

منتدى دبي العالمي
لإدارة المشاريع
DUBAI INTERNATIONAL
PROJECT MANAGEMENT FORUM



PARALLEL SESSION STREAM

Robust Crisis Management Framework

Towards the Future

Dr Evgueni Ivantsov
Chairman
Chairman of European Risk Management Council

Disclaimer

The views expressed in this Presentation are the personal views of the Speaker. While every reasonable effort is made to ensure that the information provided in this Presentation is accurate, the Speaker provides no guarantees for the currency or accuracy of information. Therefore, the Speaker shall not be liable for any direct, indirect or consequential loss or damages as a result of relying on any statement in or omission from this presentation, along with other information furnished in connection therewith, and any such liability is expressly disclaimed.

This Presentation is for the exclusive use of the recipients to whom it is addressed. This Presentation shall not be copied, published, reproduced or distributed in whole or in part at any time without the prior written consent of the Speaker.



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Key components

1. Risk appetite statement
2. Early warning signal system
3. Scenario analysis and contingency planning
4. Crisis governance and resource mobilisation
5. Crisis management Information and reporting
6. Crisis communication



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Risk Appetite Statement

- Risk appetite statement is a foundation of the crisis management framework. It provides risk parameters and benchmarks for setting and calibrating early warning signal system, scenario analysis, crisis MI & reporting. Also risk appetite statement is a guidance for the Crisis Committee in their review of crisis threats levels.
- Risk appetite statement is a formulation of corporate's risk strategy. It is an expression of the types and quantum of risks to which the organisation wishes to be exposed (and which not) on the basis of organisational core values, business model, market strategy and risk management capabilities.

Risk appetite statement should define:

- **Risk capacity:** the maximum risk that the company can absorb taking into consideration its financial and operational resilience, the strength of its reputation and brand.
- **Risk targets:** the optimal levels of risk that the company wants to take in pursuit of a specific business goal.
- **Risk limits/tolerances:** maximum risk that the company is willing to be exposed to for specific categories of risk or business areas. Zero risk tolerance areas and events should also be explicitly defined.



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Early warning signal system: deterministic forecasting models

- Multi-factor deterministic models produce the forecast based on modelling relationships between a set of independent variables and the dependant (target) variable.
- The most common modelling approach is to use regression analysis techniques like ordinary least-squares (OLS), multiple linear regression (MLR) or logistic regression.

Important conditions:

- Relationships between the mean dependant variable and independent variables is approximately linear.
- The independent variable is normally distributed

Key performance tests:

- Goodness of fit
- T-test for single variable, F-test for all variables
- R-squared analysis



@DIPMF



DIPMF



DIPMF



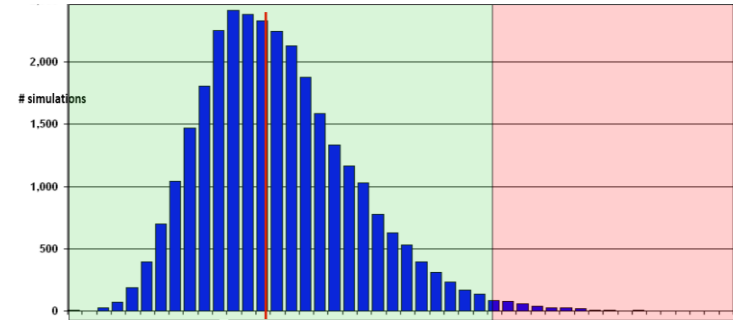
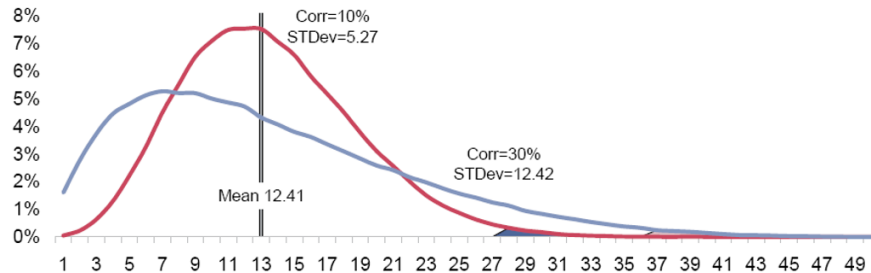
DIPMF



Crisis management framework

Early warning signal system: stochastic forecasting models

- Stochastic models utilise a stochastic process (Brownian motion, a Gaussian process) to generate a distribution of possible future states of the target variable.
- Using a random probability distribution, stochastic models integrate some inherent randomness of the future outcomes.
- The setting of limits of the target variable and the confidence level should be aligned with the risk appetite statement of the organisation:
 - E.g the tolerance level - maximum absorbed unexpected financial loss
 - E.g the confidence level - 99% (1 in 100 years event)



@DIPMF



DIPMF



DIPMF



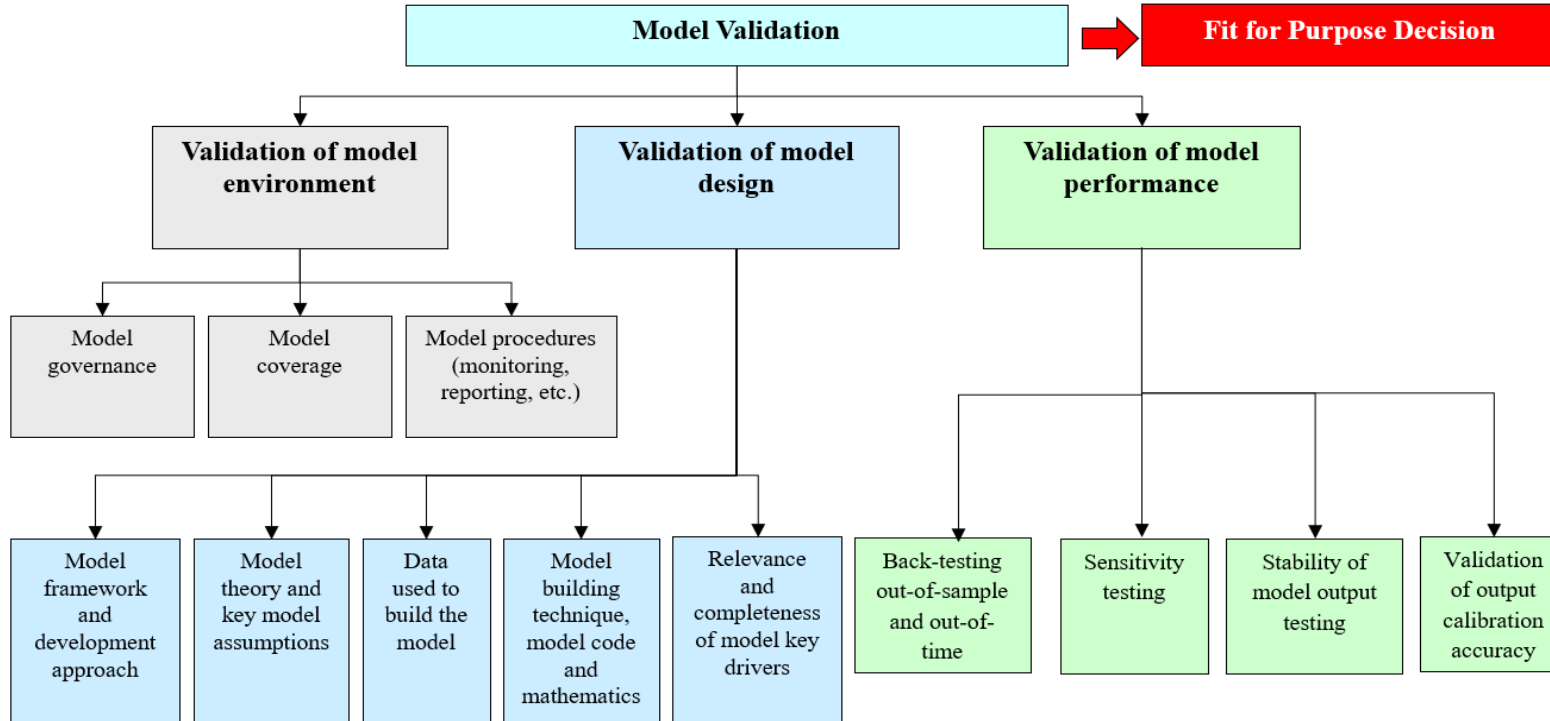
DIPMF

منتدى دبي العالمي
لإدارة المشاريع
DUBAI INTERNATIONAL
PROJECT MANAGEMENT FORUM



Crisis management framework

Early warning signal system: forecasting model validation

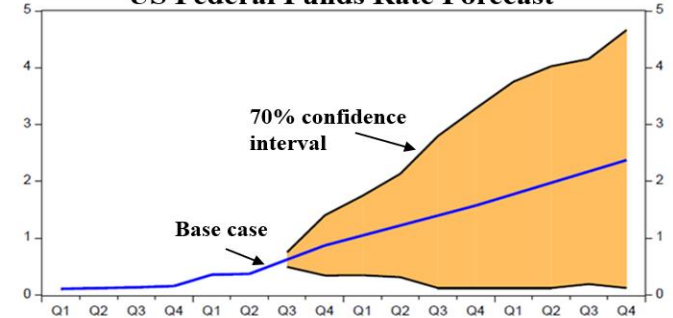


Crisis management framework

Early warning signal system: forecasting model considerations

- **Effective forecast horizon and confidence level:** The longer a forecast horizon and the higher confidence level, the larger error margin.
- **Potential model overfitting**
- **Model mis-specification** (missed or irrelevant drivers)
- **Development and validation data samples:** data relevance, completeness, correctness
- **Multicollinearity** can generate unstable, biased estimates
- **Back-testing** of stochastic models is very limited
- **“Cliff effect” and non-linearity** (especially in the segment of extreme values of the target variables)
- **Correlation assumption:** static vs dynamic correlation
- **Future probability distribution** assumption (e.g. Gaussian distribution)

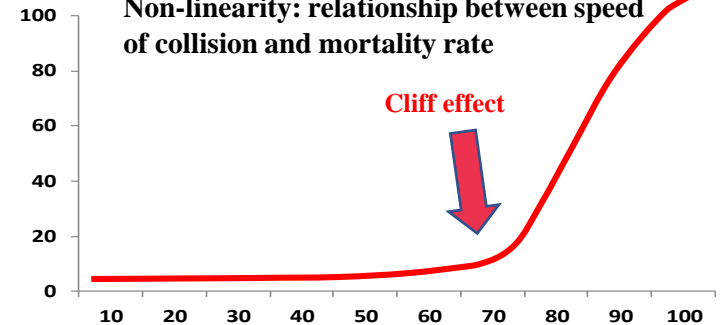
US Federal Funds Rate Forecast



Source: The Federal Reserve

Mortality

Rate %



@DIPMF



DIPMF



DIPMF



DIPMF

منتدى دبي العالمي
إدارة المشاريع
DUBAI INTERNATIONAL
PROJECT MANAGEMENT FORUM



Crisis management framework

Scenario analysis and contingency planning

- Detailed scenario analysis and stress testing are the most effective tools for development of contingency plans.
 - **Sensitivity scenario analysis:** change of one or more isolated risk drivers by a fixed amount
 - **Standard stress test:** historic event simulations, historic risk driver simulations, hypothetical scenario analysis
 - **Reverse stress test:** an ultimate stress test to uncover “fault lines” of the existing business model using a tail risk scenario that would make the business model unviable
- The scenario selection should be based on a consideration whether the analysis of the scenario can add value to the business and its crisis management practice.
- For tail risk stress testing and reverse stress testing, a scenarios selection should not be done based on probability of their occurrences. Probabilities of extreme events can not be reliably calculated due to paucity of data.



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Dynamic scenario simulation: key principles

- ▶ The fundamental technique of war gaming is applied.
- ▶ The simulation models human behaviour, industry competition, interconnectedness and time factor.
- ▶ In order to simulate the networking effect, the participants are divided in several teams which play roles of main stakeholders (e.g. the firm, competitors, customers, regulators). Each team works independently to make their own analysis and propose actions. The administration team aggregates results.
- ▶ The dynamic simulation should generate an environment of high uncertainty. The whole scenario is not known for teams in advance and is revealed gradually in several steps.
- ▶ The simulation includes several consecutive iterations. After each iteration, the administration team makes scenario adjustments based on teams' actions.
- ▶ Anything that can happen in the real world is allowed in the dynamic simulation (e.g. regulation changes, business closures, price reductions, job cutting, etc.)
- ▶ Each participating team is responsible for proposing mitigating actions and contingency planning



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Scenario analysis: Advantages of dynamic scenario simulation

The dynamic scenario simulation allows making the scenario analysis more realistic and its output more practical:

1. Scenario is not known in advance
2. Error margins are getting smaller due to shorter forecast horizon
3. Human behaviour, network effect and contagion effect are captured
4. No chance to make “back solving”
5. Stress impact is driven to large extent by management decisions.
6. The main value of the dynamic scenario simulation is the development of a robust and detailed contingency plan for each stress scenario
7. Dynamic scenario simulation trains participants to anticipate the unexpected and to make right decisions in a situation of uncertainty from the first time without a chance to come back later and “correct” the decision.



@DIPMF



DIPMF



DIPMF



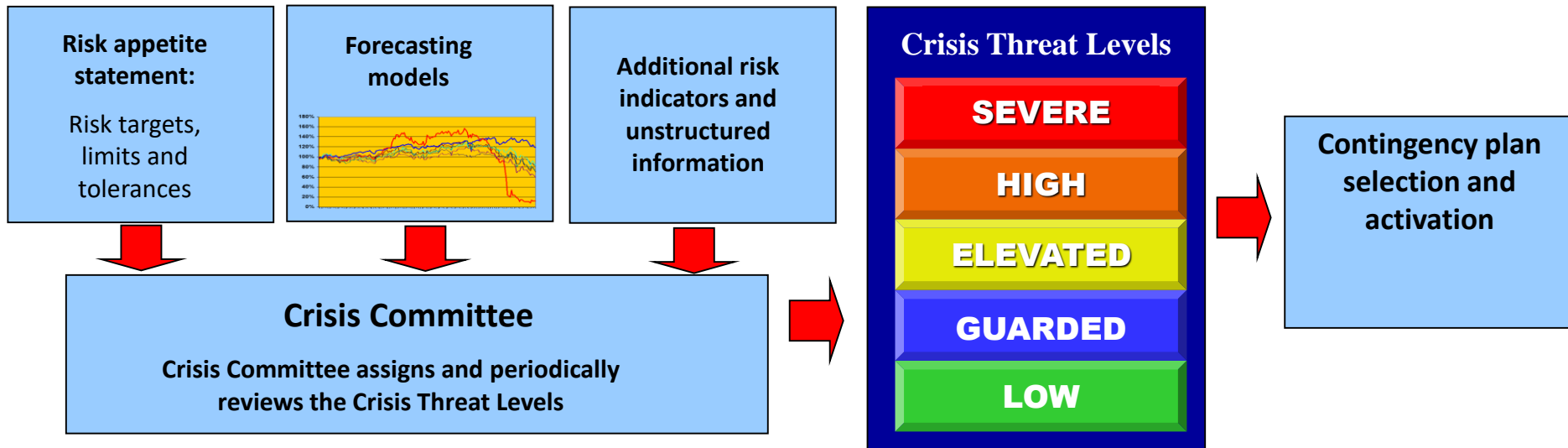
DIPMF



Crisis management framework

Crisis governance and crisis threat levels setting

Crisis governance requirements: hierarchical simplicity, concentration of decision-making power (e.g. crisis executive committee), efficiency of cascading decisions across the organisation, efficiency of feedback channels, crisis management resource mobilisation.



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

Crisis management information and reporting

The main requirements for crisis MI and reporting system:

- ▶ **High speed of data processing:** MI system should provide key information to decision-makers in minutes/hours rather than days and weeks
- ▶ **Unstructured data processing:** ability of MI system to extract maximum valuable information from scarce and unstructured dataflows.
- ▶ **Event-driven structure:** The crisis MI should be event-driven rather than time period driven (the traditional approach is based on time period data feed into central risk systems linked to the periodic output of MI reporting).
- ▶ **High flexibility of MI architecture:** MI system should be able to use alternative data sources, rapidly address **non-standard queries** and provide non-standard aggregations and tabulations of data.

Gap analysis of MI system: all standard MI and reporting systems should be tested on compliance with crisis requirements, gaps should be identified and action plans should be prepared and implemented.



Crisis management framework

Crisis communication

As a part of contingency planning, for each potential crisis scenarios the organisation should develop the following communication strategies:

- ▶ **Internal communication strategy:** the approach that the company takes to communicate the crisis with the Board and employees.
- ▶ **External communication strategy:** the approach that the company takes to communicate the crisis with customers, shareholders and investors, policy makers, regulatory bodies, social media, etc.

For each target group of internal or external stakeholders, the communication strategy should define :

- Prime and alternative channels of communications;
- Who is allowed to speak on behalf of the company
- How frequent communication should take place
- What information should and shouldn't be shared
- What should be a format and a tone of communications



@DIPMF



DIPMF



DIPMF



DIPMF



Crisis management framework

“Flight Simulator” for crisis management

Focus on crisis anticipation and training for crisis management skills



@DIPMF



DIPMF



DIPMF



DIPMF

