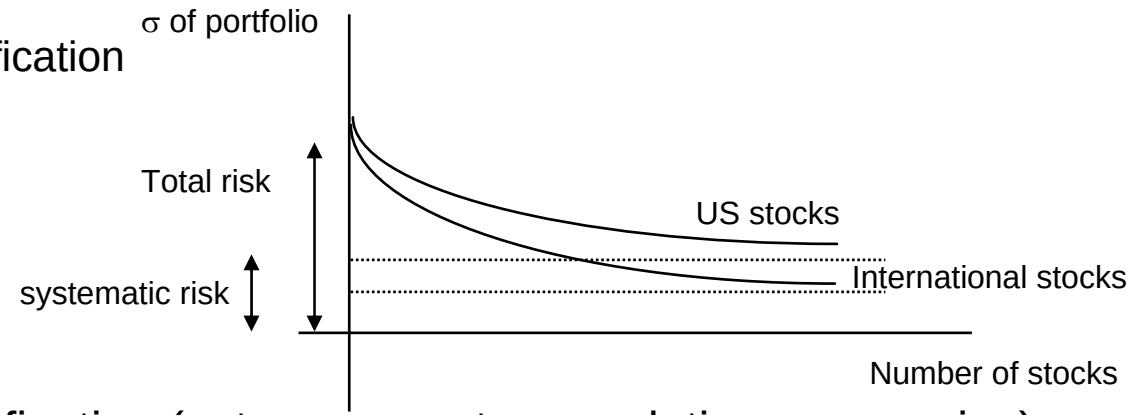
Risk sharing/Diversification/Hedging

Distributing risks:

- Example: Structured Products

Spreading risks

- Classical Diversification



Challenges to diversification (extreme events, correlations, synergies):

Operational Diversification

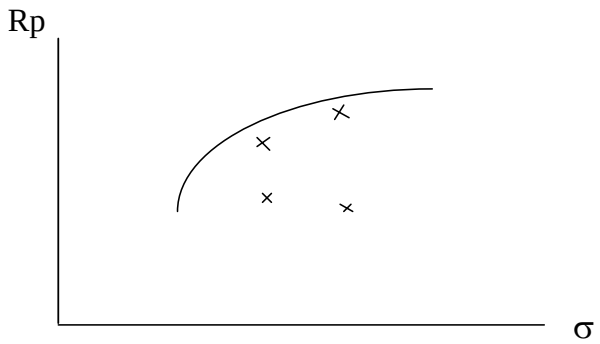
Financial Diversification

Managerial Diversification

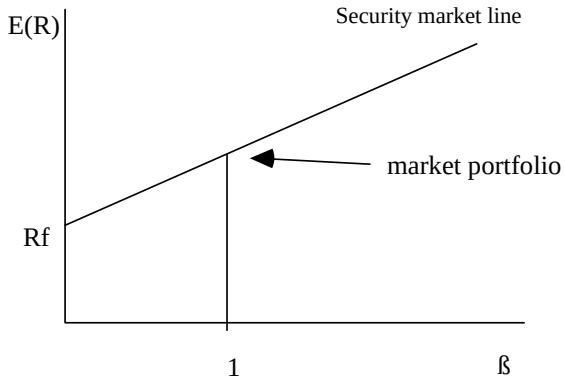
Strategic Diversification?

Has led to classical models of investments, still dominant thinking in view of decisions

Efficient Frontier



CAPM



16

These views of risk are pervasive!

1. Financial analysts and stock evaluation
2. Mergers and Acquisitions
3. Corporate Capital Budgeting Decisions
4. Corporate Performance Measures: EVA
5. Restructurings
6. Portfolio Management
7. Performance Measurement of Portfolio Management (BARRA)

This View is Terribly Challenged by the Markets!

- Equity markets getting embedded in other markets
- Non equity risks becoming major market risks
- Pricing of specific risk?
- Skewness/Kurtosis of distributions?
- Copulas
- Behavioral issues (Style effects, Momentum effects, non rational agents? Or better than rational agents?)

Hedge Funds Risk

Market and Hedge Fund Performance between 1Q2000 and 1Q2003 and during financial crises

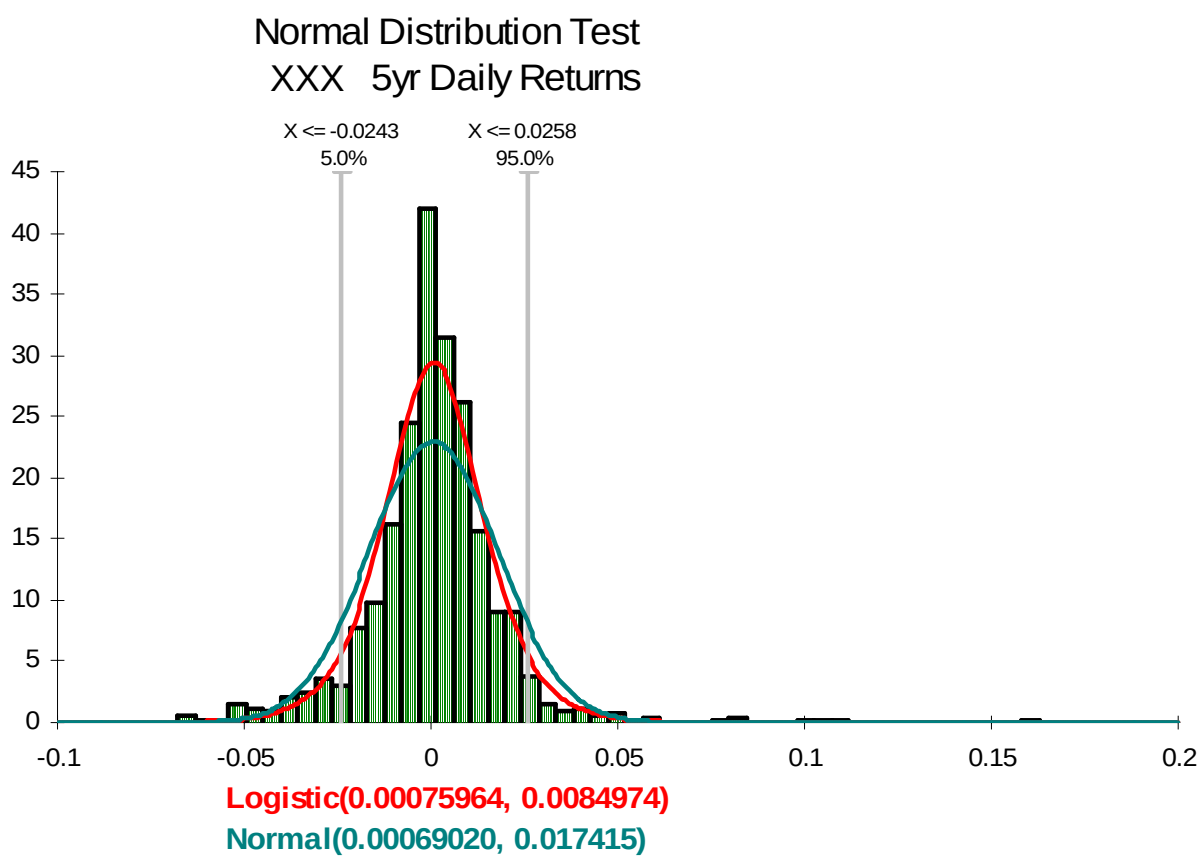
Net Performance	MSCI World $	S&P 500	Convertible Arbitrage	Equity Mkt Neutral	Event Driven	Fixed Inc Arb	Long/Short	Short Bias
1 Month	-0.27%	0.84%	0.95%	0.79%	1.01%	0.42%	0.43%	1.23%
3 Months	-4.94%	-3.60%	5.44%	1.04%	3.95%	2.69%	0.14%	-3.24%
6 Months	2.42%	4.04%	10.39%	2.60%	7.48%	1.15%	1.56%	-5.81%
1 Year	-23.85%	-26.08%	12.05%	7.52%	2.03%	5.89%	-0.78%	16.29%
2 Years	-26.80%	-26.90%	18.20%	14.09%	11.39%	14.80%	-0.20%	-0.67%
3 Years	-45.01%	-43.40%	43.94%	30.52%	20.36%	23.54%	-9.66%	43.14%
3yr Avg	-18.07%	-17.28%	12.91%	9.29%	6.37%	7.30%	-3.33%	12.70%
Since Inception	47.59%	81.84%	153.32%	159.73%	154.88%	83.70%	168.93%	3.96%
Incep Avg Annl	4.30%	6.68%	10.57%	10.87%	10.64%	6.80%	11.29%	0.42%
Beta (vs S&P 500)	0.85	1.00	0.04	0.08	0.20	0.01	0.42	- 0.85
IT Downturn (2Q2000-1Q2001)			19.93%	13.55%	7.82%	31.11%	8.97%	39.27%
Liquidity Crunch (Aug 98-Oct 98)			- 12.04	2.57	- 13.82	- 11.75	- 6.76	6.47

Which shareholders shall we target?

1. Non Diversified Investors *(Sharpe Ratio)*
2. Short Term Event-Driven Strategy *(Normality of Returns)*
3. Bond vs. Equity investors *(Option-based Cost of Equity)*
4. Risk-Averse investors *(Sortino Ratio)*
5. Long-term Well Diversified Swiss investors *(CAPM)*
6. Value vs. Growth and Small Cap vs. Large Cap *(Fama and French)*
7. International investors *(Multifactor Models)*
8. Emerging market investors *(Emerging Market Model)*
9. Capital structure/Credit Arbitrageurs *(KMV)*

How can we consider all investors in an integrated perspective?

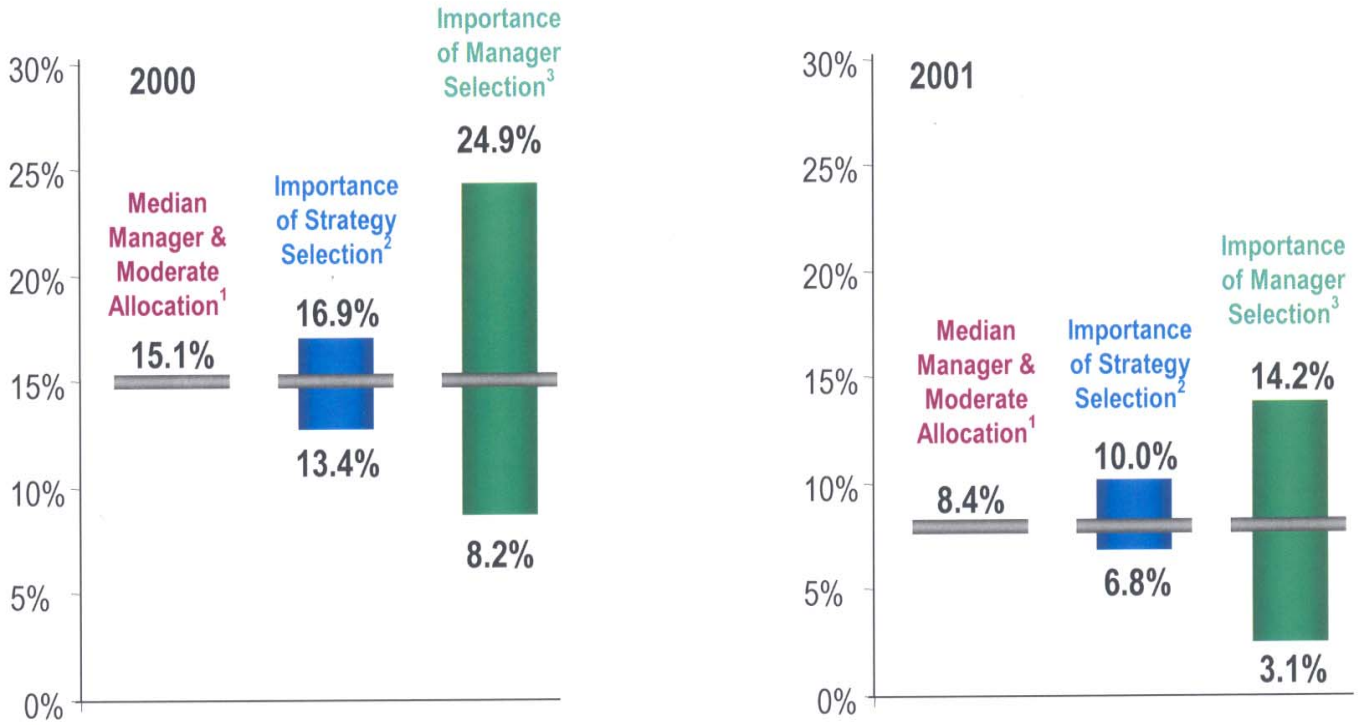
Short-Term Event Driven Strategies
(Normality of Returns)



	Fit	Input
Function	=RiskLogistic(0.	N/A
α	7.596387826546	N/A
β	8.4973759311205	N/A
Left X	-0.0243	-0.0243
Left P	5.00%	6.05%
Right X	0.0258	0.0258
Right P	95.00%	95.63%
Diff. X	0.0500	0.0500
Diff. P	90.00%	89.58%
Minimum	-Infinity	-0.067853
Maximum	+Infinity	0.16270
Mean	0.00075964	0.00069020
Mode	0.00075964	0.00000 [est]
Median	0.00075964	0.00057723
Std. Deviation	0.0154125	0.017415
Variance	0.000237546	0.00030304
Skewness	0.0000	0.9557
Kurtosis	4.2000	13.2554

	Fit	Input
Function	=RiskNormal(0.(	N/A
μ	6.902032757785	N/A
σ	1.7414725288778	N/A
Left X	-0.0280	-0.0280
Left P	5.00%	4.83%
Right X	0.0293	0.0293
Right P	95.00%	96.93%
Diff. X	0.0573	0.0573
Diff. P	90.00%	92.11%
Minimum	-Infinity	-0.067853
Maximum	+Infinity	0.16270
Mean	0.00069020	0.00069020
Mode	0.00069020	0.00000 [est]
Median	0.00069020	0.00057723
Std. Deviation	0.017415	0.017415
Variance	0.00030327	0.00030304
Skewness	0.0000	0.9557
Kurtosis	3.0000	13.2554

Hedge Funds: Manager Selection looks Primordial



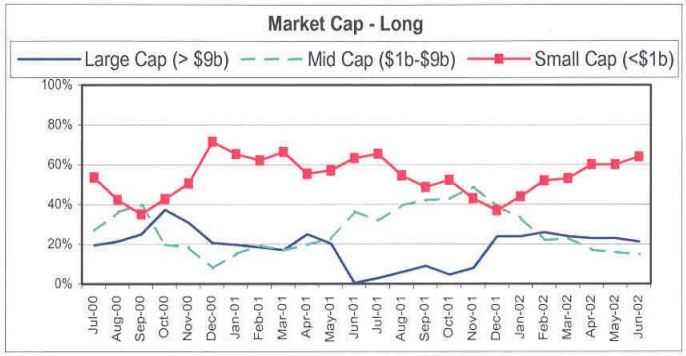
[1] Median Manager Performance combined with PAAMCO Moderate Allocation

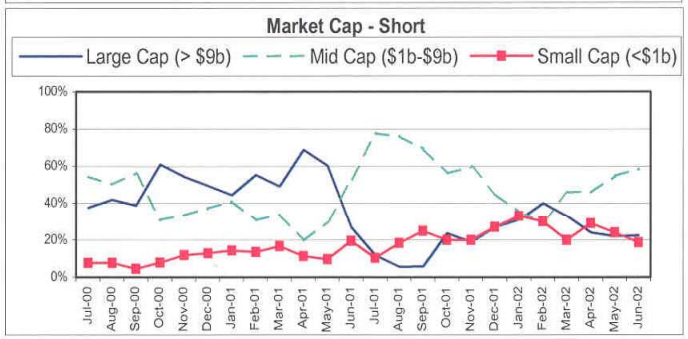
[2] Median Manager Performance with Over/Under Weighting of Strong/Weak Sectors

[3] Top/Bottom Manager Quartile Performance with Moderate Allocation

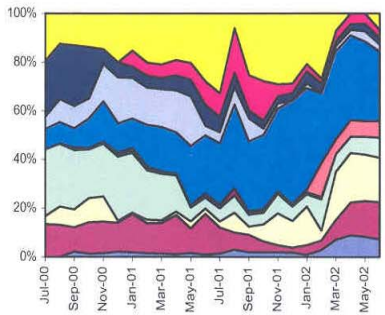
Deep Knowledge Essential to Understand Risks

Long/ Short Equity Manager

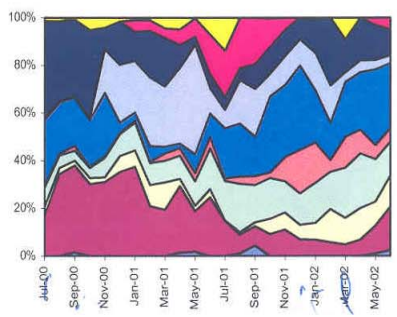




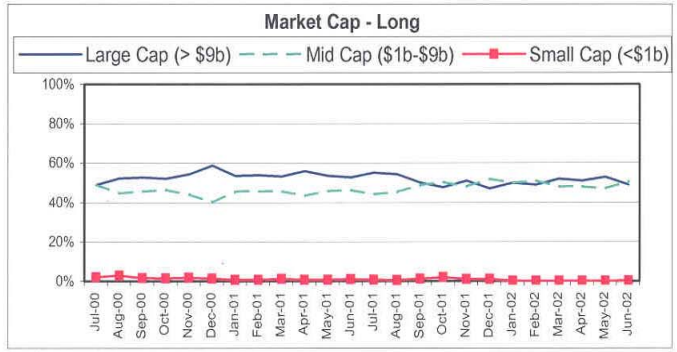
Sector Concentration Long



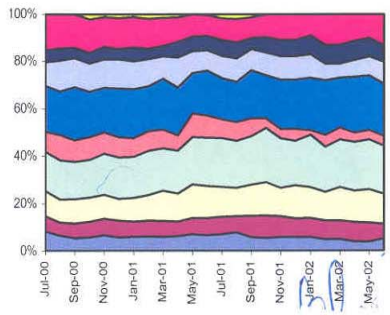
Sector Concentration Short



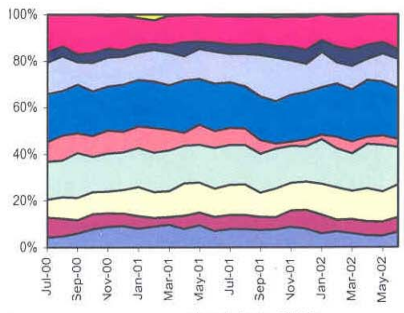
Equity Market Neutral Manager



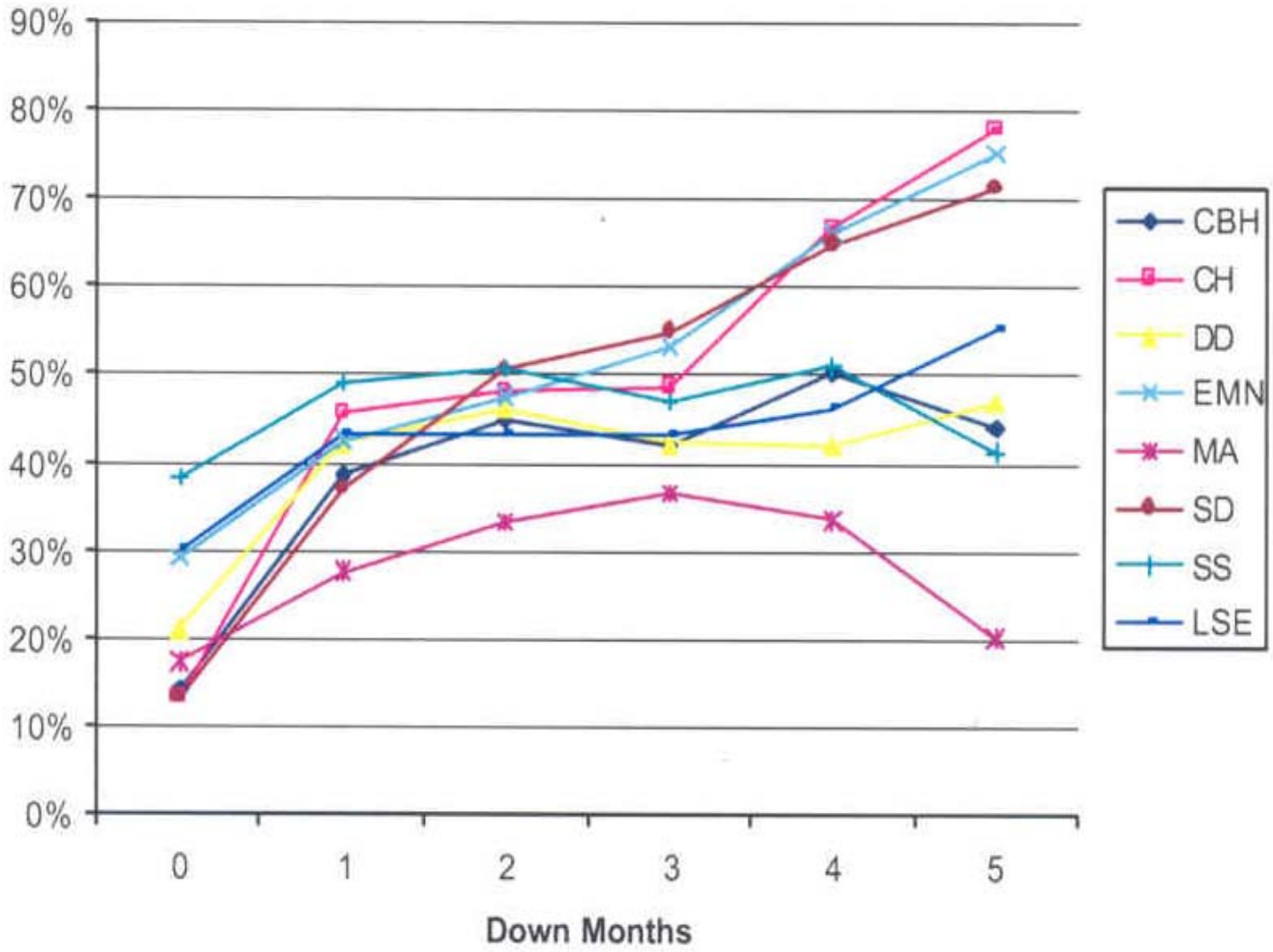
Sector Concentration Long



Sector Concentration Short



And Equity Markets' Truths Become Lies ?



Of course, tools are getting updated!

Option based frameworks for credit risk thinking

Simulation-based VaR

Copula modelization for CDOs/CLOs

Sophisticated behavioral thinking for fund of fund management in hedge funds

BUT WHAT IS NEXT???

25

We need to open our minds to Risks!

Otherwise, we will remain stuck in managing past risks with past methods!

Many of the financial markets risks will transfer into business risks.

Business risks are even more open, less defined than market risks!

How can we think about them? How can we exploit them?

Quantitative Risk Assessment Techniques

List of techniques available for quantitative risk assessment:

- Sensitivities
- Scenarios
- VaR
- Monte-Carlos Simulations (MCS)
- Real Options
- Game Theory (???)

27

Risk Techniques vs Risk Thinking

Do we need risk techniques, numbers, to have efficient risk thinking? Are subjective numbers (probas) useful?

Techniques, numbers, even when subjective:

- Foster risk thinking
- Help clarify risk issues by using a common risk language (vs almost certain)
- Help identify major risk drivers
- Encourage clearer communication about risk within organization
- Foster risk understanding across organization by objectifying subjectivities
- And metrics can also foster better risk management

28

Data is not always subjective.

Even subjective data can be helpful.

Benchmarking Best Practice

Best practice on risk assessment and risk management tends to be higher in the financial community on financial risk; eg, use of MCS on daily basis at both management and trader level within banks (Value at Risk or VaR); in some banks, traders have responsibility and accountability for risk management.

We do not see this type of sophistication within corporate clients, except for some exception that push risk analysis even further: Reinsurance.

29

Encourages us to open the box of risks?

Sensitivity Analysis

<u>Example of best practice:</u> Holcim

- Key risk drivers identified: sales volume, price, energy cost
- Consistent sensitivities asked for the key drivers across company for projects larger than 20 mns Euros

Decisions challenged: plant placement, capacity decision

Typical risk management by foothold strategy followed by scaling up and absorption (option building)

Currently challenged but challenge is rationally thought through by management thanks to risk thinking

<u>Pros of sensitivity analysis:</u> identification of risk drivers, spreads, basic risk impact, easy to understand

<u>Cons:</u> lacks skewness, kurtosis, multiple factors, correlations, future decisions

Scenarios

Scenarios:

Allows to capture risk congruence

Drives thinking around worst case and best case

Usually less reliable (more gaming)

Pros of scenarios: capture kurtosis, correlations grossly considered, can incorporate poorly quantifiable risks

Cons: more vague assessment, less control (how probable is such scenario?)

Terrorism insurance before 9.11.01

Coverage

Historically: fire insurance covered fire and explosion damage regardless of its cause

Exclusions: war, civil war, nuclear risks, strike/riot/civil commotion

Terrorism: covered, if not explicitly excluded

UK, Spain, South Africa, Israel: special regulations or pool solutions with government support

Insured bomb event losses

Loss in USD mn	Location	Year
907	London, UK	1993
744	Manchester, UK	1996
725	WTC New York, US	1993
671	London, UK	1992
398	Colombo Airport, CL	2001
259	London, UK	1996
145	Oklahoma, US	1995

Example property: explosion

Assumptions

Focus on explosions

Nuclear excluded

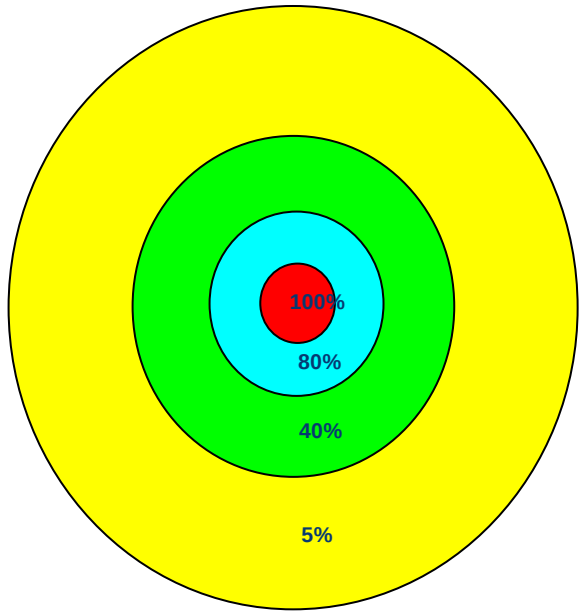
Biological and chemical attacks less important for property

Explosives: TNT, ammonium nitrate, kerosene

Means of transportation: truck/ trailer, van, airplane, cargo train, barge or tanker

Locations in focus: financial and political centres, eg New York, London, Paris, Frankfurt, Zurich, Geneva (UN buildings)

Explosion scenario



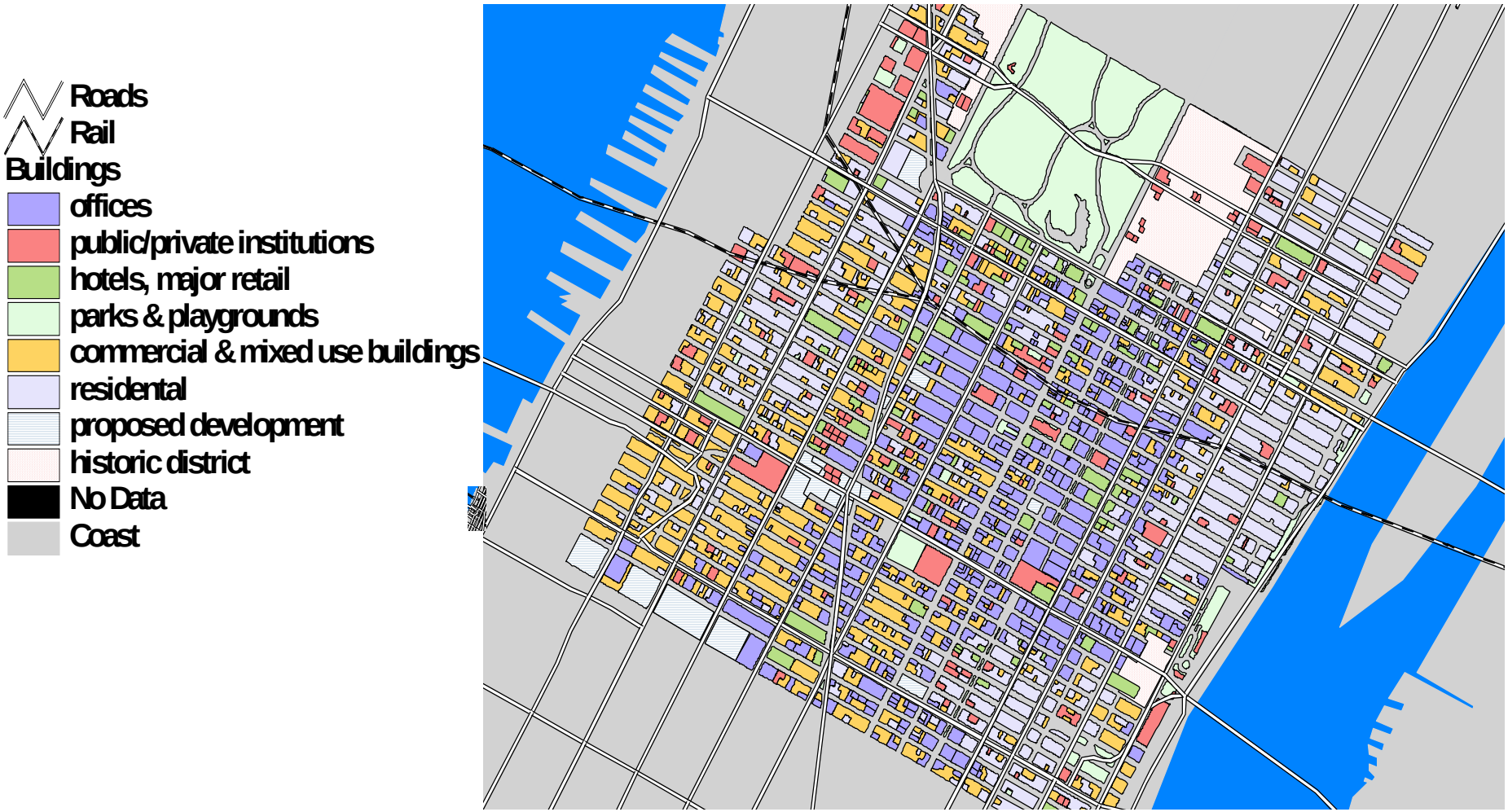
Damage radii according to TNT quantity

33

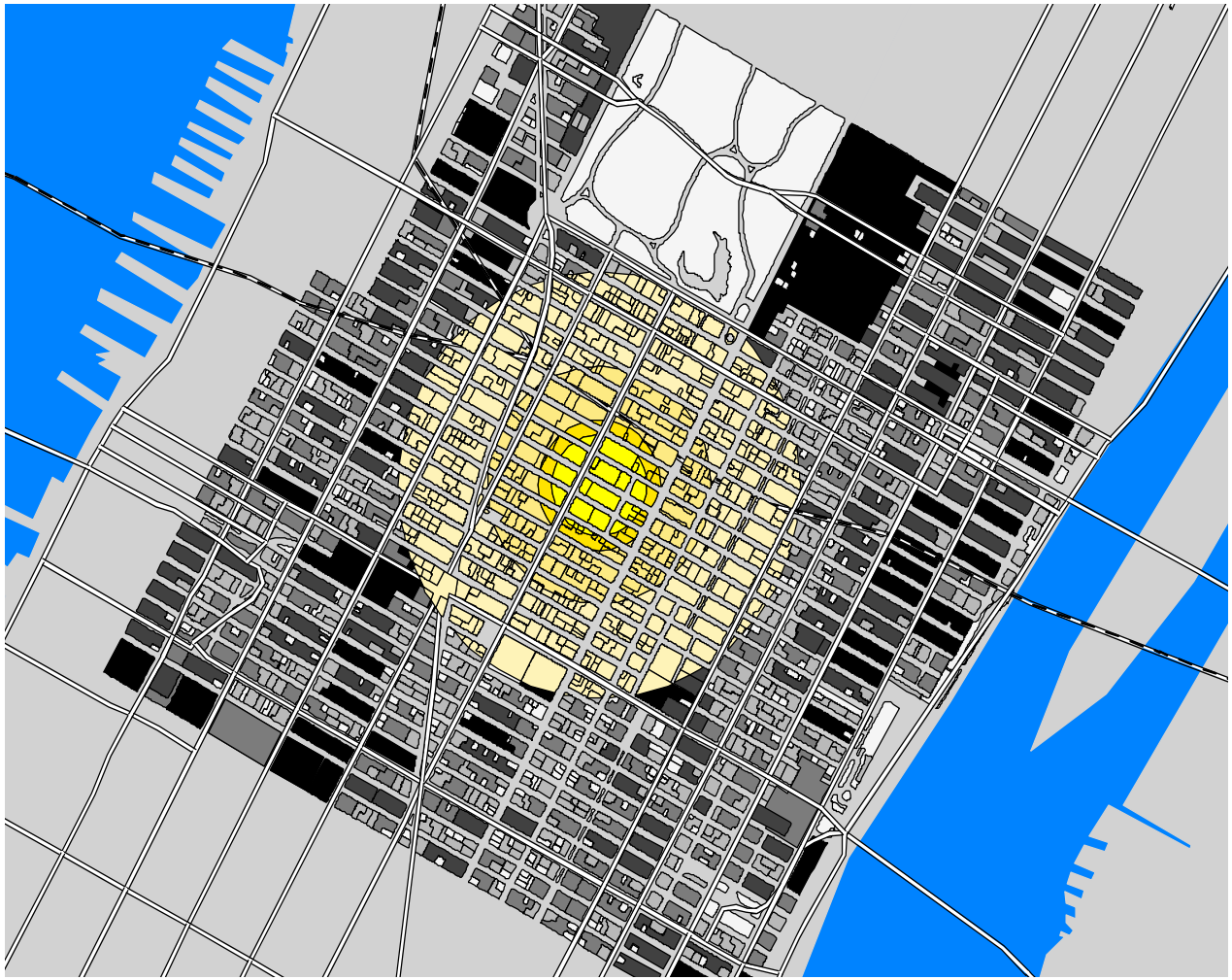
Ex. Truck and Trailer, 60 tons TNT:

100%	80%	40%	5%
130m	170m	310m	600m

Example midtown Manhattan: exposed area and values



Damage radii (eg cargo plane)

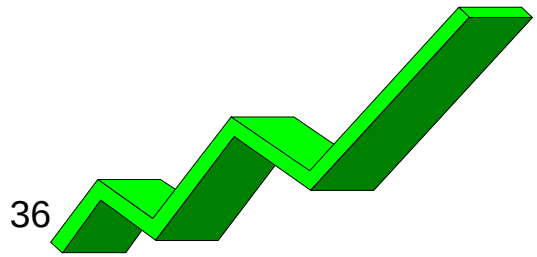


Monte Carlo Simulation

Step 1: Modeling the project

Step 2: Specifying probabilities

Step 3: Simulate Cash Flows



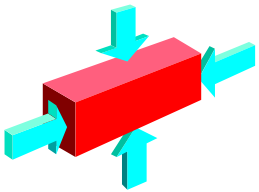
Example:

$10 million extension to chemical processing plant.

Estimated service life of the facility is 10 years. The engineer expect to use 250'000 tons of processed material worth $ 510/ton at average processing cost of $ 435/ton.

Is this a good investment ? What are the risks ?

We need to make the best and fullest use of all the market research and financial analyses that have been developed so as to give management a clear picture of this project in an uncertain world.



- Key input factors:
  - market size,
  - selling prices,
  - market growth,
  - share of market,
  - investment required,
  - residual value of investment,
  - operating costs,
  - fixed costs,
  - useful life of facilities.

38

Generally input factors fall into 3 categories:

1. Market Analyses
2. Investment Cost Analyses
3. Operating & Fixed Costs

These categories are not independent !

For realistic results, tie the factors together.

For example, if price determines the total market, computer first selects price from a probability distribution for that specific run and then use for the market a proba distribution that is related to price selected.

Use of covariances.

Exhibit II – Simulation for investment planning

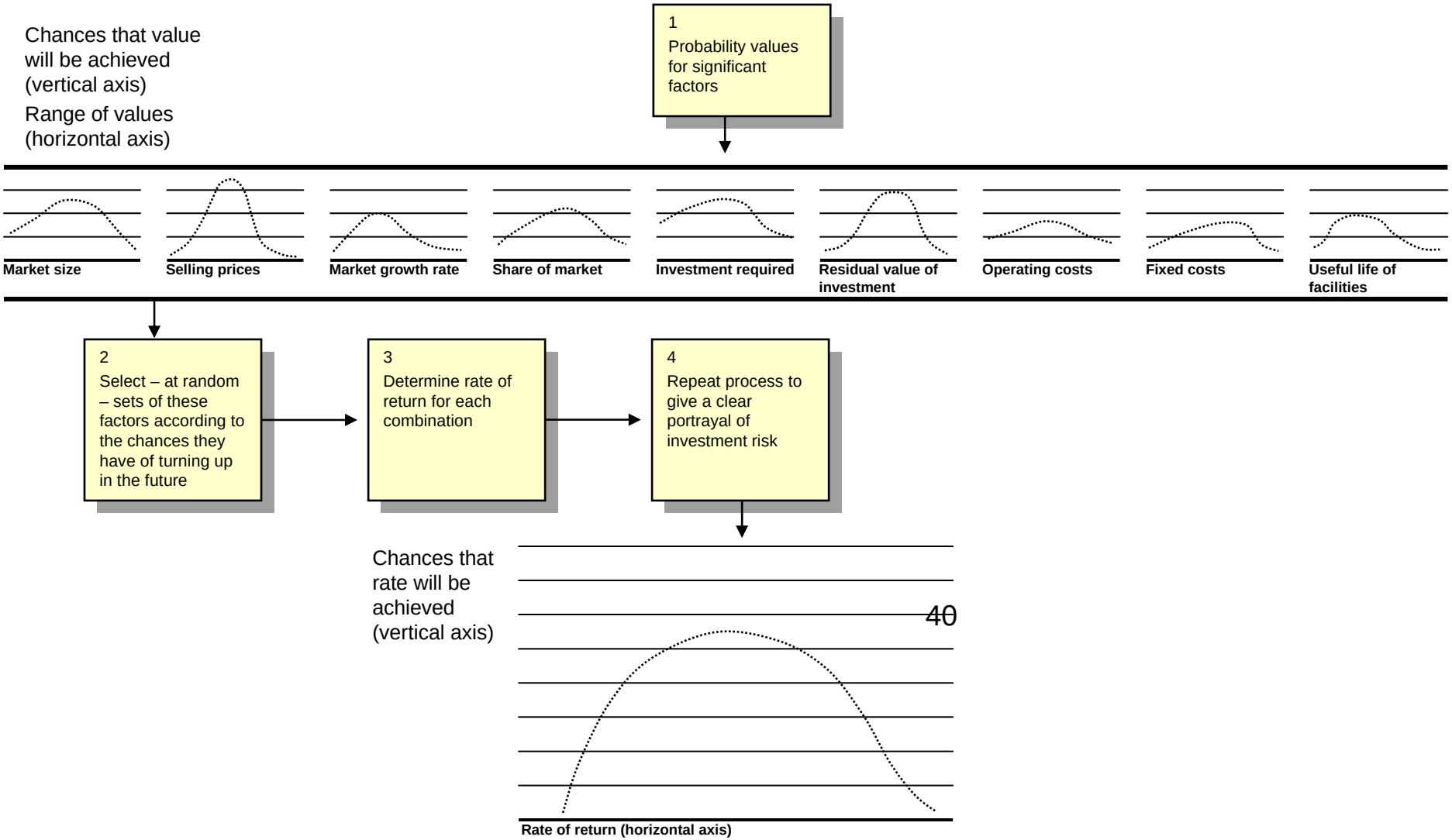


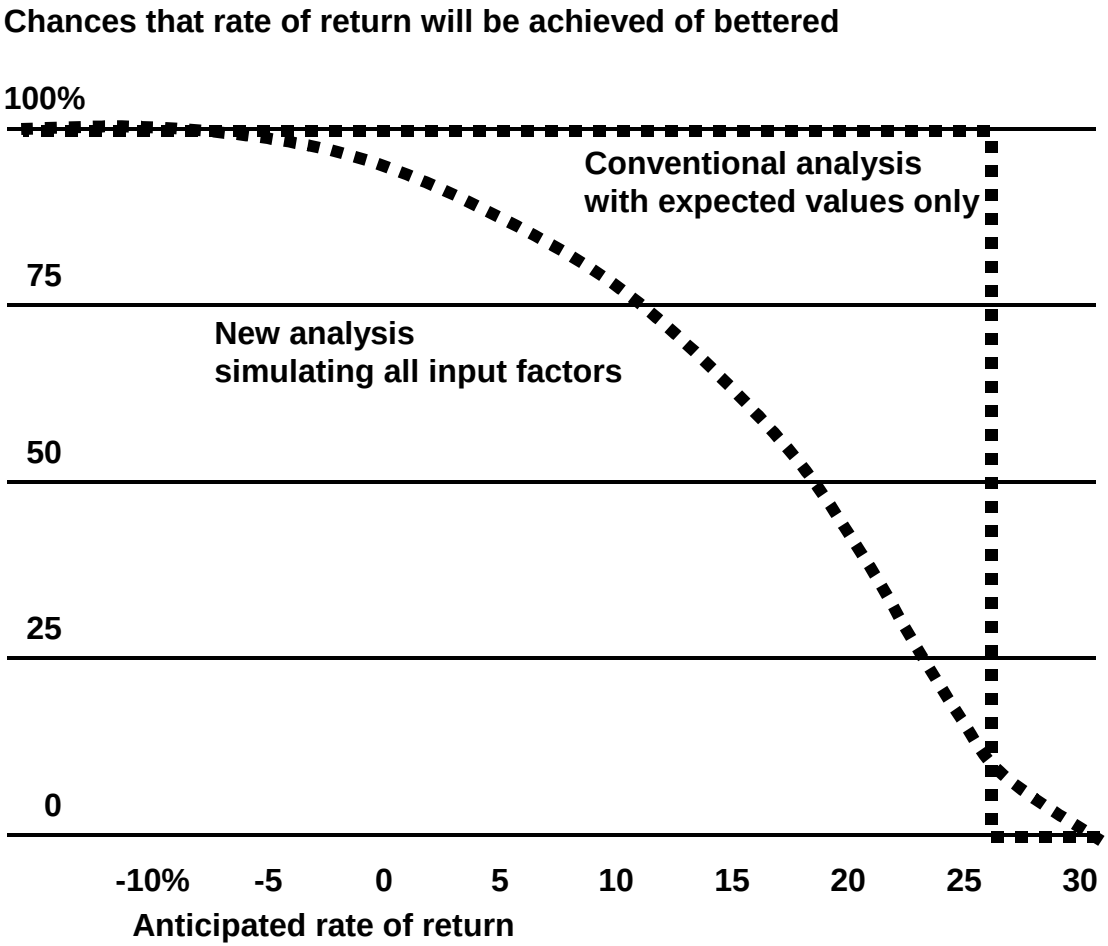
Exhibit III – Comparison of expected values under old and new approaches

	Conventional "best estimate" approach	New approach
Market analyses		
1. Market size		
Expected value (in tons)	250,000	250,000
Range	-	100,000-340,000
2. Selling prices		
Expected value (in dollars/ton)	$510	$510
Range	-	$385-$575
3. Market growth rate		
Expected value	3%	3%
Range	-	0-6%
4. Eventual share of market		
Expected value	12%	12%
Range	-	3%-17%
Investment cost analyses		
5. Total investment required		
Expected value (in $ millions)	$9.5	$9.5
Range	-	$7.0-$10.5
6. Useful life of facilities		
Expected value (in years)	10	10
Range	-	$5-$15
7. Residual value (at 10 years)		
Expected value (in $ millions)	$4.5	$4.5
Range	-	$3.5-$5.0
Other costs		
8. Operating costs		
Expected value (in dollars/ton)	$435	$435
Range	-	$370-$545
9. Fixed costs		
Expected value (in $ thousands)	$300	$300
Range	-	$250-$375

41

Note: Range figures in right-hand column represent approximately 1% to 99% probabilities. That is, there is only a 1-in-100 chance that the value actually achieved will be respectively greater or less than the range.

Exhibit IV – Anticipated rates of return under old and new approaches



Percent return	Probability of achieving at least the return shown
0%	96.5%
5	80.6
10	75.2
15	53.8
20	43.0
25	12.6
30	0

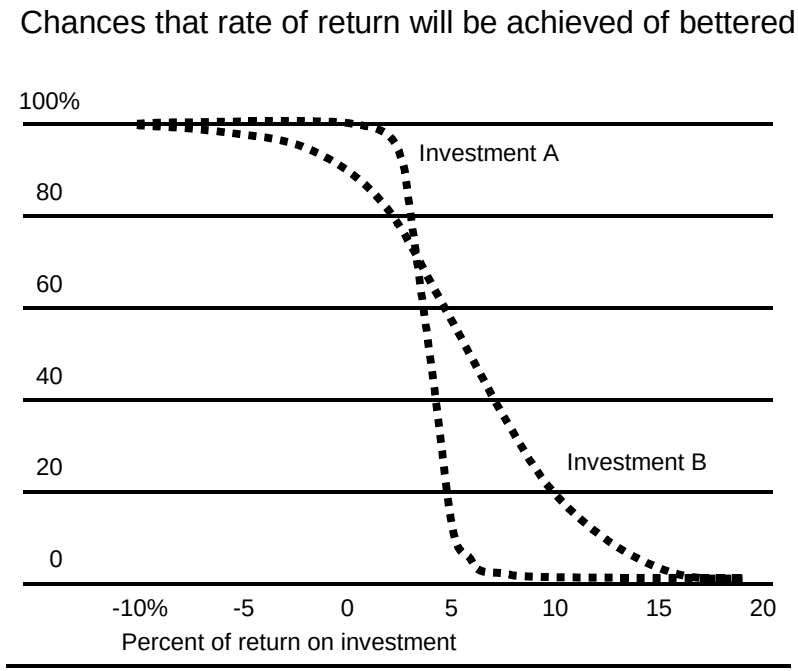
HARVARD BUSINESS REVIEW September-October 1979

Allows for better comparison of investment opportunities:

43

Exhibit V – Comparison of two investment opportunities

Selected statistics	Investment A	Investment B
Amount of investment	$ 10,000,000	$10,000,000
Life of investment (in years)	10	10
Expected annual net cash inflow	$ 1,300,000	$ 1,400,000
Variability of cash inflow		
1 chance in 50 of being greater than	$ 1,700,000	$ 3,400,000
1 chance in 50 of being less than*	$ 900,000	($ 600,000)
Expected return on investment	5.0%	6.8%
Variability of return on investment		
1 chance in 50 of being greater than	7.0%	15.5%
1 chance in 50 of being less than*	3.0%	(4.0%)
Risk of investment		
Chances of a loss	Negligible	1 in 10
Expected size of loss	Negligible	$ 200,000



44

* In the case of negative figures (indicated by parentheses) *less than* means worse than.

Monte-Carlo Simulations

Example of process corporate best practice: Honeywell (Allied Signal)

Used to check overruns in large capex projects

Step process:

- Prepare estimate and review (4/8h)
- Group MC meeting: acknowledge subjectivity of inputs & manage (1 day)
- Report with recommended contingency (4/8h)

MCS meeting organization:

- Objectives: reasons for H and L ranges, H and L ranges (1%), skew (proba under estimate)
- Psy process: accept all range reasons, train for hi/lo thinking, expert to lead discussion, roles assigned
- Sections customized to participants (engineers on costs)

<u>Pros of MCS:</u> Risk/Opportunity, Risk drivers identification, Proba assessment

<u>Cons:</u> Future decisions (options), Hard to introduce non quantifiable risk factors

Expert Applications of MCS

Capital Structure choices

- Diageo (Johnny Walker, Malibu) simulates CFs, interest rates, FX in order to determine interest cover (major driver of rating)
- Leads to assessment of optimal capital structure choice to min taxes and take “low” risk

46

Overall Risk Assessment: Portfolio effects

A now classical tool: VaR

(Value at Risk)

The miracle cure?

47

A Holistic Measure

Goal: Measure the worst expected loss over a given time interval under normal market conditions at a given confidence level.

Advantages: Firm wide (if so desired)

and cross-product!

Limitations: LTCM was expert user of VaR!

Often still Var-Cov based (ie. Normal distribution)

Typically lacks codependencies, behavioral issues such as market sentiments.

48

Simulation based VaR

Model Risk?

Remember Copernicus (De Revolutionibus) vs Ptolemaic systems…

Work on Credit Risk (Cossin and Schelhorn, Cossin and Lu, Cossin, Hricko, Huang and Aunon-Nerin, etc.): CDS, Capital Structure Arbitrage Opportunities, Success of option based frameworks:

- Links equity and bond markets…
- Networks of credit risk
- Prices dynamics of credit risk and not only statics
- Possibly addresses not only default probabilities but recoveries as well and dynamics of correlations
- Useful for thinking credit derivatives and even more for structuring credit related products

Results on Structural versus Reduced Form models…

“If you understand everything that is going on, you are hopelessly confused” WM

50

Moving an Organization Towards Risk Thinking

To build risk thinking, risk assessment techniques need to be present.

Depending on risk source, start with most basic: sensitivity analysis?

In order to have general risk thinking, generalize use (requires framework, structure)- minimize bureaucracy

For complex or large issues, having in-house expertise would be an advantage (MCS, real options)

Educate or recruit small group across countries of “experts”

May disseminate if use is deemed useful within organization

Measuring risk is good.

Isn't eliminating risk better ?

52

Why Manage Risk?

Need to identify where risk management creates value!!!

Bad reasons:

- risk aversion

Good reasons:

- operational efficiency
- project management
- investment needs
- competitive advantage build-up
- costs of financial distress
- asymmetric information
- better planning
- managerial accountability

The true question of risk management is not how.

It is why!

54

And then comes the how well!

Risk Management as it Stands: A Full Mess?

- Airlines such as SouthWest pre-purchased 80% of 2005 fuel needs at $24 per barrel. Goes into 2009.
- Swiss sold its fuel hedges in May 2005 to raise money (fuel cost of $ 400 million in 2004).
- 60% of independent oil companies were hedging oil prices in 2006.
- Government of Pakistan considering hedging part of oil bill ($ 3.8 billion)

Question: Where is the oil price going?

Subsidiary question: Do we care?

55

Behavioral finance and its lessons for risk management

Typical Behavioral Biases of Investors:

- Overconfidence
- Optimism
- Belief perseverance
- Representativeness
- Hindsight Bias
- Anchoring
- **Herd behavior (M&As, leverage, share buybacks, capex levels)**

56

Aren't we at risk of having these with senior management as well? Are hard rules put in place?

An M&A perspective on risk management

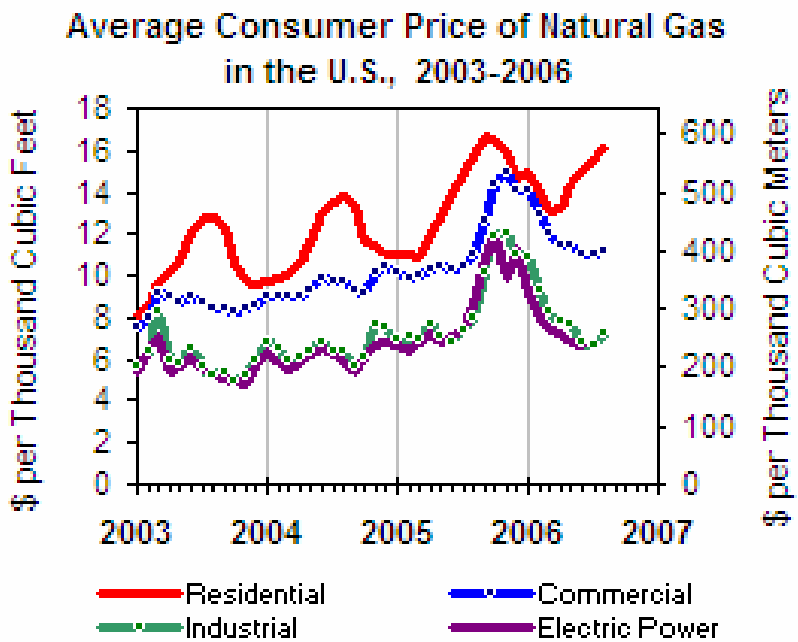
Jim Hackett:

"It's interesting to me that the forward market has stayed as strong as it has and spot prices have driven the equity values down. We have seen a downdraft in equities in the last couple of weeks. At the same time, *our transactions were more doable because of that, quite frankly*."

>> 40% premium on Kerr-McGee and 50% premium on Western Gas

>> But $ 5.20/Mcf over long term…

>> Hence hedge 75% production to 2008…



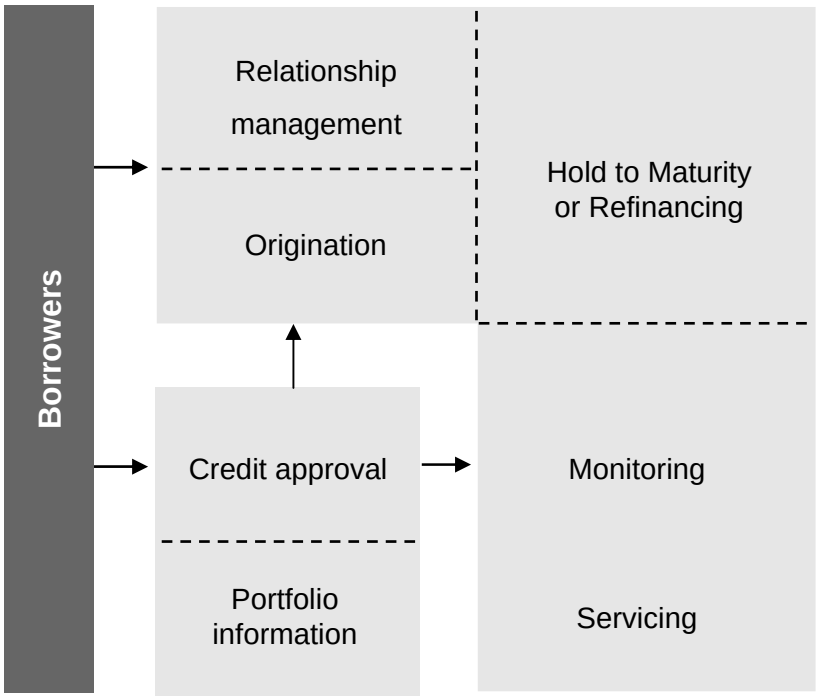
Securitization in Banking: Hedging for Capital Needs

- The use of CDSs
- Cash CDOs
- Synthetic CDOs

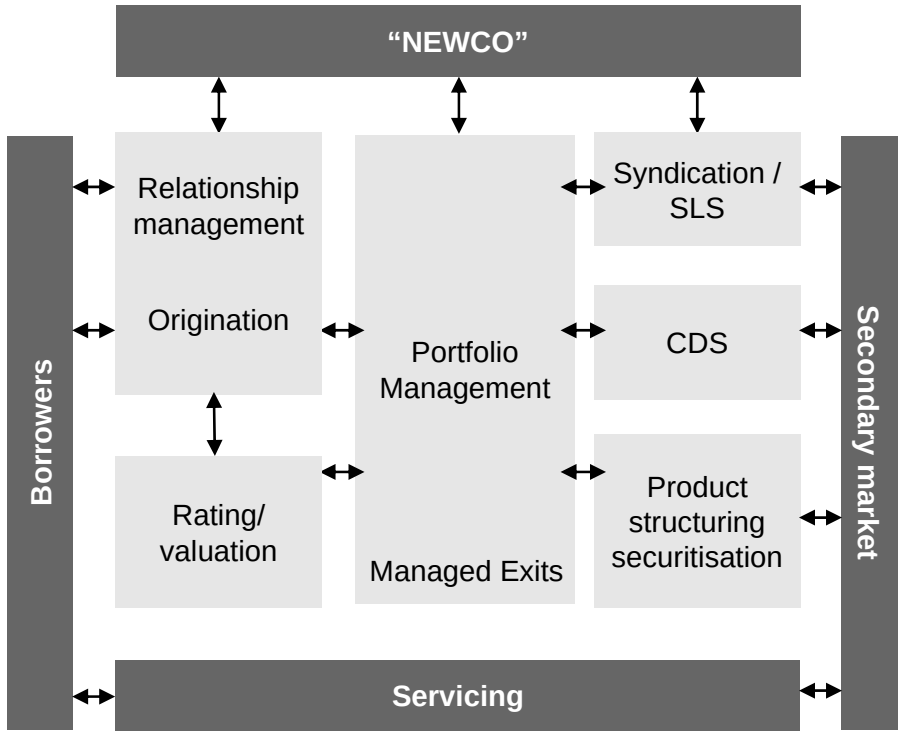
58

Commercial Banking's Brave New World

Traditional Business Model

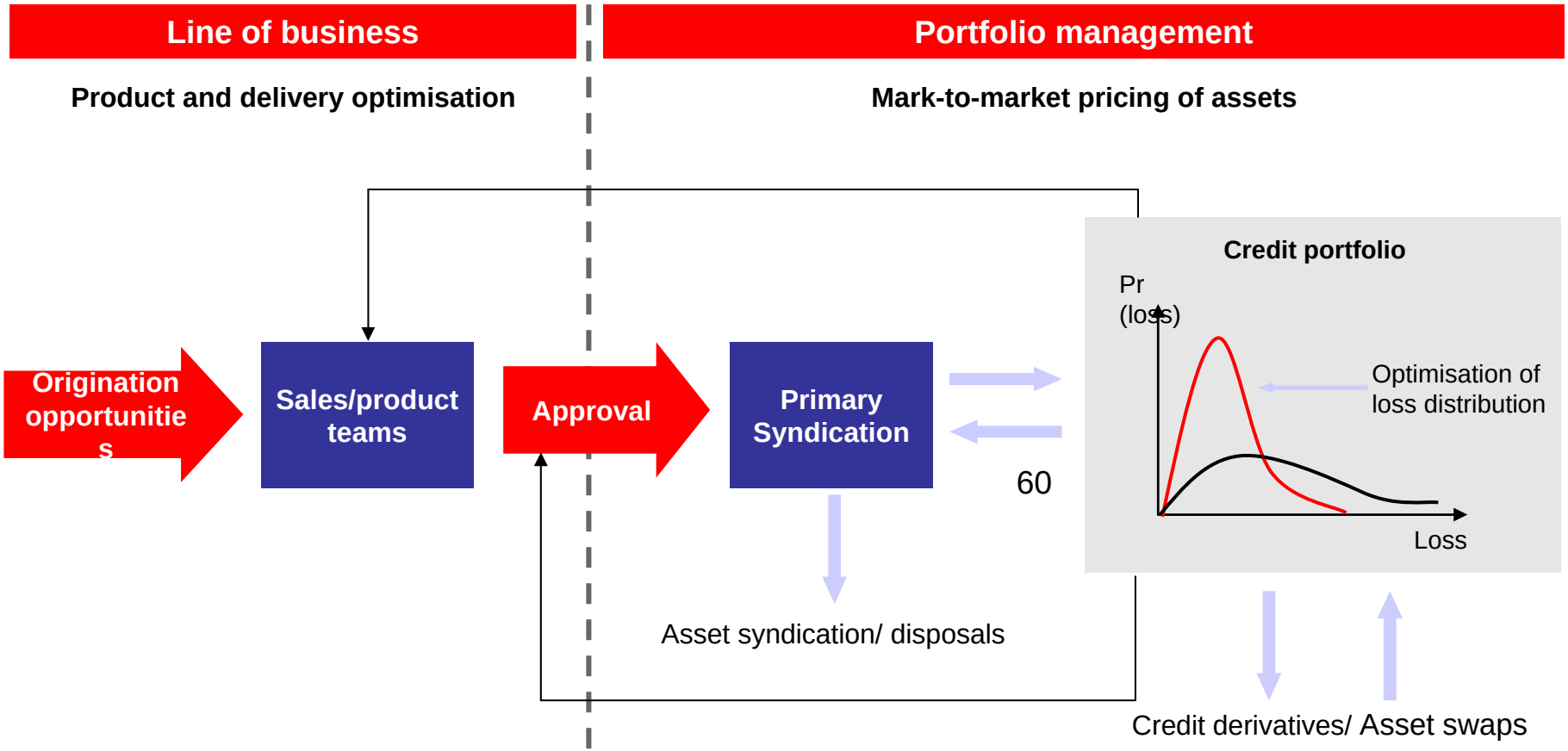


Emerging Business Models

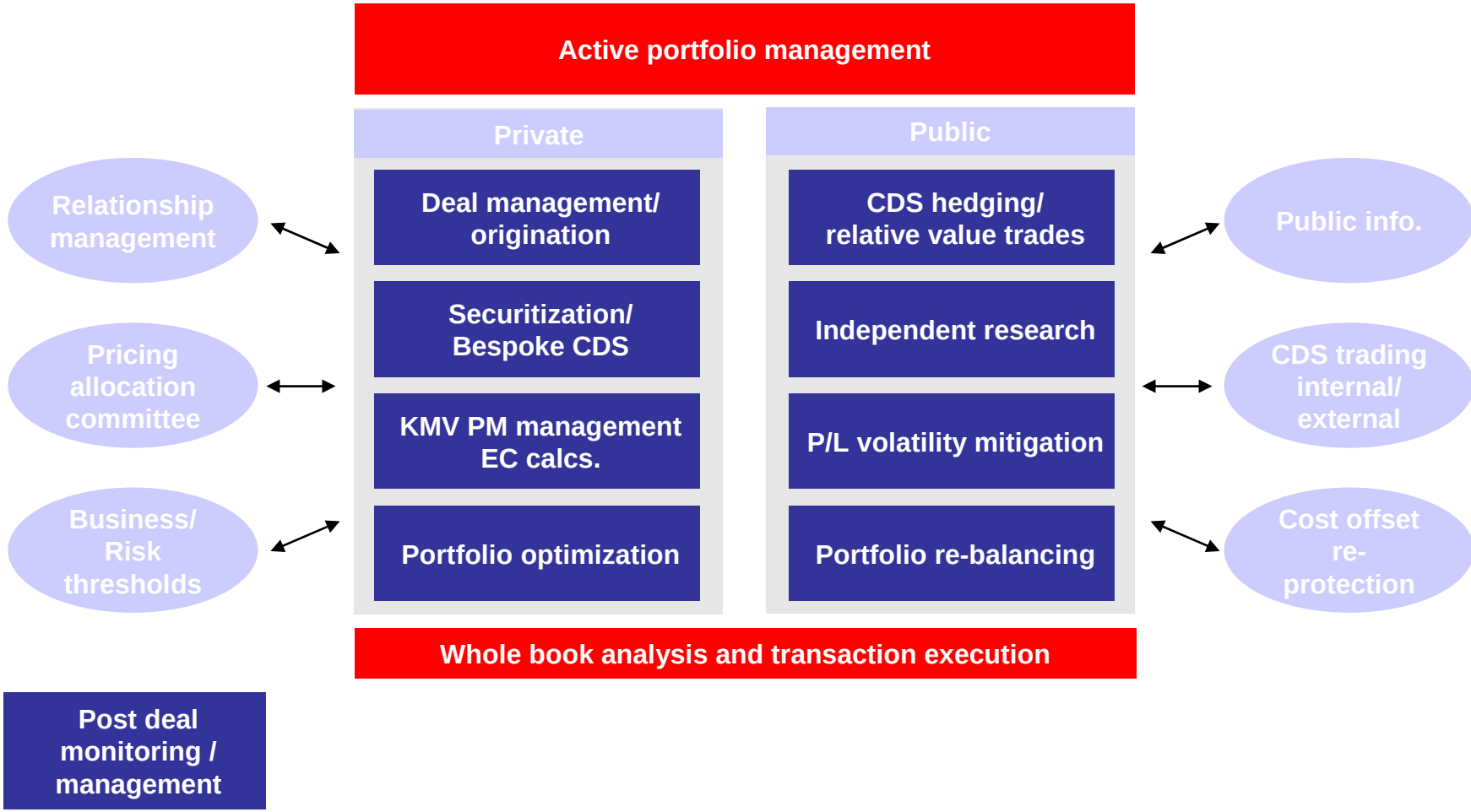


Portfolio Management and Origination Activities

Portfolio Management is a “Pricing Function” – manages and prices risk at a portfolio level



Active Portfolio Management - Balanced Structure
The Modern Bank Dream!?



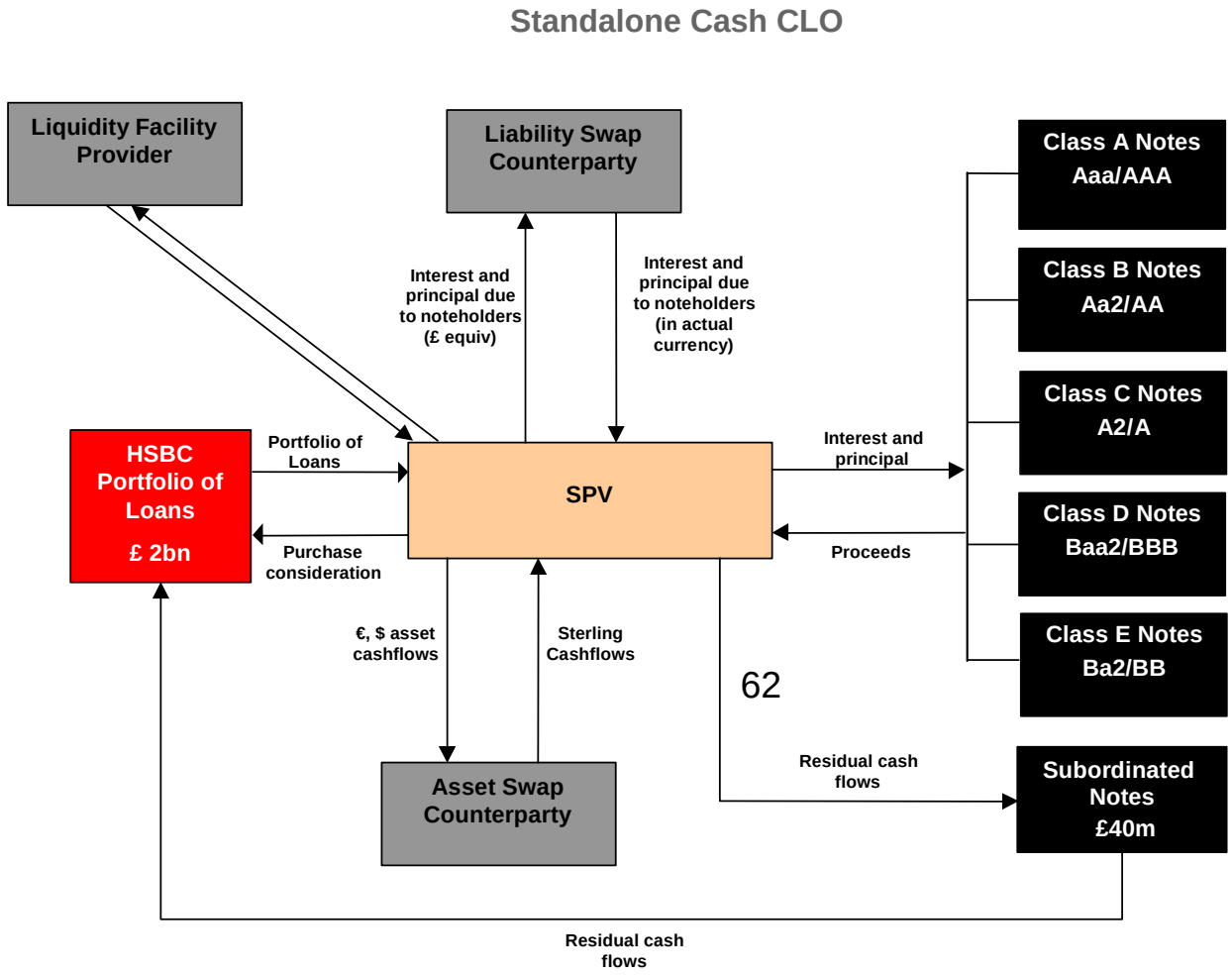
Cash CDO: HSBC

True sale of a portfolio of loans to the SPV.

"Pass-through" structure, where all principal payments from the underlying loans are passed on to the noteholders in a pre-determined priority of payments

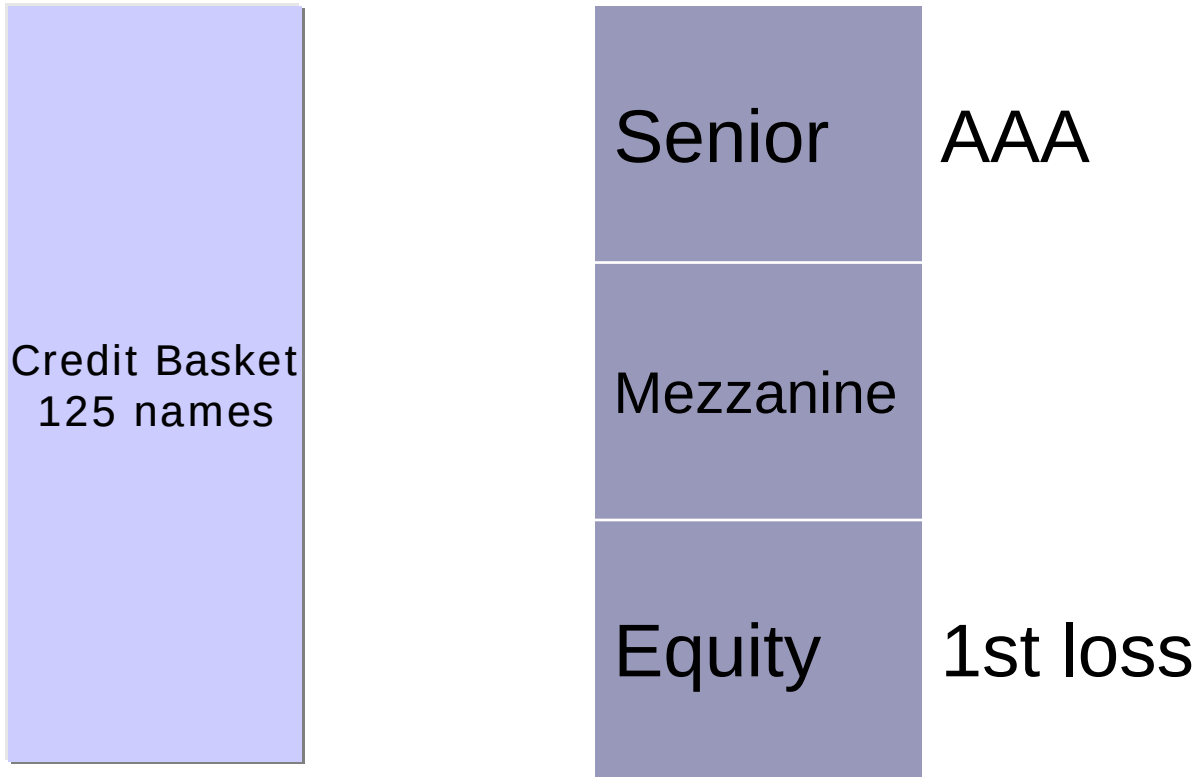
HSBC retained the first-loss or "equity" piece, representing its ongoing levered interest in the portfolio

First Loss attachment point: 3.7% → 4.4%



HSBC will retain a further **£34m** interest in the transaction through a **Reserve Fund**

“Tranching” a pool of assets



U.S. Investors Are Faced With A Riskier Play

WS, 12th May 2005

Complex Bets Haunt Hedge Funds

By Gregory Zuckerman

could avoid them this time around. ship went awry. A month or so ago, a

WS, 18th May 2005

U.S. Hedge Funds Hit Rockiest Patch in Year

WS, 11th May 2005

April Proved a Cruel Month For Europe's Big Hedge Funds

By David Reilly

WS, 12th May 2005

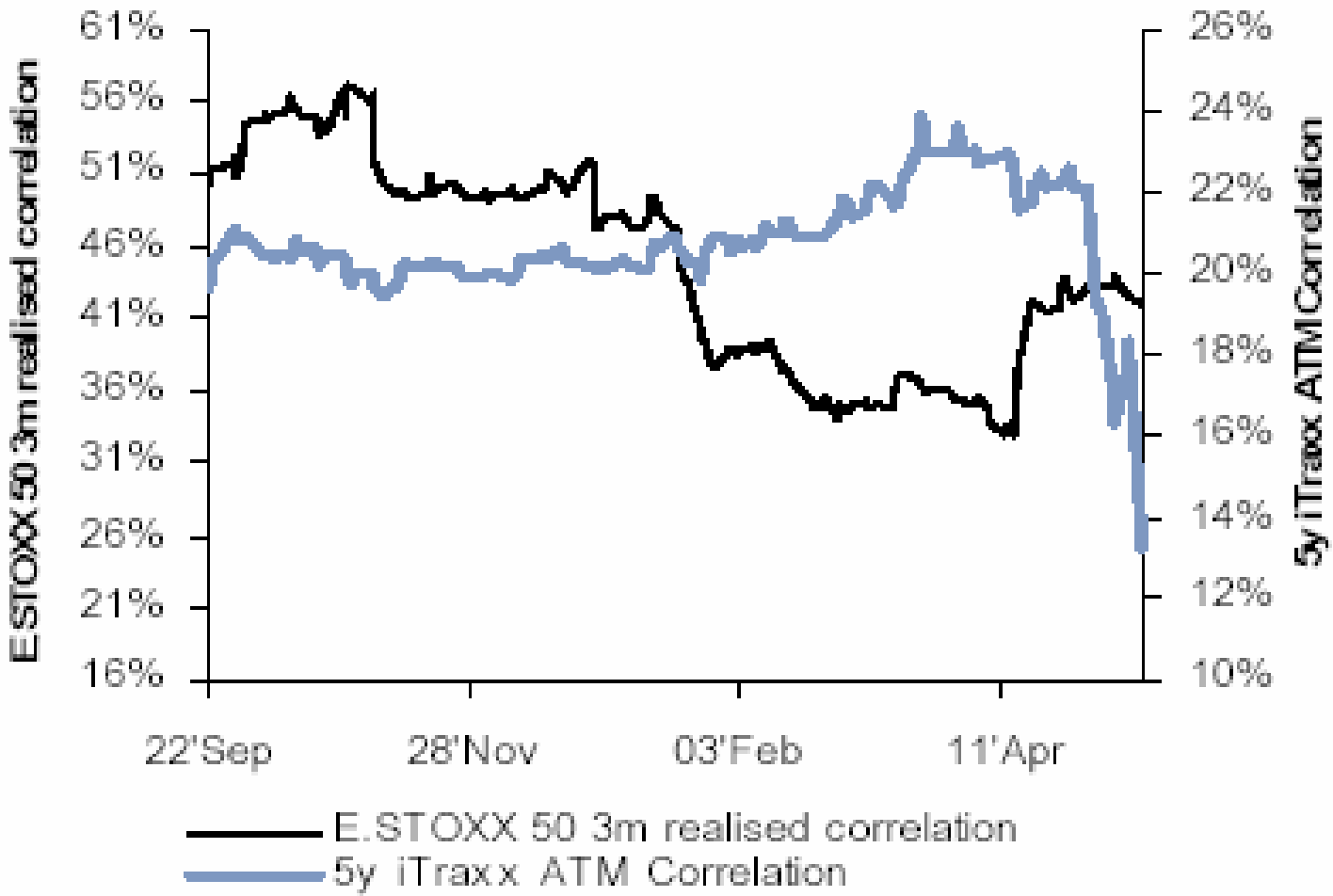
Someone will be hit as GM goes into reverse

Investment banks suffer

compensate. Trading desks tend to benefit from increased volatility. Proprietary trading is another area of secular growth. Recent research from Credit Suisse First Boston suggests that investment banks are taking mon

FT, 9th May 2005

Stock realized correlation vs Itraxx implied correlation



Source: JP Morgan

Synthetic CDOs and Hedge Funds

- Synthetic CDOs and Indices (CDX, ITraXX) offer major opportunities for hedge funds as well as for capital relief and balance sheet management of banks.
- Hedge funds have been exploiting mispricing opportunities but will quickly turn to the same regulatory arbitrage banks are attempting
- All these should keep regulators on their toes for quite a while
- And bring more attention to rating agencies!

Risk Management

Addressing different risk sources:

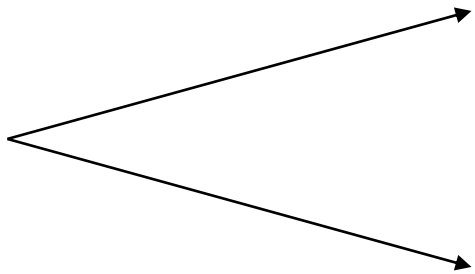
- Operational Risk
- Financial Risk
- Strategic Risk
- Brand Risk
- Leadership Risk
- Information Risk
- …

Each is complex to start with!

“Experience is not what happens to you, it is what you do with what happens to you.” AH

Risk Management

Risk management typically comes from one of two dimensions:



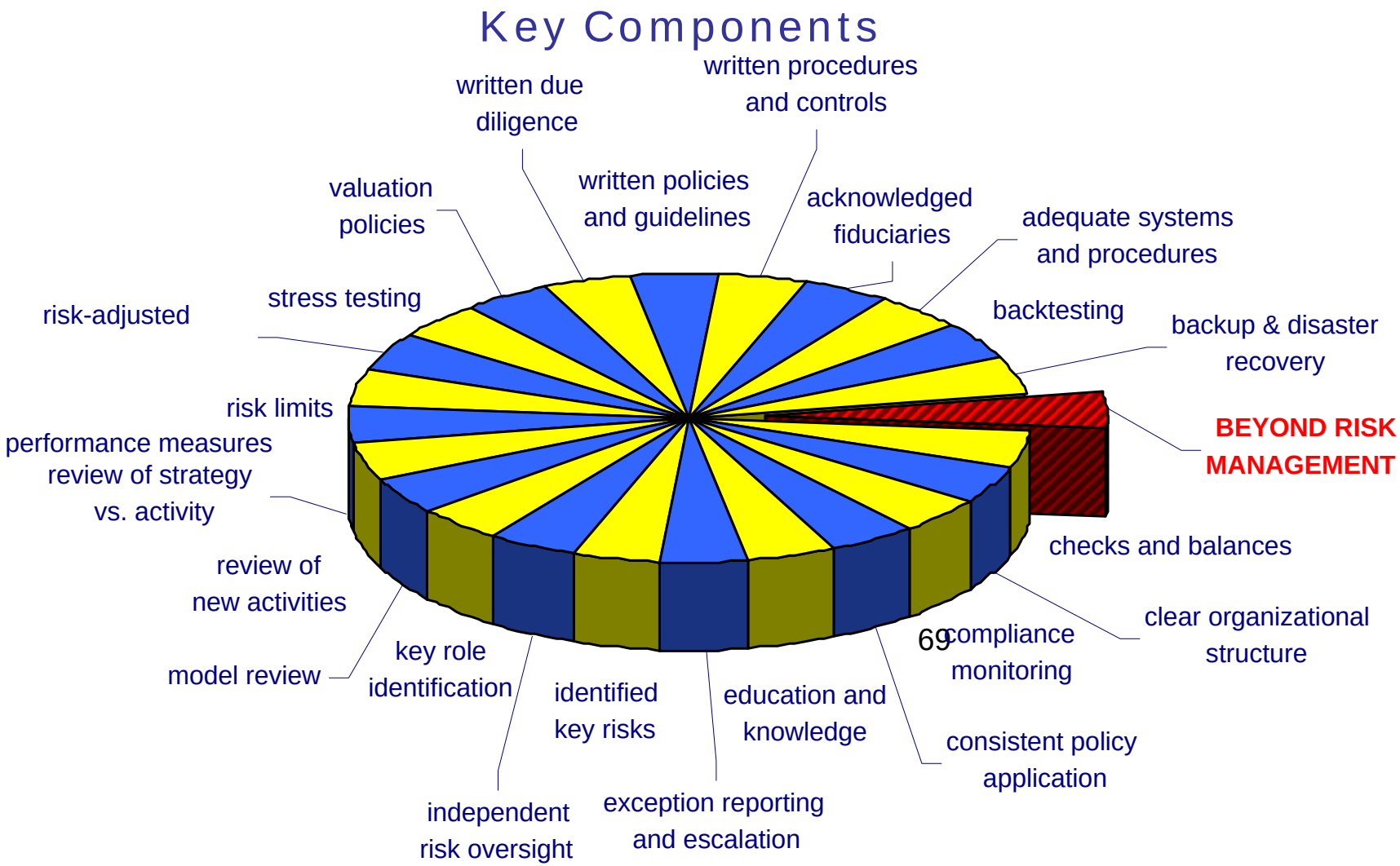
Risk response

(transform projects, structure business, diversify)

Risk ownership

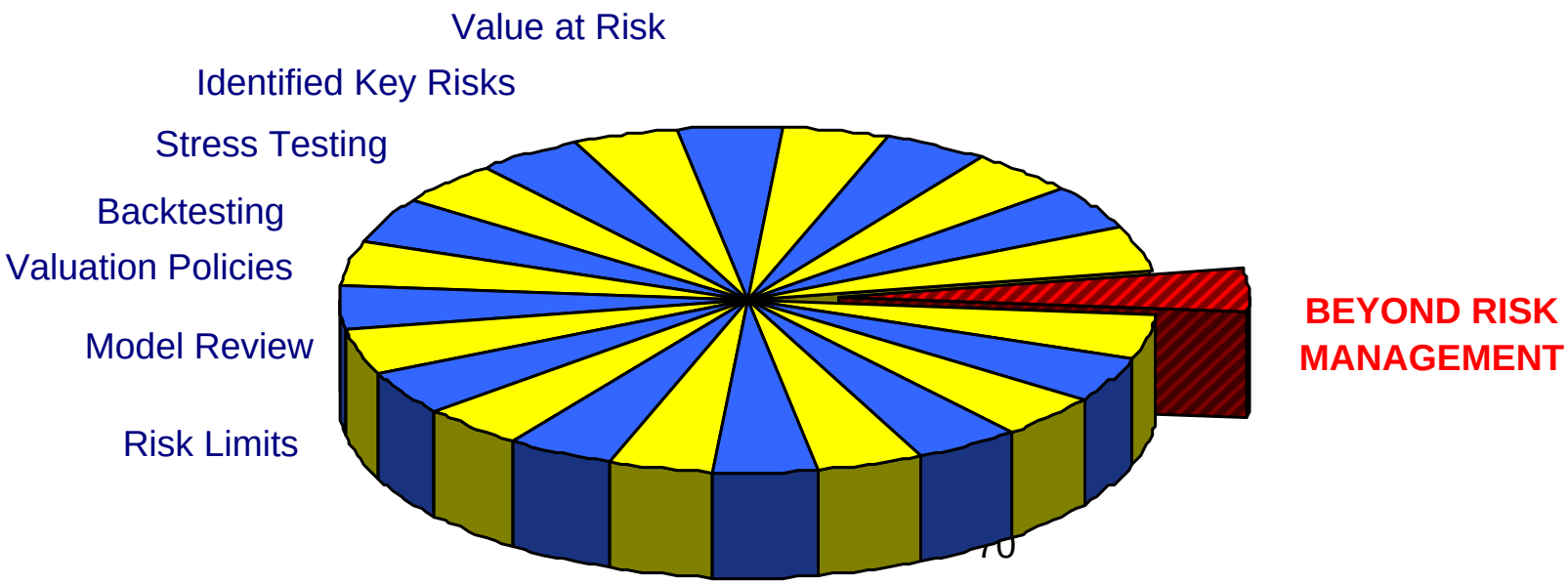
(contracting: joint ventures, options, etc.)

Risk Management Framework



Risk Management Framework

Key Components - Only 1/3 are Quantitative



Hedging: Financial vs Operational

- Financial markets have known extraordinary developments to help transfer and trade risks
- These developments are still dwarfed by the extraordinary diversity of risks present
- Financial hedges cannot overcome risks, nor should they.
- Operational hedges can complete or better financial hedges. They also are limited and usually less flexible.

Classical Derivatives help manage only some market risks:

FX

Interest rates

Raw materials

Commodities

Credit risk

etc...

Do not help with many other types of risk![72]

Remember what they used to ask: Is Derivative a Four Letter Word ?

Well-publicised derivatives losses in 1994-1995

Company	Loss amount (in million $)	Related derivatives
Orange county	1700	Leverage (reverse repos) and structured notes
Showa Shell Sekiyu	1600	Currency derivatives
Metallgesellschaft	1300	Oil futures
Barings	+1000	Equity and interest rate futures
Codelco	200	Metals derivatives
Procter & Gamble	157	Leveraged currency swaps
Air Products & Chemicals	113	Leveraged interest rate and currency swaps
Dell Computer	35	Leveraged interest rate swaps
Louisiana State Retirees	25	IOs/POs
Arco Employees Savings	22	Money market derivatives
Gibson Greetings	20	Leveraged interest rate swaps
Mead	12	Leveraged interest rate swaps

Source: James Lam, Risk Magazine, “Derivatives Credit Risk”.

But is Good Management about Risk Management?

Certainly not only risk management: also risk picking!

Pick your risks!

Often Risk Management too limited in thinking:

- Strategic Risk Thinking
- Organizational Risk Thinking
- Cultural Risk Thinking
- Brand Risk Thinking
- Information Flow Risk

74

Pick your risks!

Strategic Risk Analysis

Has to be all encompassing

Needs to take into consideration the complete strategic framework

Needs to be dynamic

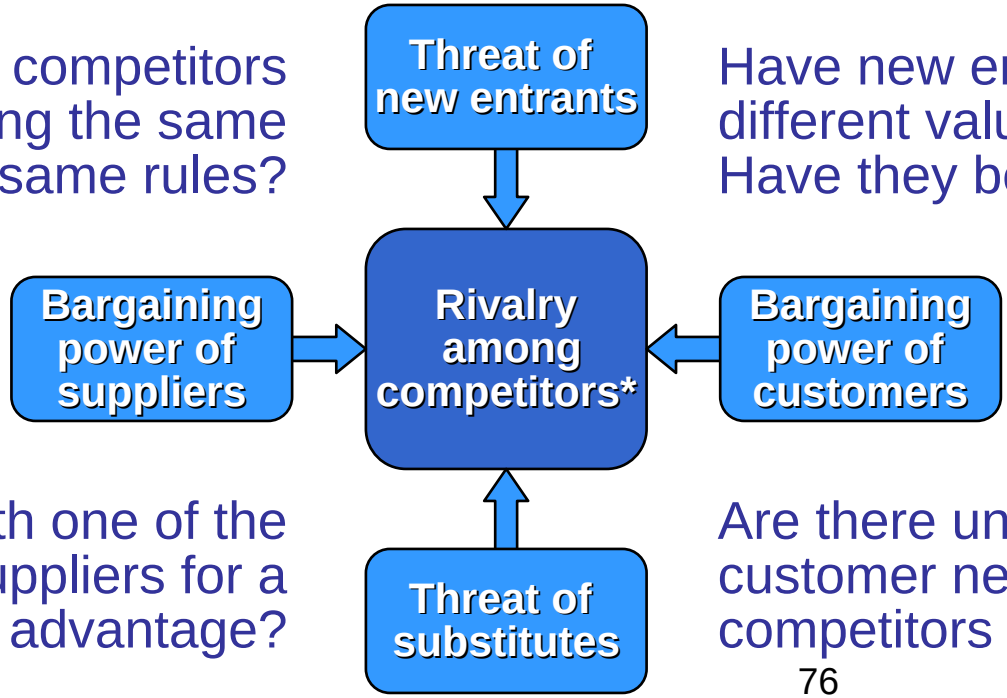
“I have never known a battle plan to survive a first contact with the enemy.”

75

Assess the Competitive Battleground

Are there opportunities for upsetting the status-quo?

Are all current competitors busy playing the same game with the same rules?



Have new entrants brought different value factors? Have they been successful?

Can we side with one of the industry suppliers for a mutual advantage?

Are there unmet/ill-met customer needs that current competitors keep neglecting?

76

Can we substitute current products and services with new ones?

* **Source**: J.-Ph. Deschamps

Bargaining Power of Customers in Banking

Is linked to many of the major banking risks:

- classical ones: bank runs, market shares
- also classical but less considered: reputation risk

See Financial Analysts reputation, Citicorp in Japan, M&A reputation, IPOs spinning, etc.[77]

Example: Bargaining Power of Customers in Banking

The Google IPO (2004):

Study by Dinos Constantinos and Didier Cossin

Bank-Client relationships:

Work by Didier Cossin and HongZe Lu in progress

78

- Son of Netscape?

Eric Schmidt, 48, owns 5.8%

Chairman of the Executive Committee, Chief Executive Officer and Director

Sergey Brin, 30, owns 15.1%

President of Technology, Assistant Secretary and Director

Larry Page, 31, owns 15.2%

President of Products, Assistant Secretary and Director

Mean first-day returns of IPOs in 38 countries

Country	Sample size	Time period	Avg. initial return (%)
Australia	381	1976-1995	12.1
Austria	83	1984-2002	6.3
Belgium	86	1984-1999	14.6
Brazil	62	1979-1990	78.5
Canada	500	1971-1999	6.3
Chile	55	1982-1997	8.8
China	432	1990-2000	256.9
Denmark	117	1984-1998	5.4
Finland	99	1984-1997	10.1
France	571	1983-2000	11.6
Germany	407	1978-1999	27.7
Greece	338	1987-2002	49.0
Hong Kong	857	1980-2001	17.3
India	98	1992-1993	35.3
Indonesia	237	1989-2001	19.7
Israel	285	1990-1994	12.1
Italy	181	1985-2001	21.7
Japan	1,689	1970-2001	28.4
Korea	477	1980-1996	74.3
Malaysia	401	1980-1998	104.1
Mexico	37	1987-1990	33.0
Netherlands	143	1982-1999	10.2
New Zealand	201	1979-1999	23.0
Nigeria	63	1989-1993	19.1
Norway	68	1984-1996	12.5
Philippines	104	1987-1997	22.7
Poland	140	1991-1998	27.4
Portugal	21	1992-1998	10.6
Singapore	441	1973-2001	29.6
South Africa	118	1980-1991	32.7
Spain	99	1986-1998	10.7
Sweden	332	1980-1998	30.4
Switzerland	120	1983-2000	34.9
Taiwan	293	1986-1998	31.1
Thailand	292	1987-1997	46.7
Turkey	163	1990-1996	13.1
United Kingdom	3,122	1959-2001	17.4
United States	14,978	1960-2003	18.3

Underpricing and Underwriting Fees in the US 1990-2003

Year	Number of IPOs	Underpricing Proceeds-weighted %	Money Left on the Table	Aggregate Proceeds ($ billion)	Underwriting fees Mean %	Number of Underwriters Mean
1990	104	8.1	0.33	4.08	7.3	1.9
1991	273	11.2	1.38	12.28	7.1	2.0
1992	385	8.1	1.71	20.97	7.2	2.0
1993	483	11.4	3.20	28.16	7.2	2.1
1994	387	8.5	1.39	16.24	7.3	2.0
1995	432	17.8	4.34	24.46	7.2	2.3
1996	621	16.1	6.53	40.65	7.1	2.4
1997	432	14.7	4.27	28.97	7.1	2.5
1998	267	15.5	4.98	32.20	7.1	2.9
1999	457	56.8	35.63	62.69	6.9	3.4
2000	346	44.2	26.77	60.54	6.9	3.7
2001	76	8.9	2.97	33.97	6.6	4.4
2002	67	5.1	1.13	22.11	6.7	4.7
2003	62	10.5	1.01	9.58	6.8	4.0
1990-2003	**4,392**	**24.1**	**95.63**	**396.9**	**7.3**	**2.3**

Impact on Customer Relationships? Reputation Risk?

- Same in M&As? (See “Acquisition Risk” evaluation in financial analyst reports)
- Same in Financial Analysis? (See proportions of Buy/Hold/Sell even after disclosures)
- Same in Portfolio Management? (“The only industry where amateurs beat professionals regularly”?)

Are banks delivering the value they can?

82

The Google experience

Supplier Risk

Little supplier risk in banking right now.

Open question: IS THERE ENOUGH?

Look at industry winners:

Dell

BMW

Can we do it all? Think Hedge Funds…

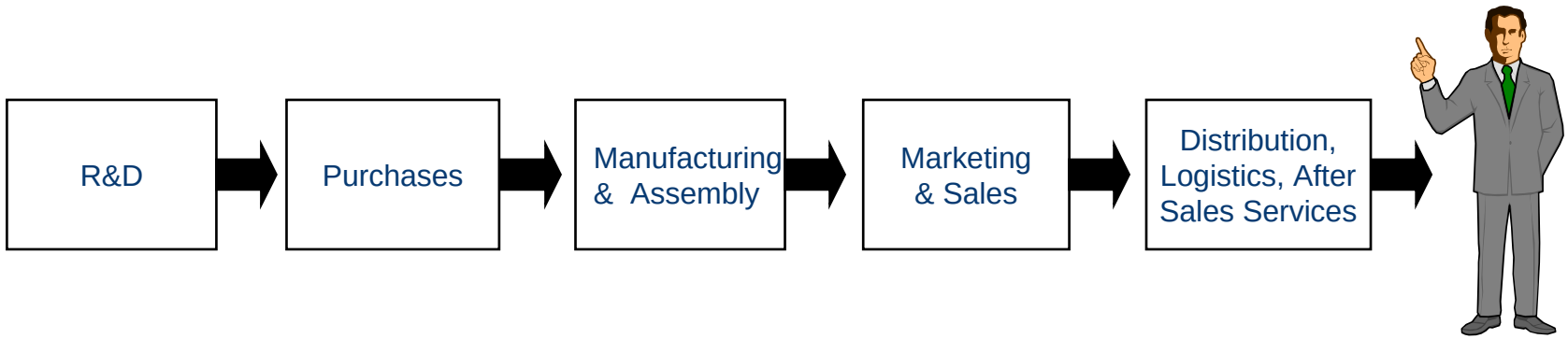
83

Other forces?

- Competitors Rivalry? Impact of Size? Efficiency? Mergers?
- Substitutes? Markets? Entrants?

84

Checking for strategic risks along the business system!



- **Customer Value Risk?**
- **Integration of Strategic Risks Along The Business System?**
- **Financial Rationale For Business Risk Decisions?**
- **How much do you outsource?**
- **How much of the value chain do you own?**

85

Challenging industry risk assumptions

- What are the industry risk assumptions (on the way to do business in that industry) that have never been challenged so far?
- Which changes in industry assumptions would create exceptional new value for customers?
- Which of these changes would provide sustainable opportunities for the company (i.e. hard to imitate advantages)?
- Which of the risk factors which the industry takes for granted could be:
  - Eliminated?
  - Reduced below industry standards?
  - Raised above industry standards?

Latest Trends in Risk Thinking: **Risk Structuring**

Risk Structuring is becoming ever present:

- **In Customer Contracts:** Schlumberger IPMs, Syngenta Yield Guarantees
- **In Supplier Contracts:** Ikea, IB Clients?
- **In Acquisitions:** Apache, Earnouts, CVRs
- **In Financing:** Automotive Manufacturer Financing Arms, Leverage Choices
- **In Investments:** Hedge Funds and Private Equity Investments

87

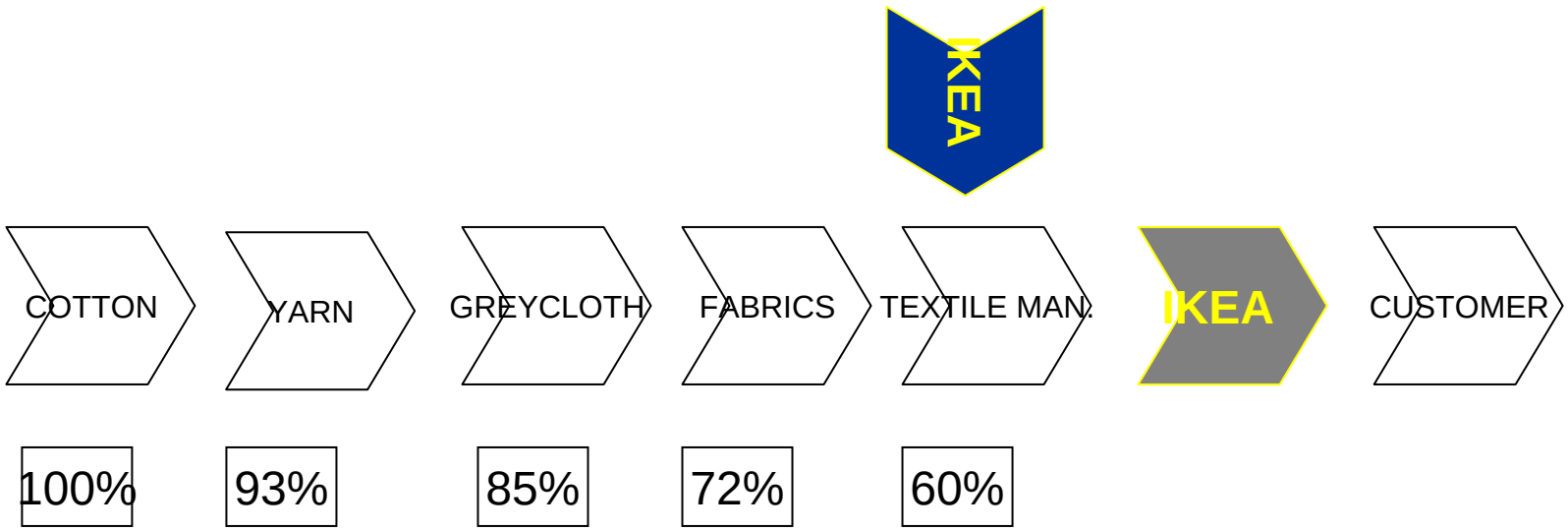
- **But be careful: there is Smart and Dumb Risk Structuring (Cephalon)**

Customer Contracts Structuring

- Could SLB have done their original IPM without a PI Cap?
- How much market share has Syngenta gained in Brazil with yield and price guarantees? (And Bioethanol option?)
- How many cancellation options, price guarantees, are not structured to maximize value?
- What will happen to commercial banking's relationships (See the Deutsche Bank example)?

88

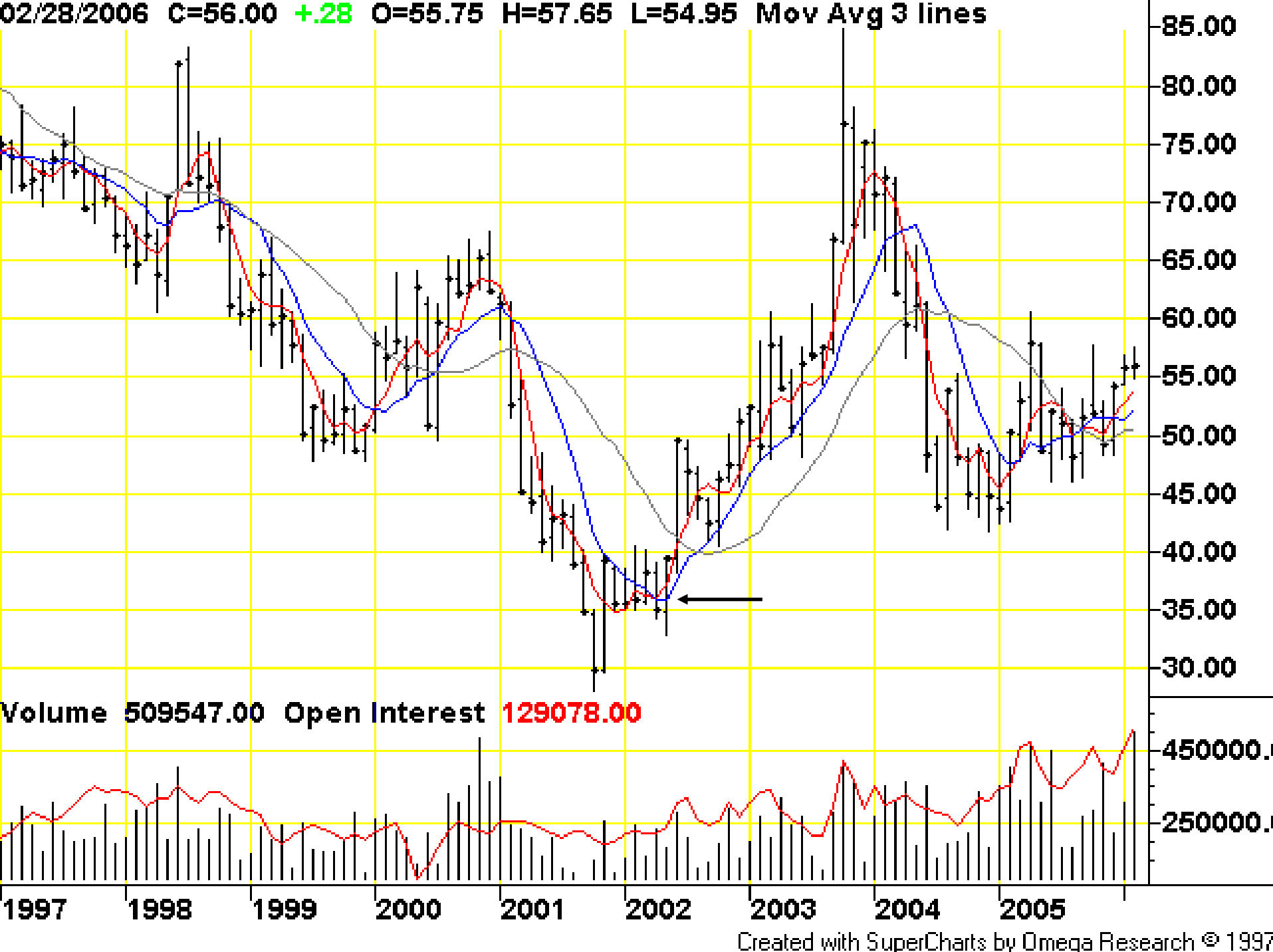
Supplier Contracts Structuring



89

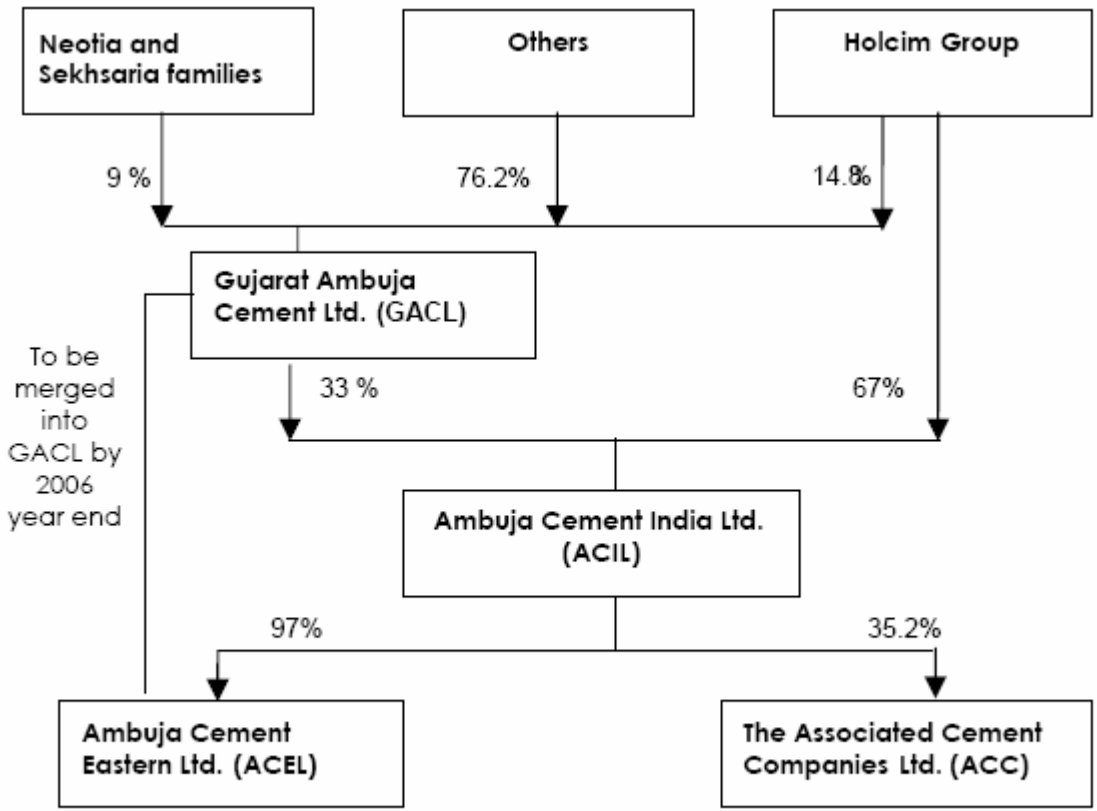
- IKEA only does the design and buy finish goods
- IKEA guarantees prices to the customer for one year through its catalogue
- On average, 60% of the cost of textile product is cotton

What price should the supplier charge IKEA?
Current Price
Volume 509547.00 Open Interest 129078.00
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
450000.
250000.
1997
1998
1999
2000
2001
Research © 1997


02/28/2006 C=56.00 +.28 O=55.75 H=57.65 L=54.95 Mov Avg 3 lines
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
Volume 509547.00 Open Interest 129078.00
450000.
250000.
1997
1998
1999
2000
2001
2002
2003
2004
2005
Created with SuperCharts by Omega Research © 1997

Structured Acquisition: Example 1: The soft way, Holcim India

- The complexity of the Gujarat and Ambuja Holdings



Source: Deutsche Bank, Holcim

Mergers and Acquisitions Structuring: Example 2: The Hard Way in China, Values and traps

$$P = A \times \left[\frac{(1.405\,S + 8.25\,E + 23.75\,N)}{3} - D\right]$$

Where **P** means the Consideration,;

A means 0.30 with regard to Phase 1 Consideration, 0.21 with regard to Phase 2 Consideration and 0.49 with regard to phase Consideration;

S means the Total Sales as of the relevant Valuation Date;

E means EBITDA for the relevant Valuation Date;

N means Net Income for the relevant Valuation Date; and

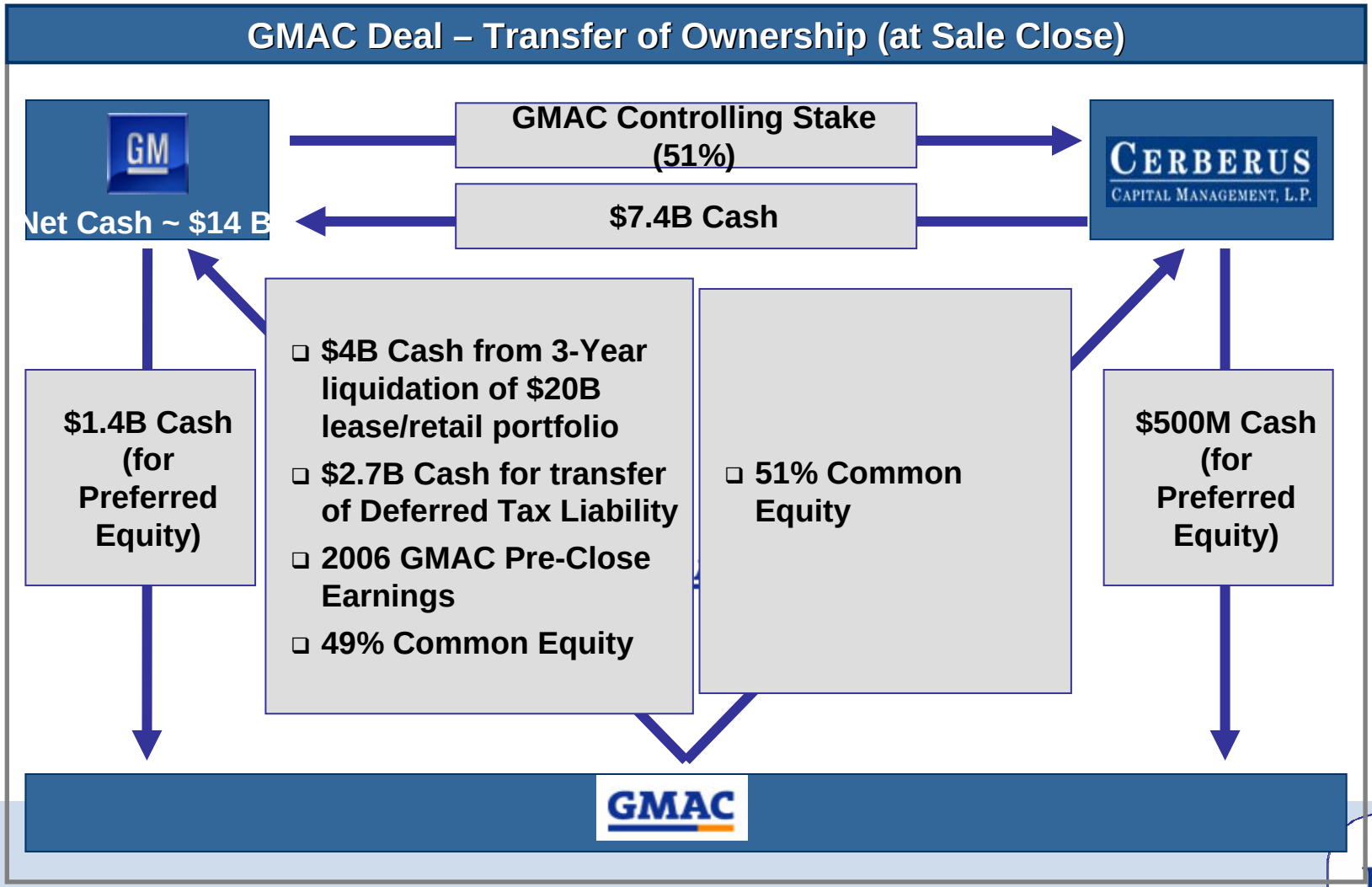
D means the Net Debt existing at the relevant Valuation Date in excess of US$50,000,000.

With additional ROCE and Sales covenants.

See also shotgun options.

Structured Acquisition. Example 3: US State of the art: GMAC

GMAC Sale occurs in a series of transactions to be executed over time



The agreement provides continued auto finance support of GM, with an option for GM to re-acquire GMAC's auto finance operations

GMAC Deal – Agreements to Be Executed Over Time (Post-Close)

GM receives:

- 10-Year Call Option on Auto Finance
  - Conditional on GM's investment grade rating
  - Exercise price higher of FMV or 9.5 X Net Income
- 5-Year Hold on GMAC Assets
  - Prevents sale of pieces of business
- Auto financing support at historical levels
  - Breadth of products & services

GM receives:

- $100M annual fees for exclusivity
  - $75 M for retail incentive support
  - $25 M in royalties for warranties & service contracts

Cerberus receives:

- Ability to dilute GM's preferred share at any time without consent
  - Board composition: Consortium 6, GM 4, Independent 3

95

Other Deal Information

- Years 1-2: GM and Cerberus dividends reinvested in GMAC
- Years 3-5: Only Cerberus dividends reinvested in GMAC
- GM to pay all residual value support payments up front

Cerberus executed a near-perfect hedge, eliminating its downside risk and creating a significant gain in all post-close scenarios

	Mortgage	Insurance	Auto Finance	Total	Cerberus Gain
Cerberus Share of GMAC Book Value ($7.4B Cash for 51% Equity)	$3.7B	$1.3B	$3.7B	$8.7B	$1.3B
Post-Close Scenario 1: Cerberus sells all GMAC assets at Book Value	$3.7B	$1.3B	$3.7B	$8.7B	$1.3B
Post-Close Scenario 2: Cerberus sells Auto Finance at Book Value, Mortgage & Insurance at FMV (1.5x Book Value)	$5.6B	$1.9B	$3.7B	$11.2B	$3.8B
Post-Close Scenario 3: Cerberus sells all GMAC assets at FMV (includes GMAC exercise of Buy-Back Option)	$5.6B	$1.9B	$5.6B	$13.1B	$5.7B
Sale Does Not Close	- -	- -	- -	- -	- 0 -

Further uses of Risk Structuring

- **Social?**
- **Emerging Markets?**
- **Islamic Finance?**

97

To Understand Structuring, One has to understand basics of Options

- Nobel Prize winning material
- Requires different skills from classical concepts (eg DCF, EVA)
- Rich framework with many applications
- Can be explicit or implicit (credit risk)

- Has well known properties such as impact of risk, maturity, etc.

Real Options: Evaluating Strategies, Contracts and Beyond?

- Patents, Rights, Options to abandon, Options to expand, Options to wait, etc... cannot be thought of correctly with classical risk thinking.

- Risk averse managers may prefer more risk when assets are options!!!

- Option Pricing Theory, that evolved notably from the Black-Scholes formula, allows for good conceptualisation of these assets.

99

NB: Classical financial measures ignore options !!!

Real Options

The Black Merton Scholes Model
Under the Black et Scholes [1973] hypotheses, the price of a European Call Option is:

$$C = e^{-yt}N(d_1)S - Ke^{-rt}N(d_2)$$

$$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \left(r - y + \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

N(d) = cumulative normal distribution function
K = exercise price
S = underlying security
t = time to maturity
σ = standard deviation of the underlying security
y = dividend yield

100

Forget the formula, check www.imd.ch/faculty/cossin

- What is the value of a patent when costs of production for the product are too expensive for production to be valuable now?
- How does one value joint venture ownership when there is option to buyback or to sell shares?
- Capacity choices: how does one decide on having extra capacity or in designing possibility for building up capacity at cost?
- How does one structure price guarantees, yield guarantees?
- M&As/Corporate Recovery can be structured as optimal sets of options.
- How do you time opening of new market?

- What is the value of making an alliance for code sharing for an airline?
- How can a company choose between building a large plant and a small plant with a possible future extension?
- How can a multinational company select which plants to keep open and which to close in uncertain markets?
- Options to abandon, options to expand, option to wait, option to switch technologies, option to make follow on investments, etc.

Options everywhere! When to stop???

Incremental value of additional option is less in presence of other options and declines as more options are present. Valuation error of ignoring an option when you valued 5 is low!

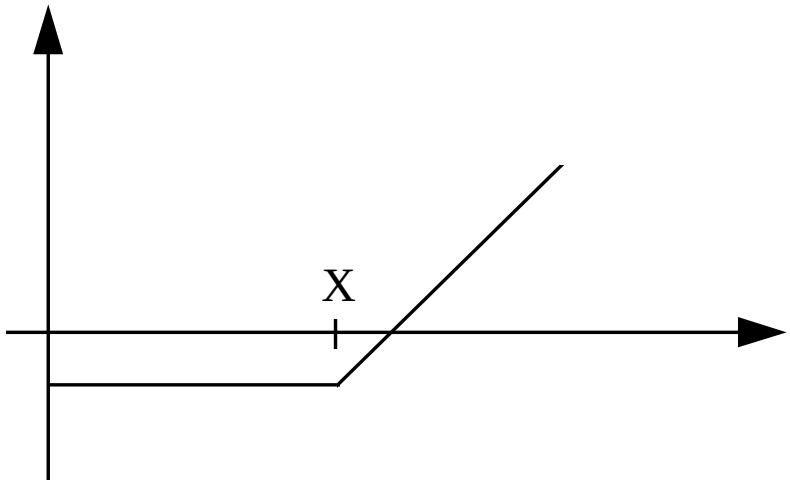
103

An example: The option to wait

- A negative NPV project can turn into a positive one in the future. In a competitve environment, owning an exclusive right can be valuable.
- Assume that a project requires an investment outlay of X for a present value of cash flows of V.
- Assume also that the company has a patent for this project.

104

The payoff diagram at maturity is:



105

- You are trying to sell a patent of for a new product to a large engineering company.

- The patent is still valid for the next 20 years.

- This product is expensive to produce and the market for it is very small. The investment would be of 500 million $ while estimated sales are valued in 350 million $.

- This is typically the payoff function of a call option.
- The technology and the market for this product are really volatile.
- The variance of a simulation gives a value of 5%.
- Assume that the continuous short-term risk-free interest rate in the market is 7%.

107

What is the value of the patent you have?

Value of this option using Black and Scholes

K = 500 mio $

S = 350 mio $

t = 20 years

r = 7%

$$Call = 350.N(d_1) - 500.e^{-0.07*20} N(d_2) = 241.40\ mios\$$$

with a 0 dividend yield. With the more realistic assumption of a 5% dividend yield (loss of value of 5% (1year/20years) every year),

the call is worth **$51 millions**.

A more complex example: Acquisition growth opportunities

- You can buy a local, small size company valued at 100 millions dollars.
- You estimate your expertise and capital would allow you to develop that market to an expected value of 250 millions (20%).
- You are unsure how much of your own resources will be needed to develop that market. You have a estimate of 75 millions with a high volatility (50%).
- The 75 millions happen in 3 years (25 millions each year).
- Stochastic exercise price (exchange option)
- Installments let you get out any time (compound options)

109

Expert Use of Real Options

- See for detailed expert use
- Merck systematic valuation of patents and selling of shelved patent
- Syngenta winning customers and reducing credit risk by guaranteeing yields (and prices)
- Oil industry
- Capacity Choices
- Stock Option Plans

A New Real Option Impact

Assessment of credit risk

- Credit risk is nothing but an option: shareholders can choose to get out and let debtholders take over assets
- EDF or CreditGrades are real options model assessing default probability of the firm
- Dynamic measures are challenging classical ratings
- Credit linked financing has become an option 111

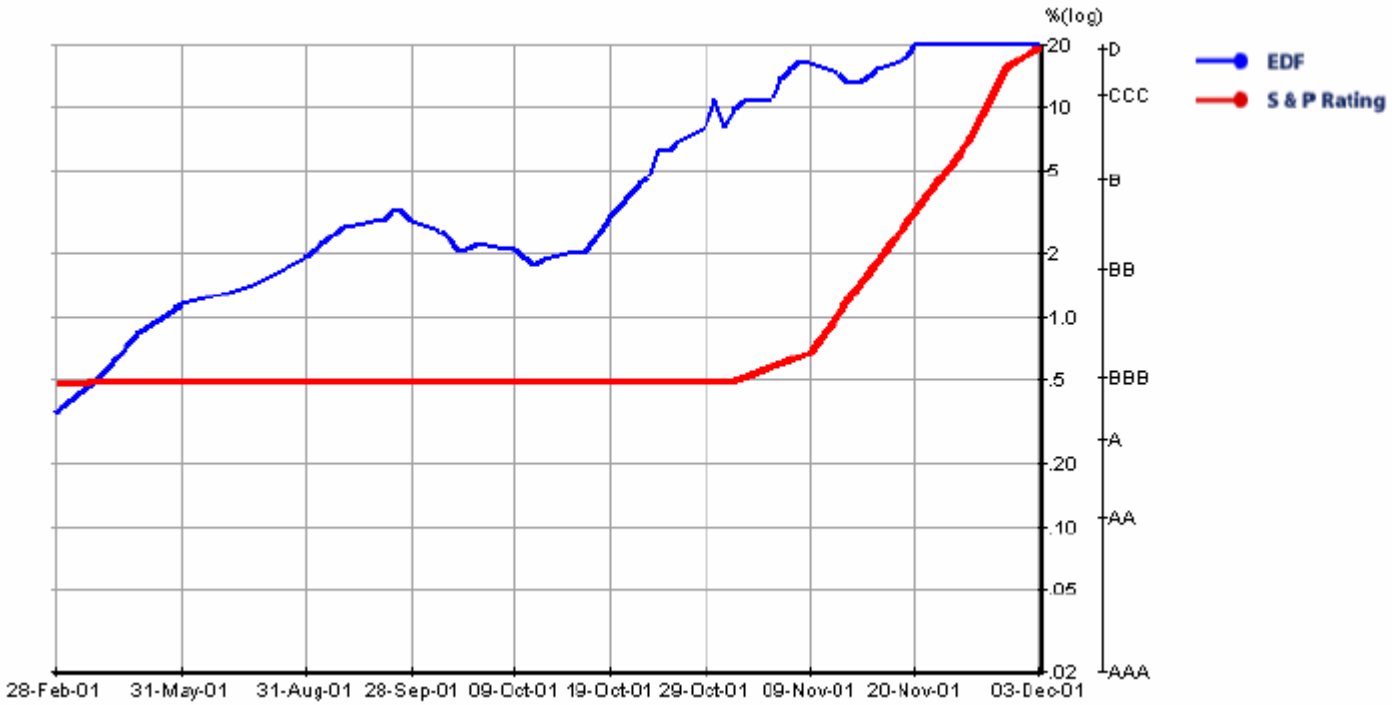
Examples of EDF/Credit Grades

- Enron
- Worldcom
- Vodafone
- Automotive Industry

Questions ratings and credit risk management within firms

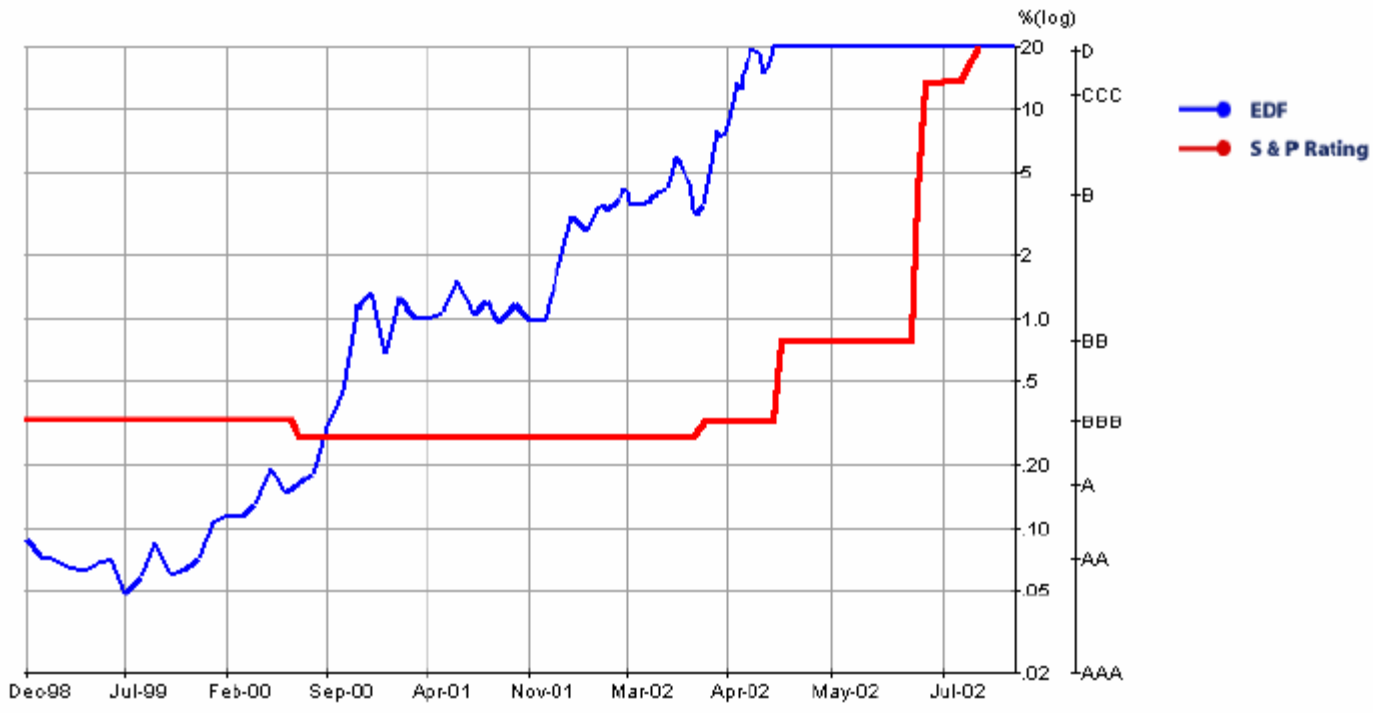
Moody's | K·M·V

EDF Case Study: Enron



IMD

EDF Case Study: Worldcom



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Company XXX

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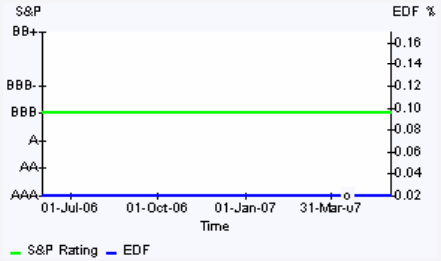
	1 YR	2 YR	3 YR	4 YR	5 YR	6 YR	7 YR	8 YR	9 YR	10 YR
EDF (Annualized)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%
Credit Category (Spot)	Aaa	Aaa	Aaa	Aaa	Aaa	Aaa	Aaa	Aa1	Aa1	Aa1
EICDS (bp)	10	12	15	18	21	25	30	35	41	47
Fair Value CDS Spread (bp)	11	15	19	23	27	33	40	47	55	64
EIOAS (bp)	10	14	19	24	29	36	45	54	64	74
Fair Value Bond Spread (bp)	8	12	16	20	24	30	37	45	53	61

EDF Highlights and Ratings — View Details >>

1-YEAR EDF HISTORY



EDF	(As of June 1, 2007)	0.02%
Asset Volatility		9.05%
Instantaneous Equity Volatility		15.04%
Credit Category (Spot)		Aaa
Credit Category (5-yr Median)		Aaa
S&P Issuer Rating	(As of April 30, 2007)	BBB+
Moody's Issuer Rating		--
Financial Statement Date:	December 31, 2006	

View Industry Composition

View Moody's Ratings & Research

CDS SPREAD Highlights — View Details >>

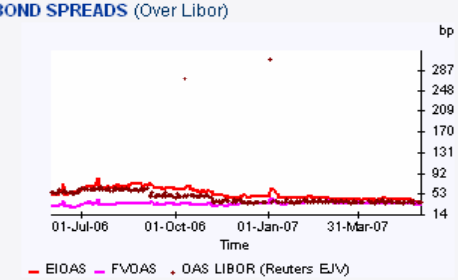
1-YEAR CDS SPREADS

CDS Description CDS 5yr USD

EICDS	21bp	**Term**	5.0 Yr.
FVCDS	27bp	**Restructuring Type**	
Implied LGD	0.426	**CreditTrade**	
Sector LGD	0.596	**GFI**	
User LGD		**Markit**	
Zero EDF Shift	-0.0005		

BOND SPREAD Highlights — View Details >>

1-YEAR BOND SPREADS (Over Libor)



Bond Description HOLN 4.375 12/09/14 EUR 4.38

Show All Bonds

EIOAS	40bp	**Duration**	6.4 Yr.
FVOAS	33bp	**CUSIP**	
Implied LGD	0.722	**ISIN**	XS0207037507
Sector LGD	0.596	**Reuters EJV**	38 bp
User LGD		**Trace**	

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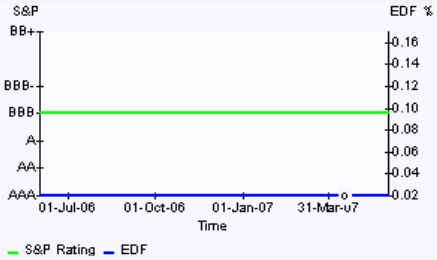
COMPANY 1 YEAR EDF HISTORY



EDF

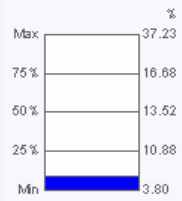
0.02% (Aaa)

MOODY'S / S&P

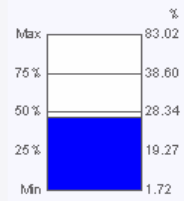
-- / BBB+

View Credit Categories

ASSET VOLATILITY



MARKET LEVERAGE



Western Europe Large Corporates

EDF Information as of: June 1, 2007
Financial Statement Date: December 31, 2006
HOLN 4.375 12/09/14 EUR 4.38

Define Current: mm/dd/yy 6/1/07 Define Previous: One Day

Amounts in: CHF Millions (except Share Price)	Current	Previous	Amt Change	% Change
EDF	0.02%	0.02%		
Credit Category	Aaa	Aaa		
Asset Volatility	9.05%	9.05%		
Instantaneous Equity Volatility	15.04%	15.13%	-0.09%	-0.59%
Market Leverage	26.89%	27.14%	-0.25%	-0.92%
Market Value of Assets	59,758.781	59,209.699	+549.082	+0.93%
Market Capitalization	35,963.129	35,414.270	+548.859	+1.55%
Share Price	137.600	135.500	+2.100	+1.55%
Shares Outstanding	261.360	261.360		
Default Point	16,067.800	16,067.800		
Short-Term Liabilities	8,621.000	8,621.000		
Long-Term Liabilities	14,333.000	14,333.000		
Total Adjusted Liabilities	22,954.000	22,954.000		
Other				
Common Dividends	382.000	382.000		
Preferred Dividends	0.000	0.000		
Dilution	1.000	1.000		

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Managing with Real Options

- Creating Options/ Contracting with Options
- Maximizing Option Values
- Thinking All Option Dimensions
- Taking and Shaping Risk

117

Strategic Implications of Real Options

- Managing the environment
- Selecting strategic risks
- Transforming strategic risks with the right structures
- Best practice examples

But are real options flexible enough by themselves?

At the end of the day, good risk thinking is good risk picking!

- Often Risk Management is too limited in thinking:
- It addresses risks passively
- It is often inspired by risk aversion
- It is imprecise in its risk assessment

While the true business game is to:

119

Pick your risks!

Good risk thinking requires good education

- One need to be current on risks that arises
- One need to be current on the tools that assess and handle these risks
- One need to have an open mind to new risks that will arise

- Only “education” gives you the skills required.

Risk Thinking @ IMD !

120

Send your senior managers to the Take Risks, Get Growth! Program!

Conclusions: We need to open our minds to Risks!

Otherwise, we will remain stuck in managing past risks with past methods!

- Many of the economic risks will transfer into business risks.
- Business risks are even more open, less defined than financial market risks!

We have sophisticated tools to help us think about risks, even to exploit them.

- Then stress testing is necessary!
- No risk model is without limitations or implied assumptions!
- Do not believe those who believe!
- Think outside the box!

Technical knowledge is good but brain is still useful!

- Bets are rarely wise when you do not have a specific comparative advantage.
- We can significantly reduce risks by risk management.
- But what risks to take maybe the most important question!

<u>Sophistication is essential: Senior management@risk!</u>

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