Institute of Actuaries ERM Seminar

ERM – Tying it together

Stuart Robinson

3 July 2006

The UK insurance industry is emerging from a period of massive change

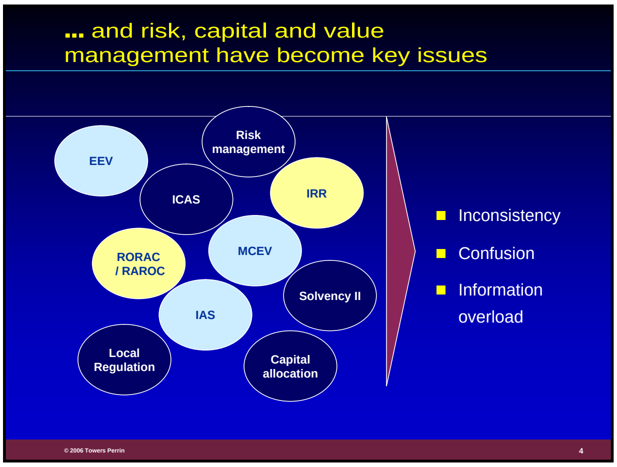
Recent focus of activity | **Key challenges for the future**

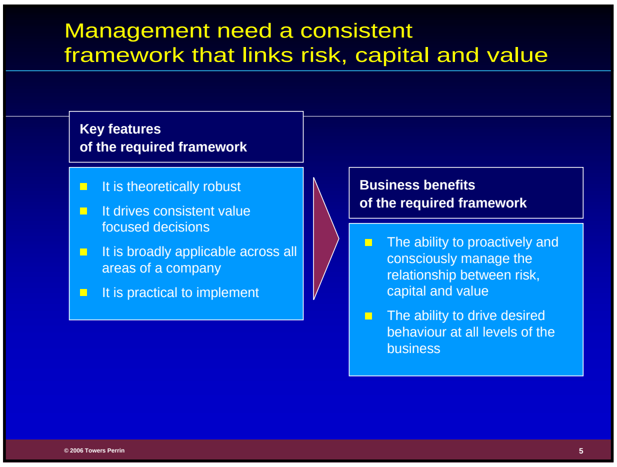
Regulatory Compliance	Risk Measurement	Capital Conservation	Risk Management	Value Measurement	Risk & Value Optimisation
IAS IFRS EEV Risk management	ICAS Realistic balance sheets Economic capital Solvency II	Asset mix Hedging Bonus rates	Risk strategy Risk appetite Risk governance Risk process	Profit sources Value metrics	Capital allocation Target setting Maximising in-force value Maximising franchise value

Regulatory Requirements (Regulatory Compliance, Risk Measurement) — **Loss minimisation** (Capital Conservation) — **Development of Performance Management Framework** (Risk Management, Value Measurement) — **Implementation** (Risk & Value Optimisation)

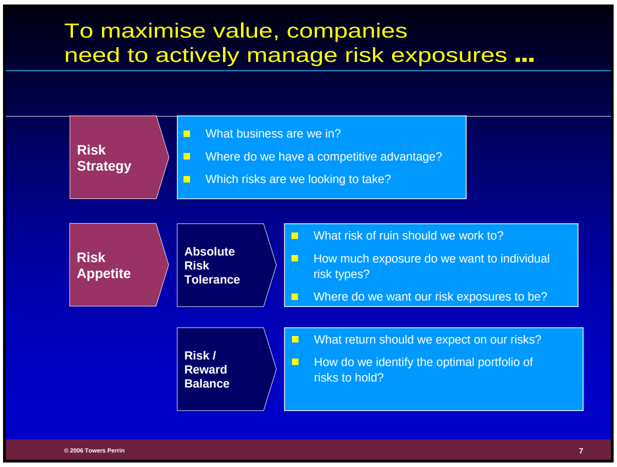
Companies are beginning to ask more forward looking questions ...

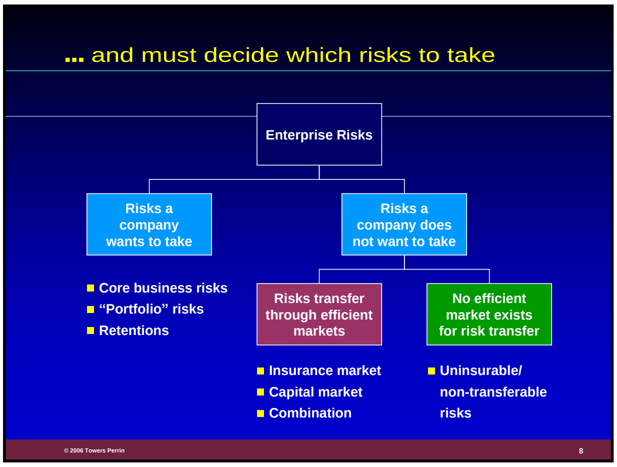
- **Value –** What metrics should we use?
- **Assessing results –** How should we measure the performance of our business?
- **Measuring risk –** What benefit will we get from developing internal capital models?
- **Pricing –** How do we maximise the vale of new business?
- **Targeting –** Should we introduce an IRR target?
- **Capital availability –** How can we factor capital constraints into our metrics?
- **Consistency –** What approach should we adopt to compare our life and non-life businesses?
- **Risk appetite –** What do we need to consider when developing a risk appetite?
- **ALM –** How do we understand if ALM decisions are genuinely adding value?
- **Tools –** What do we need to do to develop and align our risk and value tools?
- **Risk management –** What do we need to do to 'embed' our framework?
- **Planning –** Can you explain to us how to introduce a value-based planning process?
- **Hedging –** How should we use a value framework to evaluate the impact of hedging decisions on risk and value?

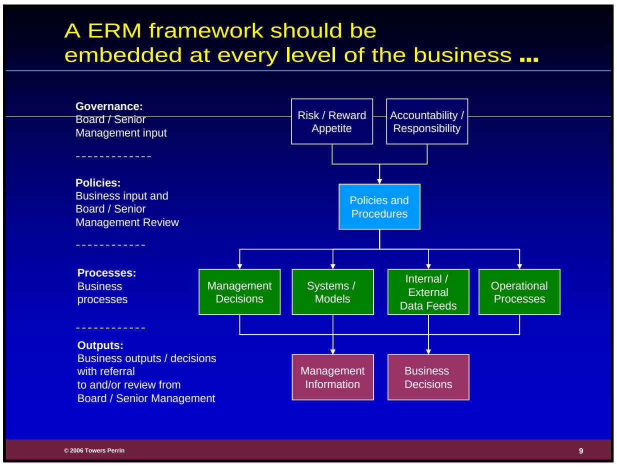

... and risk, capital and value
management have become key issues
EEV
Risk management
ICAS
IRR
RORAC / RAROC
MCEV
Solvency II
IAS
Local Regulation
Capital allocation
Inconsistency
Confusion
Information overload
© 2006 Towers Perrin
4

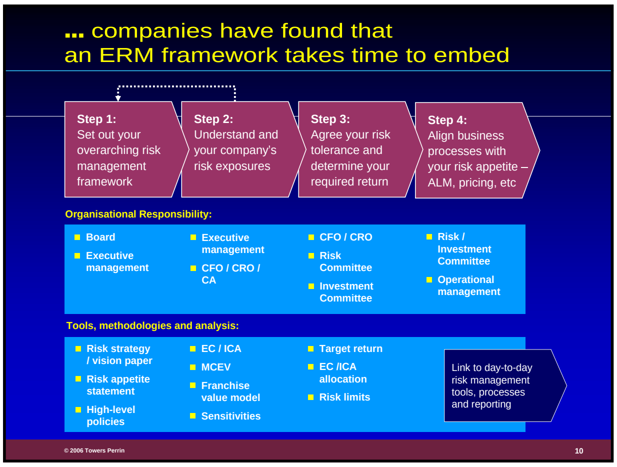

Management need a consistent
framework that links risk, capital and value
Key features
of the required framework
It is theoretically robust
It drives consistent value focused decisions
It is broadly applicable across all areas of a company
It is practical to implement
Business benefits
of the required framework
The ability to proactively and consciously manage the relationship between risk, capital and value
The ability to drive desired behaviour at all levels of the business
© 2006 Towers Perrin
5

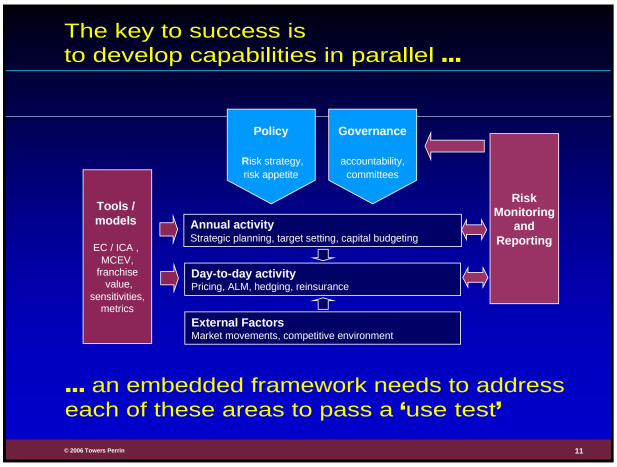

UK companies are facing two challenges
Risk Management – Embedding in the business
Risk Measurement – Linking risk, capital and value
© 2006 Towers Perrin
6

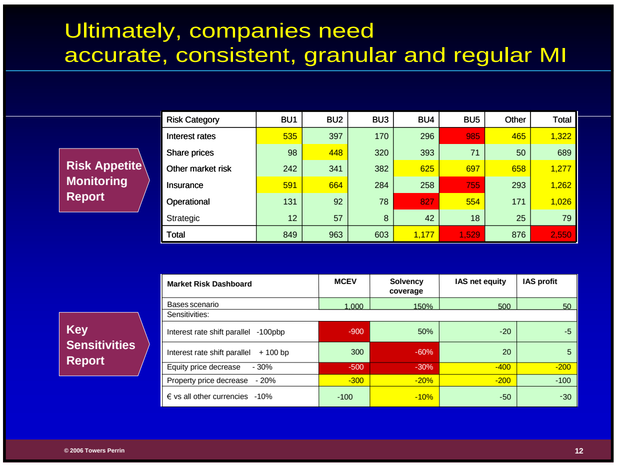

To maximise value, companies
need to actively manage risk exposures ...
Risk
Strategy
What business are we in?
Where do we have a competitive advantage?
Which risks are we looking to take?
Risk
Appetite
Absolute
Risk
Tolerance
What risk of ruin should we work to?
How much exposure do we want to individual risk types?
Where do we want our risk exposures to be?
Risk /
Reward
Balance
What return should we expect on our risks?
How do we identify the optimal portfolio of risks to hold?
© 2006 Towers Perrin
7


... and must decide which risks to take
Enterprise Risks
Risks a company wants to take
Risks a company does not want to take
Core business risks
"Portfolio" risks
Retentions
Risks transfer through efficient markets
No efficient market exists for risk transfer
Insurance market
Capital market
Combination
Uninsurable/ non-transferable risks
© 2006 Towers Perrin
8


A ERM framework should be
embedded at every level of the business ...
Governance:
Board / Senior Management input
Policies:
Business input and Board / Senior Management Review
Processes:
Business processes
Outputs:
Business outputs / decisions with referral to and/or review from Board / Senior Management
Risk / Reward Appetite
Accountability / Responsibility
Policies and Procedures
Management Decisions
Systems / Models
Internal / External Data Feeds
Operational Processes
Management Information
Business Decisions
© 2006 Towers Perrin
9







Risk Category	BU1	BU2	BU3	BU4	BU5	Other	Total
Interest rates	535	397	170	296	985	465	1,322
Share prices	98	448	320	393	71	50	689
Other market risk	242	341	382	625	697	658	1,277
Insurance	591	664	284	258	755	293	1,262
Operational	131	92	78	827	554	171	1,026
Strategic	12	57	8	42	18	25	79
Total	849	963	603	1,177	1,529	876	2,550

Market Risk Dashboard	MCEV	Solvency coverage	IAS net equity	IAS profit
Bases scenario	1,000	150%	500	50
Sensitivities:				
Interest rate shift parallel -100pbp	-900	50%	-20	-5
Interest rate shift parallel + 100 bp	300	-60%	20	5
Equity price decrease - 30%	-500	-30%	-400	-200
Property price decrease - 20%	-300	-20%	-200	-100
€ vs all other currencies -10%	-100	-10%	-50	-30

UK companies are facing two challenges

Risk Management – Embedding in the business

Risk Measurement – Linking risk, capital and value

Companies often focus on risk and capital and give less thought to value

Economic capital / internal model methodology choices

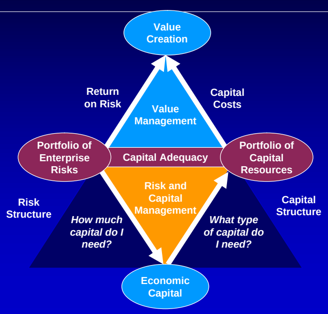
Decision 1: Period for assessment	Decision 2: Definition of capital	Decision 3: Measure of risk	Decision 4: Risks to include	Decision 5: Quantification methodology	Decision 6: Aggregation
One year Run-off n years	Economic IFRS Accounting	Risk of Ruin VaR TVAR	Market Credit Insurance Operational Liquidity	Stochastic modelling Stress Testing Factor based	Additive Variance/ Covariance Stochastic

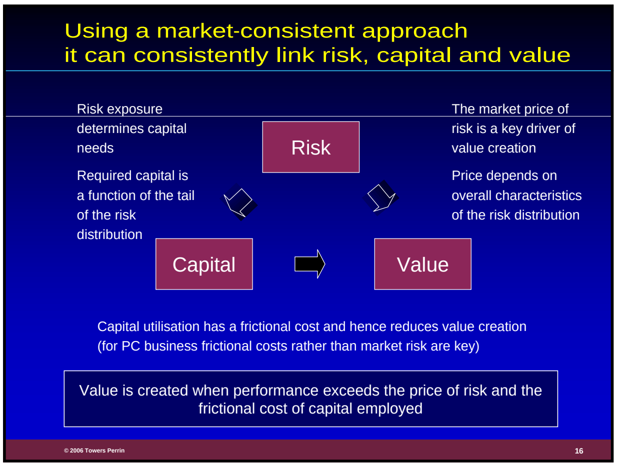
There is not necessarily a 'right' framework - approach taken should reflect the nature of the company's risks and management's objectives

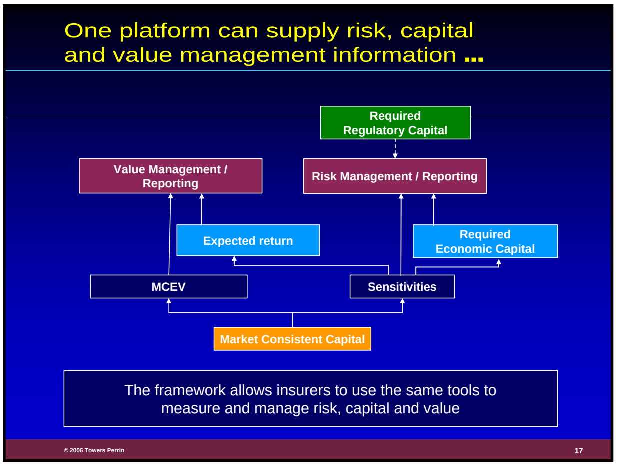
Our Risk-Capital-Value Framework is holistic

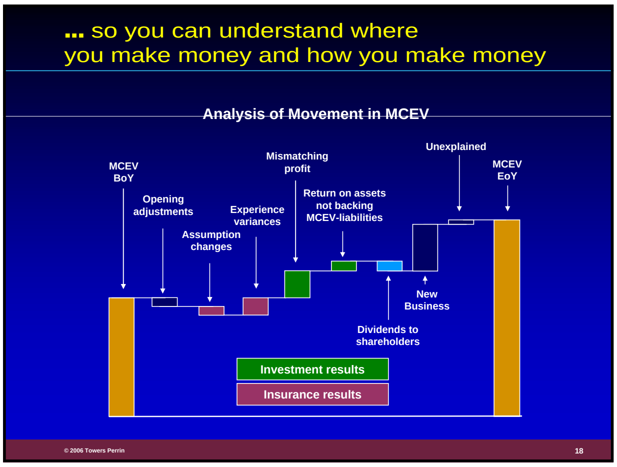
Leading-edge companies maximise value by relating decisions on the **risks they take** to the decisions on the **capital they use** to finance their business …

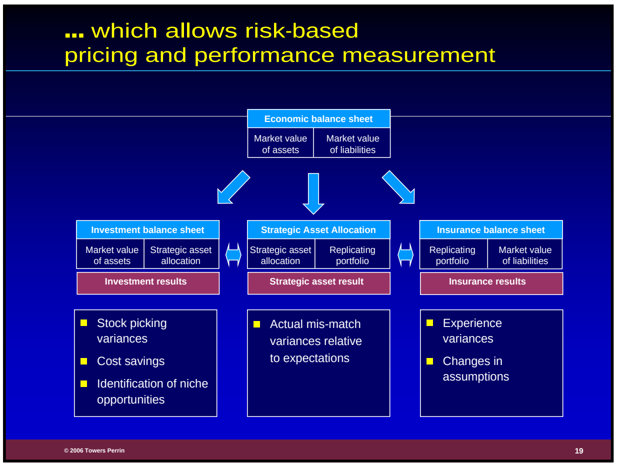
… they also explicitly consider how best to **balance the interests of shareholders and policyholders** by analysing **economic capital** requirements and **value creation**

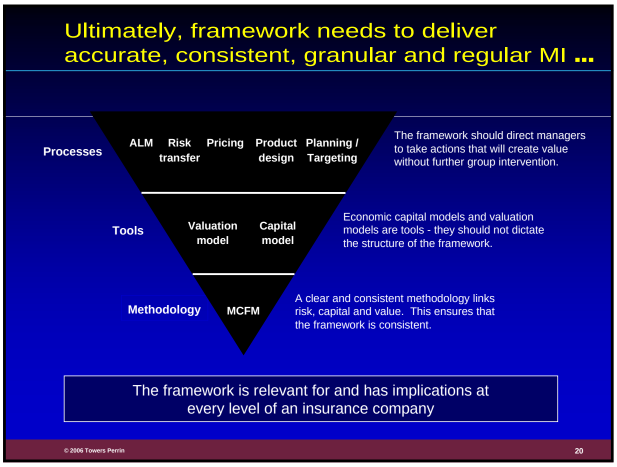


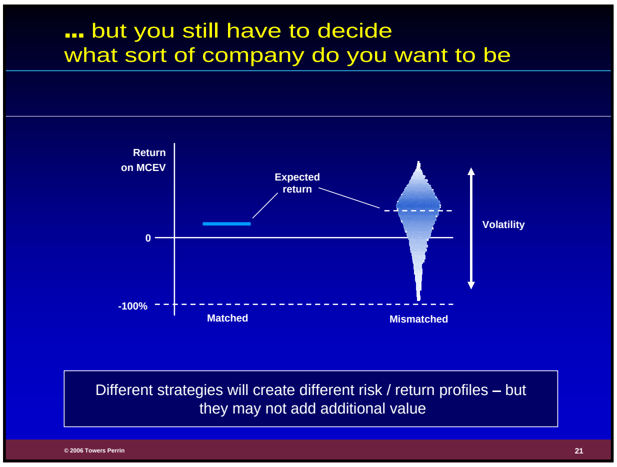

Using a market-consistent approach
it can consistently link risk, capital and value
Risk exposure determines capital needs
Required capital is a function of the tail of the risk distribution
Risk
The market price of risk is a key driver of value creation
Price depends on overall characteristics of the risk distribution
Capital
Value
Capital utilisation has a frictional cost and hence reduces value creation
(for PC business frictional costs rather than market risk are key)
Value is created when performance exceeds the price of risk and the frictional cost of capital employed
© 2006 Towers Perrin
16


One platform can supply risk, capital
and value management information ...
Required Regulatory Capital
Value Management / Reporting
Risk Management / Reporting
Expected return
Required Economic Capital
MCEV
Sensitivities
Market Consistent Capital
The framework allows insurers to use the same tools to measure and manage risk, capital and value
© 2006 Towers Perrin
17


... so you can understand where
you make money and how you make money
Analysis of Movement in MCEV
MCEV BoY
Opening adjustments
Assumption changes
Experience variances
Mismatching profit
Return on assets not backing MCEV-liabilities
Dividends to shareholders
New Business
Unexplained
MCEV EoY
Investment results
Insurance results
© 2006 Towers Perrin
18


… which allows risk-based
pricing and performance measurement
Economic balance sheet
Market value of assets
Market value of liabilities
Investment balance sheet
Market value of assets
Strategic asset allocation
Investment results
Strategic Asset Allocation
Strategic asset allocation
Replicating portfolio
Strategic asset result
Insurance balance sheet
Replicating portfolio
Market value of liabilities
Insurance results
Stock picking variances
Cost savings
Identification of niche opportunities
Actual mis-match variances relative to expectations
Experience variances
Changes in assumptions
© 2006 Towers Perrin
19


Ultimately, framework needs to deliver
accurate, consistent, granular and regular MI …
Processes
ALM
Risk transfer
Pricing
Product design
Planning / Targeting
The framework should direct managers to take actions that will create value without further group intervention.
Tools
Valuation model
Capital model
Economic capital models and valuation models are tools - they should not dictate the structure of the framework.
Methodology
MCFM
A clear and consistent methodology links risk, capital and value. This ensures that the framework is consistent.
The framework is relevant for and has implications at every level of an insurance company
© 2006 Towers Perrin
20


… but you still have to decide
what sort of company do you want to be
Return on MCEV
Expected return
Volatility
0
-100%
Matched
Mismatched
Different strategies will create different risk / return profiles – but they may not add additional value
© 2006 Towers Perrin
21