

# **IAA Life & AFIR Colloquium, 7 – 9 September 2009**

Dear Sir or Madam,

Thank you for the opportunity to submit a paper. My suggested talk will be on “Internal models” (as described below in more detail) for the IAA Life & AFIR Colloquium in Munich.

Kind regards

Tigran Kalberer

---

Name: Tigran Kalberer  
Affiliation: SAV  
Address: KPMG, Badenerstrasse 172, 8026 Zurich, Switzerland  
E-Mail: tkalberer@kpmg.com  
Telephone: +41 (0)44 249 32 14

**Title:** Internal models

**Indication of topic:**

Solvency, accounting and the evaluation of life insurance business (LIFE)  
Solvency, guarantees and risk capital (AFIR)

**Keywords:** Internal models, required risk capital, Solvency II, Swiss Solvency Test, ERM, Market Risk, Credit Risk, Insurance risk Senior Management, consistent financial management framework, replication portfolio

**Abstract:**

Internal models are a key component for the measurement of required risk capital, i.e. risk. They allow to assess the risks an insurance company is exposed to and to feed them into a consistent financial management framework.

Internal models build typically on market-consistent valuation of assets and liabilities and analyze how the net value, which is the difference between assets and liabilities, may change over time due to the risks the company is exposed to.

There are different metrics how this risk is measured (e.g. as Value at Risk (VaR) or expected shortfall), different time horizons considered (e.g. 1 year or until run-off) and different purposes of the risk measurement (e.g. policyholder protection or measuring shareholder risk). It is typically intended to include all dimensions of risk into an internal model, i.e. market, credit, insurance and operational risk.

Internal models can be used to fulfill regulatory requirements (Solvency II, SST), where they are required in some cases (e.g. for reinsurers) but their main application is for internal management purposes.

Internal models can be used to allocate capital, risk-adjust returns, measure risk, perform ALM, determine reinsurance prices and many more tasks.

Setting up an internal model is a non-trivial task from a methodological as well as from an implementation point of view.

Producing robust and timely results is a challenging task and is actually only a smaller part of the effort. Management needs to understand the results and be able to take action based on

these results – this typically requires a new financial reporting framework and a change of mindsets.

Several best practice approaches for internal models exist which serve different purposes best and have their advantages and disadvantages.

Over the next few years, companies going for internal model approval will have to either build new models or enhance existing models and put a framework in place to use the model that will meet both regulatory requirements and business requirements. Some of the key decisions to be made are to find the right balance in the Internal model between granularity and ease and speed of use, and how well the model is embedded within the business and the way it is used. And the bar on documentation will be raised, not just the model itself but also documenting how it meets the regulator's requirements and how it is used within the business – and this needs to be done in such a way that it is useful to the business.