

INTELLIGENT RISK

knowledge for the PRMIA community



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Professional Risk Managers' International Association



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editor@prmia.org

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Andy Condurache
andy.condurache@prmia.org

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Andy Condurache
andy.condurache@prmia.org

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✉ letter from the editor

Justin McCarthy



Like many other people I am finding that 2014 is passing very quickly indeed. This is especially so as we continue to work to improve PRMIA and also to deliver interesting new thought leadership articles and updates via our quarterly PRMIA publication, Intelligent Risk (iRisk).

In the *Letter from the Chair* our association Chair, Faruk Patel, mentions many completed and upcoming initiatives for PRMIA. These include enhancing and refining our C-Suite offering. More evidence of this work around C-Suite can be seen in a number of articles in this issue of *iRisk*, including notes from C-Suite events in New York and London. We will continue this work, with more meetings planned in New York, London and Asia later this year. We will continue to report on these meetings and the high level and important items discussed at them in coming issues of this publication. If you are interested in joining PRMIA as a C-Suite Member, you will find details later in this issue.

Apart from PRMIA-centric updates, we have once again included an excellent sample of thought leadership articles that will be of great interest to risk practitioners. These include:

- The first part of a two-part feature on the history of financial derivatives by Hilary Till
- A continuation of a series of articles from Moorad Choudhry
- An excellent article from our issue sponsors, Bloomberg, on the importance of Stress Testing and Risk Appetite
- Many more articles on topics such as: correlation, risk culture, human rights & risk and a piece on Risk Weighted Assets (RWA) from one of PRMIA's London chapter, one of our busiest local chapters.
- Last but not least, we have included two Accredited University Profiles, from Université Laval and Imperial College London, the newest members of PRMIA's Accreditation Program

Finally, I would like to call your attention to the guidelines for submissions at the end of this issue. PRMIA's *Intelligent Risk* is accepting submissions from all PRMIA members. If you would like to contribute an article, we welcome your submission at: iRisk@prmia.org.

I hope you will enjoy reading this issue as much as the *iRisk* team and I have enjoyed preparing it. Please continue to read this resource as we advance PRMIA and our risk management community through the year 2014 and onwards.

letter from the chair

Faruk Patel



Dear PRMIA Volunteers and Members,

As we close another fiscal year, I'd like to reflect back on some of the major strides we've made during the past year, and let you know about exciting upcoming initiatives.

PRMIA's goal has always been to serve its members throughout their careers through training and resources, certification, networking and membership opportunities.

We've celebrated many new initiatives this year, including:

- Restructuring our individual membership options to better serve our members' needs;
- Launching and continuing to enhance our website and its offerings;
- Enhancing and refining the C-Suite program to allow for targeted peer-to-peer networking;
- Adding benefits to the Corporate Membership program that offers solutions to meet your organization's needs today and in the future;
- Making it easier for our members to have access to a number of valuable risk resources;
- Hosting the first PRMIA Risk Management Challenge, attracting 340 students from nearly 40 colleges and universities;
- Conducting a growing number of in-house training courses, bringing PRMIA's globally-recognized training to corporations around the world.

The Board of Directors and PRMIA Staff are eager to continue expanding our offerings to continue meeting the needs of members, including:

- Exciting new updates to the PRM exam and PRM Handbook;
- Increased benefits for members, with additional networking opportunities, training programs, and risk industry resources;
- New certificate offerings, including a certificate in Operational Risk Management;
- Introduction of a continuing professional education (PRM - CRL) credit program;

- Second annual PRMIA Risk Management Challenge;
- First-ever Leadership Summit in Chicago in October, 2014 for PRMIA's leaders to come together in person and influence the direction of the organization;
- The expansion of networking opportunities by providing online forums through which members can connect and share ideas.

As your Board Chair, I'm very excited with the progress we've made as an organization. The future is bright, and I hope that you'll join us as we set a higher standard for risk professionals everywhere.

On behalf of the PRMIA Board of Directors (listed below), I remain humbled to serve as your Chair. Please continue to support the Association that supports you and your career.

Faruk Patel
Chair

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Kevin Cuff & Mark Abbott

Thursday, June 5 – Convene Midtown West, NYC

PRMIA hosts NYC CRO Summit on the major contemporary issues facing sr. risk officers

On June 5 PRMIA hosted nearly 60 NY Chief Risk Officers at Convene Midtown West in NYC for its most recent CRO Summit.

David Ingram, CERA, PRM, Executive Vice President for Willis Re, was the keynote speaker at the dinner held the evening before at the Harmonie Club. He opened the Summit with a presentation on Risk Culture – Beliefs or Practices. David's presentation centered around *Ten Risk Culture Practices and Preliminary List in ERM Beliefs*, an article David co-authored as a response to a call for papers by the North American CRO Council, where it was among the prize winning submissions. For those who are interested, we have included the article in this issue of Intelligent Risk.

The following half-day session was conducted under *Chatham House Rule*, with full disclosure and complete confidence through ease of comment and discussion. Mark Abbott (Guardian Life), Kevin M. Cuff (PRMIA) and Bill Spinard (EY) served as ample moderator, host and supporter. The sessions moved seamlessly through major challenges facing the contemporary CRO, to the evolving regulatory environment, to discussions in emerging risk, to roundtable *Hot Topic* discussions over lunch.

It was extremely hard to ignore the overwhelming onslaught of regulatory burden that has forced the closely merged risk and compliance functions. "*Regulation has forged good discipline,*" said one CRO in reflection to overwhelming demand for Board-led risk culture and in response to regulators seemingly interacting with one another (as risk professionals are) trying to explore and explain the overall landscape. The multitude of testing and the separation of risk reporting either directly to the Board / CEO or through executive session has heightened the critical risk function.

To many in attendance, the evolving role of the CRO has created the overwhelming response to sessions such as these. Many of the attending CROs expressed great appreciation for the created environment for like-minded professionals to interact on extremely sensitive subject matters. "*This is my place to interact with colleagues to learn about options, to discuss trends, and to receive validation of what I am experiencing,*" said a Connecticut-based CRO in response to questions surrounding business management in response to regulation.

Finally, PRMIA presented a *Risk Management Standards of Practice: A proposed approach*, as a possibility of developing a prototype to deal with the changing environment. The initiative is designed as a developed prototype using all underlying analytical and semantic frameworks to develop recommended best practices. Most of the surrounding CRO dialogue (from PRMIA Summits) support many of the frameworks and present anecdotal and case management that enhances the framework.

Julian Fisher and Dan Roberts, the two primary authors of the prototype were on hand to loosely present the prototype and to consider much of the conversation as interpretive case management to the project. Ultimately, the use of the framework and the use of the Summit conversations help to support authoritative sources of risk management guidance through interpretation of key regulatory objectives and key industry frameworks.

Nothing outlines this intersection better than a PRMIA CRO Summit – especially in NYC.

London Events Committee

With the introduction of Basel II, advanced banks have been able to calculate the risk weights used to determine their banking book capital requirements utilising their own internal models. More recently, concerns have been raised about the accuracy and variability of these risk weights and the models used to calculate them. Both the Basel Committee and the European Banking Authority have set up workstreams to investigate RWA (Risk Weighted Asset) variability.

On 17th March 2014 PRMIA London and ISDA brought together some key thinkers in this area to discuss this topic. The speakers were:

- **Jas Ellis**, Economist, Prudential Policy Division, Bank of England
- **Simon Samuels**, Managing Director, European Banks Equity Research, Barclays Capital
- **Laurie Mayers**, Associate Managing Director, EMEA Banking, Moody's Investors Service
- **Paul Harrald**, Group Head, Risk Strategy at Standard Chartered Bank (SCB)
- **Brandon Davies** (Moderator), Non-executive Chairman, Premier European Capital Limited Advisory Committee, PRMIA London

The session was executed under Chatham House Rule, so no content is attributed to any particular panellist and the text is not true to the exact chronological sequence of the discourse. In addition, one of the panellists stressed that the views they expressed were not necessarily the views of their employer.

This note provides a summary of the discourse that occurred during that event. For brevity, views and questions have been paraphrased. The text below is therefore PRMIA London's interpretation of the event proceedings. It does not necessarily reflect PRMIA's views on the topic nor those of the author.

The event was structured as a panel discussion followed by questions.

background

The panel observed that some 15 years ago, when Basel II was being conceived, many industry specialists were very optimistic about its promise and the potential of a risk sensitive regulatory framework. However, there is now significant disillusionment within the industry.

The Basel framework was originally introduced with the 1988 (Basel I) accord. This framework specified the minimum amount of equity capital that banks need to have in reserve to fund their assets. Under Basel I (and also Basel II), the equity capital held by banks must be at least 8% of their assets where the value of those assets is determined on a risk-weighted basis. Under Basel I, risk weights were determined using a look-up table. The Basel I framework was updated with the Market Risk Amendment in 1996. This amendment allowed banks to use their own internal models to calculate risk-weights for market risk. The framework was updated again in 2006 with the introduction of Basel II. Basel II allowed approved banks to use their own models to determine the risk weights across their books.

The latest instalment of the Basel Accord, Basel III, has brought in a number of important changes. These include the Liquidity Coverage Ratio, the Net Stable Funding Ratio, the Leverage Ratio and a number of additional buffers. However, it was suggested that perhaps the most important change has tightened-up the definition of capital, ensuring that this is more able to absorb losses. This change affects the numerator of the capital ratio.

It was observed that now more attention is now being placed on the denominator of the capital ratio, the risk-weighted assets:

- Work performed by the UK FSA (Financial Services Authority) and Simon Samuels of Barclays Investment Bank (on the panel) highlighted differences in risk weights between banks several years ago.
- The Basel Committee more recently launched a project to assess the variability of risk weights across international banks. The Basel work addressed both the trading and banking books. The work on the Banking Book was divided into three parts:
 - A hypothetical portfolio exercise where PDs and LGDs were obtained from banks for named exposures.

- A top-down analysis looking at aggregate information collected by supervisors.
- Interviews with banks to survey bank and regulatory practices.

The hypothetical portfolio exercise focused on larger exposures (sovereign, bank and large corporate). These are co-rated by many banks and so are suitable for cross-comparisons. The aggregate observed variation, measured by comparing capital ratios, was about 1.5 times. However, the variation on individual portfolios was much larger at as much as 13 times.

where does the variation come from?

The Basel study observed that, in general, banks are fairly consistent in the way they rank order exposures, but PDs and LGDs are much less consistent, and areas such as differences in regulatory approach (the portion of assets on Standardised), the treatment of defaulted assets and the portfolio mix strongly contribute to the variance.

It was pointed out that variation in risk weights due to portfolio mix is to be expected as banks will invest in different assets.

The panel observed that supervisory practices also lead to risk weight variation; some supervisors top-up underestimation of RWAs in Pillar 1, others in Pillar 2. There are also different ways that regulators determine capital requirement increases; for example, stress tests are a bottom-up approach while top-ups and buffers are more top-down.

The panel noted that regulators have also increased capital requirements due to non-credit concerns; for example FINMA has been talking to UBS and Credit Suisse about additional capital requirements for litigation risk. In the UK, the FPC required banks to raise additional capital as part of its headwinds exercise; this additional capital requirement was not broken down so analysts could not determine contributing factors. In addition, different regulators have moved at different paces when implementing regulation; Europe and the US did not implement Basel II at the same time.

It was observed that when looking across institutions, RWA variability is also reflected in management practices. Such practices include: the use of netting agreements, the pace of movement of assets onto IRB, and increasing the scope of models.

¹ / The comments within the discussion focused on primarily on the banking book work.

why do we care about risk weight variation?

The panel noted that RWA variability creates problems for rating analysts and the rating agencies when performing analyses, providing recommendations and ratings:

- Rating agencies like to look at issuers on a comparable basis and a common tool is to create peer groups. These are often based around analyses of quantitative metrics (e.g. return on RWAs). If values used in these metrics are determined on different bases by different banks, then it is difficult to create consistent metrics that can be compared across banks.
- Assessing capital adequacy is difficult – there is a need to understand the capital available above the regulatory minimum. As Pillar 2A capital requirements are not disclosed this is complicated.
- From an investor perspective, RWA variability creates a mistrust in bank disclosures. When comparing two banks, say bank A and bank B, if bank A has higher risk weights for no apparent reason, some investors will conclude that bank A is more conservative and bank B less trustworthy.

what is being done to address the issues?

From a global perspective, the following remarks were made by Stefan Ingves (Chairman of the Basel Committee on Banking Supervision) and repeated within the discussion:



“We will need a series of policy and supervisory changes, along the following lines:

- *Most immediately, there will be supervisory action. Our studies have provided supervisors with a clearer picture of how their banks stack up against their international peers, and supervisory action is already being taken against a number of the outlier banks that are on the low side.*
- *Similarly, the Committee’s RCAP (Regulatory Consistency Assessment Program) work is helping to reduce variability due to undesirable differences in national regulations, thereby improving the consistency of outcomes. The Committee is also looking at the issue of national discretions and Pillar 2, and it is investigating whether more can be done to reduce variability from these sources.*
- *Since a lack of transparency in bank modelling practices lies at the heart of the problem, the Committee will propose enhancements to Pillar 3 in the first half of this year.*

- *At the heart of this problem is a question of whether, for regulatory purposes, banks have too much freedom in their modelling choices, so we are looking at whether, and how far, greater constraints on the modelling practices of banks are needed.*
- *To make a more direct impact, we are also examining the role of floors and benchmarks within the regulatory framework, and considering whether they should have a greater role to play.*

Finally, we now have the leverage ratio as a backstop to the risk-based regime. And the case for a leverage ratio will only grow stronger if risk-weight variability is not adequately dealt with.”

It was noted that the Bank of England's Financial Policy Committee has also focused on this area. Actions include a recommendation that UK banks follow the disclosure requirements of the FSB's Enhanced Disclosure Task Force and the execution of a feasibility study to assess the additional cost banks would incur if they were required to report Standardised risk-weights in addition to IRB ones.

what do the panellists think should be done?

The panel suggested that either the framework should be maintained roughly as-is or replaced with something radically different. If the framework is maintained as-is it will need a strong defence and potentially to be made more risk sensitive. It was stated that the current framework is simplistic, at least from some perspectives; for example, it provides no rewards for geographic diversification.

It was argued that it is reasonable that banks should have different PDs for the same asset, as each bank will manage its assets differently, and risk appetite and the current state of the cycle need to be considered when assessing PDs. This means that there is a need to refer to internal data when making comparisons across banks and better disclosure is required; banks should be asked to disclose default rates against credit scores to facilitate a clearer understanding, and there should additionally be comparisons against risk sensitive benchmarks. Hypothetical portfolio exercises should refer to internal data.

It was suggested that additional capital should be added to Pillar II capital as opposed to Pillar I as otherwise systemic risk is created.

Concerns about the leverage ratio were raised. It was observed that in the US the leverage ratio has played a more prominent role in regulation than in Europe. It was argued that this has resulted in an increased prominence of Government Sponsored Enterprises, in particular: Freddie Mae and Freddie Mac (up until the crisis), greater use of the securitisation and bond markets as the leverage ratio makes it unprofitable for banks to lend to low risk entities or individuals.

The panel suggested that any framework should be assessed against the incentives it creates. There is a danger if a single measure is used as the banks' management teams will focus on this; there needs to be a range of measures.

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☒ human rights are now a material risk¹

by **Olivier** Jaeggi

When preparing the first issue of the ECOFACT Quarterly² this year, our team had a discussion about what we considered last year's most important development in the environmental and social risk arena. The winner was the traction that human rights norms have gained.

Since the UN Guiding Principles on Human Rights and Business³ (Guiding Principles) were endorsed in 2011, there has been an ongoing discussion about the potential implications for the financial sector. In 2013, three developments altered the pace of that discussion:

- The National Contact Points⁴ of the Netherlands and Norway ruled that the OECD Guidelines for Multinational Enterprises also apply to minority shareholders. Minority shareholders are expected to engage in human rights due diligence before making investment decisions. This sets a precedent for what is expected from investors. In addition, it is reasonable to assume that this requirement also applies to other types of transactions, such as lending or underwriting.
- The Thun Group of Banks (Thun Group) published a discussion paper⁵ which aimed to tailor the key requirements of the Guiding Principles to the financial sector.
- In the UK, an amended Companies Act⁶ requires the directors of listed companies to include information about human rights issues in their annual strategic report. The strategic report must also include information about the company's corresponding policies and their effectiveness. If the report does not cover these issues, it must state those which it does not contain.

¹ / This article is derived from a longer article which appeared on the Sustainability Blog of the MIT Sloan Management Review: "Human Rights: The Next Frontier"; April 15, 2014

² / The ECOFACT Quarterly (ecofact.com/EQ) is a briefing tailored to the needs of individuals and teams in charge of assessing environmental, social, and reputational risks in banking and commercial insurance.

³ / Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises; John Ruggie / "Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework"; March 21, 2011

⁴ / The implementation of the OECD Guidelines for Multinational Enterprises is supported by a unique mechanism of National Contact Points (NCPs). The final statements on this case were issued by the NCP of Norway in May 2013, and the NCP of the Netherlands in September 2013.

⁵ / The Thun Group of Banks, "UN Guiding Principles on Business and Human Rights / Discussion Paper for Banks on Implications of Principles 16 – 21"; October 2013; supplemented by a statement signed by Barclays, BBVA, Credit Suisse, ING Bank, RBS, UBS, and UniCredit.

⁶ / Parliament of the United Kingdom, "The Companies Act 2006 (Strategic Report and Directors' Report), Regulations 2013"; October 1, 2013

The Guiding Principles are difficult to operationalize, in particular because they brought about a paradigm shift in that companies must now aim higher than simply mitigating their own risks⁷. In the financial sector, this means that a financial institution is expected to at least try to exert its influence on a client that infringes human rights, and not simply step away.

From a risk management perspective, it does not matter what the legal status of the Guiding Principles is today. What matters is the traction they have gained and how they will shape regulation in the future. The Guiding Principles have already influenced many standards and guidelines which are relevant to businesses⁸.

Consequently, it may be wise to work on the assumption that the Guiding Principles already provide binding guidance. The Principles make it very clear that the duty of private-sector companies to respect human rights is an active responsibility. Ignoring these expectations today might, in retrospect, be seen as a deliberate decision which will eventually expose a financial institution to risk. Directors and executives should make sure that their financial institution conducts a strategic assessment of its human rights risks, and implements appropriate human rights due diligence processes where necessary.

Still, it is important to remain realistic about what a financial institution can achieve. Financial institutions can take a risk-based approach to prioritize which human rights risks to address first. Also, they do not need to prevent or mitigate adverse impacts alone. Promising strategies might involve partnering with other institutions on challenging issues or in individual client relationships.

author

Olivier Jaeggi

Managing Partner / Chairman, ECOFACT



Prior to founding ECOFACT in 1998, Olivier Jaeggi worked in UBS's credit risk control where he was in charge of managing environmental risks. He graduated in environmental engineering from the Swiss Federal Institute of Technology (ETH) Zurich, and completed executive education programs at Harvard Business School and at the University of Oxford. He is a member of PRMIA's subject matter expert advisory group on reputational risk and, since 2012, contributes to the annual sustainability report produced by the MIT Sloan Management Review in collaboration with the Boston Consulting Group. He is also a regular contributor to the sustainability blog of the MIT Sloan Management Review.

⁷ / According to the commentary on principle 17, "human rights due diligence (...) goes beyond simply identifying and managing material risks to the company itself (...)." According to principle 19, if the company "is unable to increase its leverage", it "should consider ending the relationship (...)."

⁸ / The most important of these include the OECD Guidelines discussed above, the renewed EU Strategy 2011-14 for Corporate Social Responsibility, including the related action plans of the EU member states, and the latest release of the Equator Principles.

by **Adam Litke**

who are the stakeholders and what do they expect?

When the board of a firm determines how much capital to hold they are trying to satisfy several different constituencies. Regulators set minimum levels of capital which they think are sufficient to pay back protected classes of liability and to allow the orderly unwinding of the firm. Rating agencies set minimum levels of capital to obtain a given rating which, in turn, has a direct impact on funding costs. Finally, equity holders want the amount of capital to be low enough to allow them to earn a decent return on their investments without losing control of the company. It is interesting to note that shareholders have no interest in how much money is lost once the equity layer is wiped out. Protection of senior liability holders is provided only to obtain better funding rates or satisfy regulations.

Investors are in the same position as corporate boards. The money that they have invested is usually set aside for a specific purpose such as paying pensions or maintaining the spending power of endowments. Just like boards, they have conflicting goals. On the one hand, they must preserve capital – possibly adjusted for inflation. On the other hand they want to maximize long term spending power or ensure that plan sponsors do not have to make more contributions to the fund.

asking the question

The fundamental question that we must ask when determining risk appetite can be phrased in one of two ways:

Under what circumstances are we willing to let the firm go under, the pension fund turn insolvent, or the endowment lose its purchasing power?

Or

How much excess capital do we want to hold so that after a bad event which cripples most of our competition, we can continue to write business at highly profitable levels when they are paralyzed? How do we ensure that we have dry powder for investing when the markets are under stress and there are buying opportunities? How do we ensure that we can meet our spending needs in tough times without destroying future purchasing power?

the answer is stress tests

The key idea in both of these questions is event. Models and their associated confidence levels can be used to help understand the variability of returns. They are useful for aggregating risks across disparate portfolios. They may even be useful for obtaining a basic understanding of portfolio behavior in extreme events. What models cannot do is determine what these events are. It makes little sense to talk about holding capital at some multiple of 99 percent VaR or at the 99.90 percent confidence interval for credit losses over the next year. In addition to the false comfort of relying on extrapolation from a limited data set these numbers do not necessarily correspond to events that mean something.

So what should our capital stewards do? Stress scenarios should start with reasonable worst cases for the risk factors underlying the firm's portfolio. For banks and other investment firms, including pension funds and endowments, this would include severe bear markets with no asset liquidity, negative GDP growth, unemployment spikes and concomitant default levels for loans. For insurance companies this would include extreme loss events in each significant portion of the portfolio with some consideration for supposedly uncorrelated events happening at the same time. Any time somebody says something like "This happened in the past but it cannot happen again" or "This happened in that other country but it can't happen here" it is a good bet that all of the appropriate events have not been considered. The numbers that come out of these scenarios may be higher or lower than those that come out of the models but they are an indispensable reality check on the way the business is managed.

There are some events that an institution cannot hope to survive and are implicit in the business model. The most obvious of these is home country default. This is the main reason behind allowing banks to hold home country sovereign debt denominated in local currency at a zero risk weighting. The government of the home country has ultimate control over any assets that are held within its borders. While we like to think of the laws governing financial assets as being stable, the decisions made by a country that is in economic distress are fundamentally political ones. If the rulers of the country decide that nationalization of assets is in their best political interest, local banks will be vulnerable to default. If a city or state can no longer pay its obligations a bankruptcy court can rewrite the rules governing which creditors get paid first. When determining risk appetite, we must remember that there is no point in holding capital against those events where capital does not provide a defense.

parameterization

The scenarios we have been discussing are stress tests, and the first thing we need to do when creating a stress test is to make sure that it is both bad and plausible. Then we need to turn our scenario into the parameters that drive our portfolio. There are several steps to this process.

- Make a list of scenarios you should be worried about. There are two issues that need to be considered. What are the large concentrations of risk, no matter how benign they may seem, in your portfolio? Under which scenarios do you expect to fail?

- Convert these stories into parameters. This may be as simple as turning to the parameters in a risk model and rerunning a past event. We see this when banks replay the 1987 stock market crash or the 2007-8 market collapse. Insurance companies often replay specific catastrophes, such as a severe hurricane, against their current portfolio. It can be more difficult if the event has not yet occurred. Then the best defense is to look at other markets. Even if the US stock market has never stayed down for a 30 year period, it doesn't mean that other markets haven't. Any long term US equity investor should, at a minimum, run a scenario on the US market corresponding to Japanese stock market data from 1990 to 2014. It may not be a highly probable event, but it should factor into risk appetite.

robust stress testing

Risk is not linear. We begin with the notion that knowing how much you lose in a stress test is not enough to manage risk. This can be seen in a simple example from the mortgage book. Let's say that a bank makes a mortgage loan on a \$1 million house with a 20 percent down payment. Now, assume that the borrower defaults. As long as the house is worth at least \$800,000 (net of foreclosure costs) the bank gets its principal back and doesn't incur a loss. If the house is worth less than \$800,000, then the bank suddenly begins to lose money one-for-one with the value of the house. Remember that the value of the house may be a leveraged bet on the economy. For employment and, therefore, home prices there is a bigger difference between a change in GDP from 0 percent growth to -1 percent growth than there is from 1 percent growth to 0 percent growth. This means that the losses on the loan can accelerate as the economy gets worse. In a crisis, these losses can be highly non-linear. A bank can go from no losses to moderate losses to extreme losses. This is why many banks found their loan-loss forecasts falling off a cliff as the housing crisis worsened in early 2008. As the economy moved past critical levels, defaults skyrocketed, housing price depreciation accelerated and loan portfolios collapsed.

These types of losses are common in financial portfolios. While equity portfolios are linear, option portfolios are highly non-linear and credit portfolios are nothing more than out-of-the-money options, which don't render a loss because their strike price is away from the underlying security's price. The accelerating losses in our housing scenario are fundamentally the same as a short gamma position in an option, where exposure becomes larger as the price of the underlying asset decreases. The only linear instruments that banks hold in significant amounts are government bonds and those are only linear because banks default long before their home countries' default. This is Taleb's¹ notion of fragility in a portfolio. It can appear to be robust under reasonably large moves, but beyond a certain point the losses can accelerate. An anti-fragile portfolio is one that has decelerating losses in the tail. This is not about convexity or gamma in the traditional sense as these are concerned with risk in current market conditions; it is about negative convexity in the tails.

¹ / http://www.riosmauricio.com/wp-content/uploads/2013/05/Taleb_Antifragile.pdf

We can capture non-linear effects by taking our original stress test and create two additional tests on top of it. Let's assume that the stress is a 20 percent fall in housing prices. Then our two new stresses will be a 21 percent and a 22 percent decline. If the difference between the 22 percent and 21 percent stress scenario is larger than the difference between the 21 percent and 20 percent stress scenario then we know that it is insufficient to describe the risk in the bank's portfolio. This is because losses are accelerating after the stress event.

from stress testing back to risk appetite

In the end a stress test tells us what we can lose in a very specific scenario. A well designed stress test can also tell you if you have risk hidden in the tails. In order to be useful there needs to be a continuous feedback loop between stress testing and stories. Risk appetite is all about being able to say what you think will happen to your portfolio in a bad event. Since no stress test is perfect, actual exposures need to be set a good deal below the level of failure, but failure should always be an option. Nobody who invests in a BB rated company expects the same level of safety as they do in an AAA rated company. They do expect a commensurate increase in returns. Good stress testing lets the risk takers explain to the true risk owners what their downside is in simple language. Imagine how much easier it would have been for banks to manage through 2008 or the Eurozone crisis if they had thought about a collapse in advance rather than simply stating that these events were outside the tail of their risk measurements

author

Adam Litke

Head of Enterprise Risk Services, Bloomberg



Adam Litke is the Head of Enterprise Risk Services for Bloomberg. He is responsible for developing Bloomberg's strategy around risk models and software. Prior to this Adam was the head of Market Risk for the Securities and Investment Group of Wells Fargo and head of Market Risk for Wachovia where he managed market risk activities including quantitative risk management, counterparty risk modeling and direct management of market risk. Before that Adam worked for Barclays Bank, PLC as the head of Market Risk in the Americas and head of Market Risk for Global Financing. Adam also served as the Global Head of Market Risk for Swiss Re Financial Products, and spent several years in various management roles with BNP Paribas.

Adam is a trustee of the Georgia State University Risk Management Foundation and is a former advisory board member for the GSU masters program in mathematical risk management. He is also a past chairman of the Market Risk Program Committee for the New York Chapter of PRMIA.

future bank strategy: fewer choices, tougher calls

by **Moorad Choudhry**

The most important function that a bank's Board and senior executive can undertake is to set the firm's strategy. It is vital that banks put in place a coherent, articulated strategy that sets the tone for the entire business, from the top down.

In the first instance the Board must take into account the current regulatory environment and the bank's own capital, liquidity and human capital constraints. This includes of course the requirements of Basel III, as well as any specific requirements of the national regulator. A bank cannot formulate strategy without a clear and genuine understanding of the environment in which it operates. Once this is achieved, before proceeding with a formal strategy the bank needs to determine what markets it should operate in based on the resources it possesses, what products it sells and what class of customer it wishes to serve. Individual business lines should be set up to operate within the main strategy. In other words, all the business lines exist as ingredients of the strategy. If a business line is not a fit with the strategy, it should be divested; equally, if a bank wishes to enter into new business, the strategy should be reviewed and realigned if it does not naturally suggest the new business. This sounds obvious, but there are many cases of banks entering piecemeal into different businesses, or maintaining unsuitable lines that have been inherited through previous growth or acquisition.

The first task then is to understand one's operating environment. It is then to incorporate a specific target market and product suite as the basis of its strategy, after taking into account what resources are currently in place and, if these are insufficient, what additional resources are needed before embarking on the strategy. Concurrent with this, the bank must set its Return on Capital (RoC) and Return on Risk-Weighted Assets (RoRWA) targets, the level of which will influence much of the bank's culture and ethos. A realistic RoC target is one that is sustainable over the entire business cycle.

Concurrently with the above process, a bank must ask itself where its strength lies and formulate its strategy around that. In other words, it is important to focus on core competencies. The experience of the crash showed that many banks found themselves with balance sheet risk exposures that they did not realise they had. This may have been simply the holding of assets (such as structured finance securities) whose credit exposures, valuation and secondary market liquidity they did not understand, or otherwise embarking on investment strategies such as cash-synthetic negative basis trading without being aware of all the risk measurement parameters of such strategies. To properly implement a coherent, articulate strategy, a bank needs to be aware of exactly what it does and does not have an expertise for undertaking, and not operate in products or markets in which it has no genuine knowledge base.

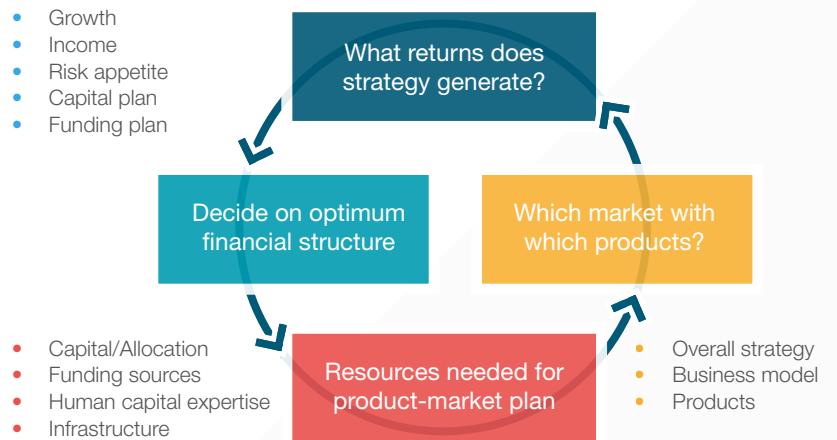
Figures 1A and 1B are a summary of the change in strategy-setting culture that was demanded as a result of the crash. The cycle is now resource-constraint driven, and anti-clockwise on our diagram, compared to the clockwise process that was heavily influenced by return target in the pre-crash era.

Pre-crash

- Capital finite but available
- Funding finite but available
- Return target drives strategy

Post-crash

- Capital more expensive and limited
- Funding now driven by regulatory requirements
- Resource base constraints drives strategy



In this article we consider the various strategy alternatives for commercial banks and their feasibility: as we will see, the choice is limited for all but the largest or the most nimble firms. Furthermore, none of them is any easier to implement than the other.

specific strategy choices

The competitive environment for banks remains extremely tough. The issue is even more challenging for banks domiciled in countries that experienced a sovereign bail-out, where there is additional pressure associated with continuing poor public image and brand association. Under such circumstances it is unsurprising that differentiating oneself from the competition presents difficulties for bank Boards and senior management, particularly when one considers the commoditised nature of the basic bank product.

All banks are aware of universal strategic imperatives in the wake of the crash and the Basel III regulatory regime. These are summarised as follows:

- To improve capital efficiency via existing loan book restructuring and “optimising” collateral management
- To investigate “capital-light” growth opportunities within existing knowledge and resource base;
- To lower costs via a combination of simplifying operating models, headcount reduction, outsourcing or disposing of unprofitable or non-core business lines;
- To implement more robust and stable funding structures, particularly with respect to higher-cost longer-term funds.

Of course the first three are essentially platitudes – all businesses would seek to maximise capital efficiency and minimise the cost-income ratio at all times, simply as good operating practice. To be considered a genuine long-term contender in banking requires more than this in fact: no less than a specific defined customer-orientated differentiation of one’s business model.

strategy and outperformance

The overwhelming majority of retail and corporate customer banking requirements can be met with simple deposit and loan products. The plain vanilla nature of bank products makes brand differentiation not a straightforward process, and requires that banks place a great emphasis on customer service. This fact, together with traditional high barriers to entry, limits the strategy choices available to both established and new challenger banks. We summarise below six distinct strategic paths that a bank might consider.

- **Global integrated multinational:** our first strategy choice is, in fact, hardly any choice at all. The barriers to entry to a bank electing this option are so considerable as to make this strategy unfeasible for virtually all banks that are not already in this space. Outside of a handful of names such as HSBC, Citibank and Bank of America it is difficult to think of any institution that would consider this strategy today, realistically, particularly in the wake of the more stringent capital and liquidity requirements of Basel III. Unless a bank derives a significant share of its revenue from outside home markets, say at least 35% - 40%, it is not credible for banks to adopt this approach.
- **Basic banking:** this approach concentrates on delivering simple product with maximum efficiency. The key metrics to follow are customer satisfaction (or, customer complaints volume) and cost-income ratio. Adopting this strategy is only feasible if the bank exhibits, or plans to exhibit, a below-average cost base compared to its peers. Almost by definition, such banks would run low balance

sheet risk exposure compared to other banks, but the key to competitive advantage is in keeping costs low – and by responding to mass customer desire for simple, easy-to-understand products. By running a low cost operation, a bank following this strategy can supply low-cost products. At the same time, the bank would need to adopt a conservative credit origination policy, to maintain relatively low risk exposure on the balance sheet and also to ensure that it understood fully the credit and market risks it was running.

- **Specialist customer base:** a bank adopting this strategy will target a specific customer franchise, in essence those customers that are willing to pay a premium in return for a more “modern” banking experience. This would include products with a dynamic image and a leading edge digital and mobile platform. Note that such a customer base does not exist in every jurisdiction; it is also more of a retail rather than corporate customer base. While we emphasise the importance of strong customer service at all banks irrespective of their strategy, this particular approach requires a markedly superior reputation for truly excellent customer care, if it is to succeed as a strategy – the difference has to be such that customers are happy to pay the cost premium involved. As important is the cultural ethos in place at the bank, treating every customer as a special relationship in which all their financial needs are met from one source.
- **Market growth strategy:** fast-growing economies are able to support banks that adopt a market-growth strategy. Almost by definition it suits more those banks that are early entrants and thus able to help shape the country’s financial system. Later entrants can still apply this approach but will need to demonstrate creativity and innovation as they also seek to influence the market’s development. Domestic banks may have an advantage in that they “know your customer” better than foreign banks; multinational banks need to ensure they are familiar with the customer base if they are to adopt this strategy for their local branch or subsidiary. This strategy is more realistic in those countries that have a comparatively faster growing economy than more mature economies, such as certain regions of Asia-Pacific and the Arabian Gulf.
- **Private banking:** an alternative approach to mainstream banking is to concentrate on high net worth customers and target this franchise. As such this strategy is a sub-set of the specific customer base approach described earlier; however, it is more specialist – it demands a capital- and funding-light balance sheet model, and one in which returns are generated more from wealth management and asset management activities than mainstream banking. In fact, for this to be a realistic and distinct strategy the bank would have to derive over 60% of its revenues from such activities, and most likely outsource more traditional banking operations such as ATMs and cheque clearing to other banks. It would concentrate on efficient capital/asset and revenue/asset ratios, and be funded exclusively by customer deposits. Larger banks may choose to set up a separately branded arm specifically so as to incorporate this strategy for part of their revenue base.

- **Hybrid strategy:** this strategy combines two or more of the above strategies but presents a greater challenge in implementation and delivery because of the need to excel in all selected fields. This applies equally to the need to control costs. That said, it may be the logical choice for comparatively larger institutions that currently offer a full service product across all customer types but are struggling to deliver shareholder value in some or all of their customer proposition. For example, a bank may elect both the “back-to-basics” strategy but at the same time develop and enhance a niche or boutique business arm – perhaps with its own brand – that delivers a private banking or asset management service.

This list is not claimed to be the complete universe of possible strategic direction for all banks. Equally, there is always scope for an approach that is more tailored, or perhaps simply a hybrid one as we suggest above, for specific individual banks. But it does present almost the complete range of distinct strategy types that are available. This should not come as a surprise: as we note at the start, financial services are a commoditised product. There are only so many ways one can seek to deliver them well, consistently, and at the same time also differentiate one’s brand and customer offering.

concierge banking

Irrespective of the strategy selected and the customer franchise targeted, some requirements are universal. All banks will need to invest capital and resource into enhancing their digital capability. Internet and mobile technology are paramount because of customer demand for them and must be delivered with efficiency. This is the one area where the barrier to entry for new banks is less of an issue; established banks, particularly large banks and/or banks that have grown through acquisition, suffer from legacy systems and data management platforms that do not necessarily lend themselves to modification or enhancement. Challenger banks at least have the luxury of being able to develop new systems that are fit-for-purpose, albeit at cost. All the strategies, with the exception perhaps of the global multinational approach, require high quality data analysis ability and interface skills that integrate the physical (branch) and digital channels, to the benefit of all customers. The benchmark for banks is companies such as Amazon or Google, which have a customer-orientated data management and analytics capability that is highly efficient.

The other universal is customer service. Simply selecting and attempting to implement a strategy is no guarantee of success or outperformance. In essence, a bank needs to make every one of its customers feel as if he or she is the only customer it has. This is perhaps less of an issue in the Basic Banking model, where customers’ expectations will be slightly lower, but all of the strategies demand exceptional customer service. For certain strategy options such as specific customer franchise this will require heavy investment in staff technical and service skills, but every bank will need to pay close attention to this requirement. The emphasis on customer care, and the staff training requirements that this will drive, is paramount.

In effect, banking culture needs to move to that of a service one. Culture is set from the top and it is

essential that senior management drive change through personal example. The author's own term is "Concierge Banking", the qualitative philosophy that states that each and every interaction with every customer, however large or small, must be treated as if the future of the company depends on it. This is a skillset that must be taught by example, from the top downwards. The way that senior executives deal with their subordinates, and they in turn with theirs, is crucial to inculcating this cultural skillset. The way a team operates in a bank will help drive this cultural change. "Total banking" demands that every member of a team can cover for everyone else (to an extent, but certainly amongst peers), are open and honest in their interaction with each other without fear of impact on career progression, and enthusiastic about assisting each other in their daily tasks. This creates a genuine team environment.

Each customer must be made to feel as if it is the bank's only customer. Adopting a concierge banking approach is the key to success.

delivering on the strategy

Strategy selection is, of course, only the start. In any case, the options are limited. Notwithstanding that, we have outlined six distinct strategies; the reality for most banks is that only 2 or 3 of them present a feasible course of action. For example, the market growth approach is dependant on the state of the economy, and non-domestic banks with no existing presence in-country would struggle with it. The capital- and funding-light private bank or asset management strategy would involve a fundamental change of operating model for banks that are not already involved, to a significant degree, in this business. And the multinational integrated bank strategy presents simply too high a barrier to entry for banks that are not, already, large universal banks.

This leaves essentially two paths: the "basic bank" strategy that emphasises tight control of costs, or the more "up market" approach that targets a more sophisticated customer franchise and product base. The latter also requires genuine brand, service and product differentiation if it is to succeed. Both approaches require exceptional, or at least above peer-group average, levels of customer service. For larger banks, adopting either strategy will require substantial cost-cutting and possibly divestment of "non-core" businesses.

The hybrid strategy is in our list precisely because many larger banks will not be nimble enough to adopt one focused approach but will nevertheless be too small to adopt the universal strategy. Instead they will take the perceived "easy option" of a combined strategy. This can still be a winning course of action; however, it requires a knowledgeable and intellectually strong senior executive. It is not uncommon for larger banks to wish to offer a "one stop shop" for all customers ranging from retail to SMEs and larger corporates. The big danger is that the bank provides an average service for all customers. To make this strategy work, middle management must be cut to a minimum and the line of control from senior executive to operating businesses must be clear and transparent. Otherwise the bank will drift and become a jack-of-all-trades and master of none. In a crowded field, this could prove fatal.

conclusions

Selecting a defined, and definite, strategy is the first step to becoming a more focused financial institution. As we noted earlier, for the majority of banks the choice is limited to at most 2 or 3 distinct approaches. And irrespective of the strategy path embarked upon, the need to deliver first-class customer service is paramount. Another universal is the need to have efficient technology platforms, to simplify products, and to narrow the product range. Every bank would testify to the popularity of this action in the past with both retail and corporate customers. This also benefits the bank's risk management function: a simpler product range generates less exotic and more "vanilla" risk exposure on the balance sheet, which is easier to understand and mitigate.

The shift to a high-class customer service culture is the key to success. This requires investment in staff training, both technical and qualitative, especially for customer-facing teams. But customer service is more than simply having senior executives spouting platitudes, it is a change in internal environment to one that is genuine and open. A working culture free of politics and bureaucracy creates naturally an ethos of caring customer service. This, beyond mere selection of a distinct strategy, is the biggest challenge faced by banks.

author

Moorad Choudhry

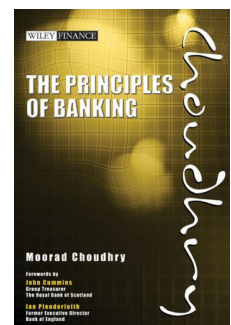
Professor, Department of Mathematical Sciences, Brunel University



Professor Moorad Choudhry is at the Department of Mathematical Sciences, Brunel University. He has over 25 years experience in investment banking in the City of London and was latterly Treasurer at Williams & Glyn plc, The Royal Bank of Scotland. He is author of *The Principles of Banking* (John Wiley & Sons 2012).

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1. Parts of this chapter are extracted from Professor Choudhry's book *The Principles of Banking* (John Wiley & Sons Ltd 2012) and are reproduced with permission.



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✂ the history of financial derivatives, a 2-part feature

by **Hilary Till**

Part I

The emergence and development of financial derivatives post Bretton Woods

abstract

This 2-part series discusses the emergence of financial derivatives after the collapse of the Bretton Woods accord in 1971. In Part 1, the article explains the concepts that enabled financial derivatives markets to flourish, focusing on the required mathematical concepts. Part 2 continues with enumerating the business models that have been employed by successful commercial participants in the financial derivatives arena. Part 2 also briefly covers the development of over-the-counter financial derivatives, including their misuse during the lead-up to the Global Financial Crisis. The article concludes with the possibility that we may be nearing the limits of what the power of mathematics can do to hedge, and thereby conquer, financial risk.

the emergence of financial derivatives post-bretton woods

Post-World War II, Essentially the Gold Standard: No Need for Hedging

Examining the history of currency arrangements, in “the summer of 1944, delegates from 44 countries met in the midst of World War II [at Bretton Woods, New Hampshire] to reshape the world’s international financial system,” recounted Schifferes (2008). At this conference, John Maynard Keynes unsuccessfully floated the idea of an alternative post-war currency, the “Bancor,” which was to be anchored by 30 commodities, a broader base than the Gold Standard. Instead, noted Conte and Karr (2001), “the leaders decided to tie world currencies to the dollar, which, in turn, they agreed should be convertible into gold at \$35 per ounce.” This created a modified gold standard. Therefore, when the Bretton Woods system functioned, there was no pressing economic need for derivatives to hedge currency risk.

No Anchor, Post-Bretton Woods

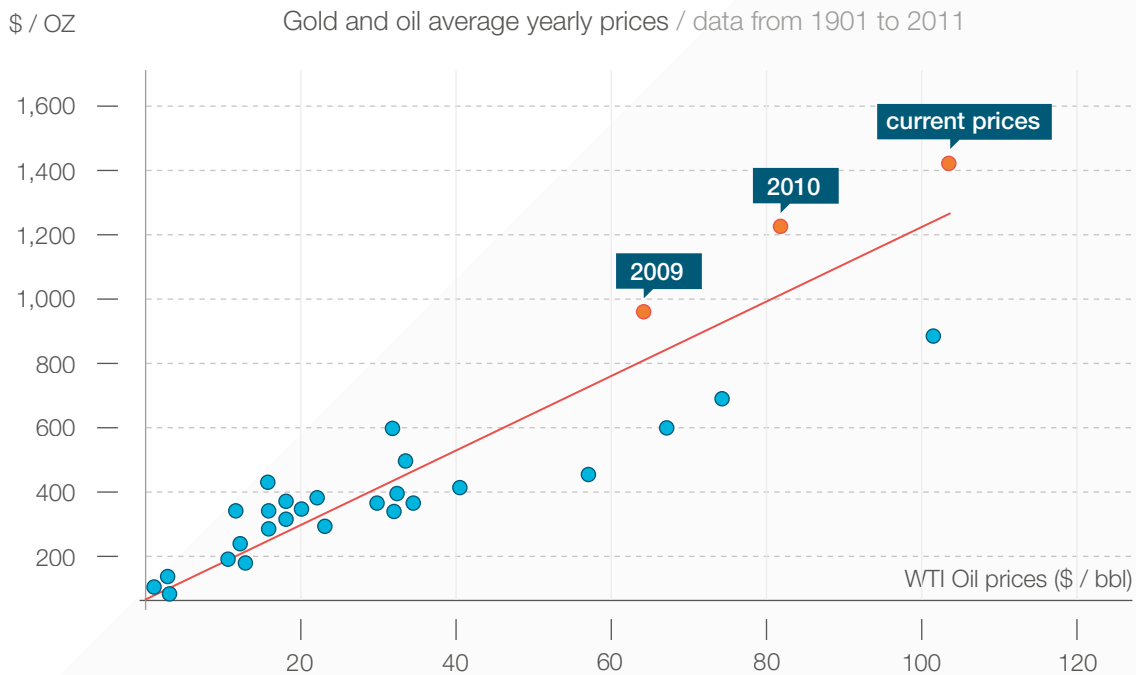
“In 1971, the US ... unilaterally went off the gold standard and devalued the dollar ... This led to the abandonment of fixed exchange rates and the introduction of floating rates, where the value of all the main currencies was determined by market trading,” explained Schifferes (2008).

With the U.S. dollar no longer pegged to gold or anything of fixed value, the risk of large price changes entered the markets. As reviewed by Leo Melamed, Chairman Emeritus of the Chicago Mercantile Exchange in Melamed (1994), “the collapse of the Bretton Woods Agreement ... ushered in an era of considerable risk in currency price fluctuation – risks which could be limited if there were a viable market for currency futures trading.” As a result, the Chicago futures exchanges developed innovative financial hedging instruments in both currencies and interest rates in the 1970s and 1980s.

Arguably, outside of the United States, there was a different response to floating exchange rates. According to Hammes and Wills (2005), from the end of WWII through late 1971, “10 [to] 15 barrels of oil would buy an ounce of gold. ... [This] situation changed [temporarily] ... in the early 1970s.” That said, this long-term relationship appears to have regained its validity, even though the dollar price of oil has had wide fluctuations since the 1970s. Please see [Figure 1](#).

historical relationship between gold and oil

figure 01



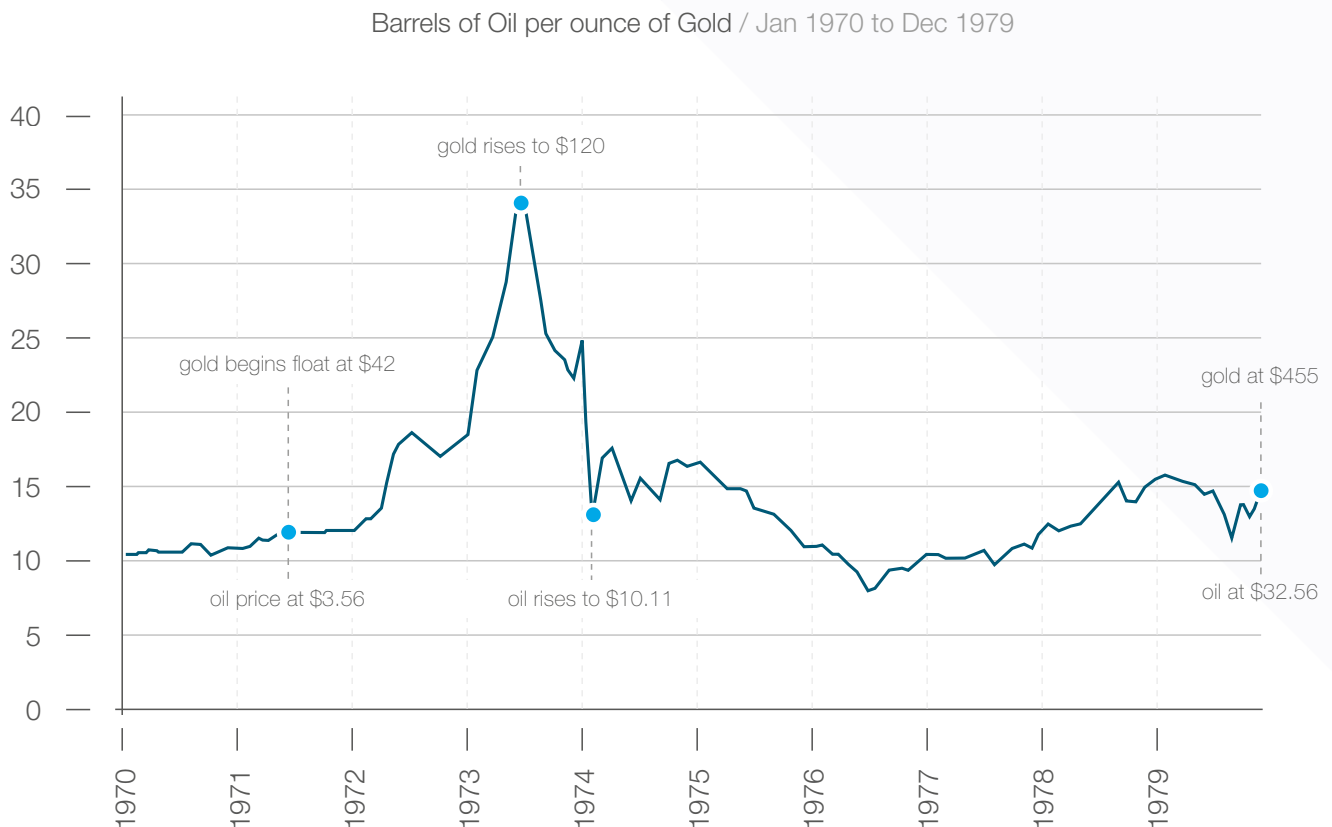
Graph based on Soares et al. (2011), Chart I.

Hammes and Wills (2005) hypothesize that after the end of the Bretton Woods accord in 1971, there may have been an implicit pegging of oil to the price of gold by oil producers in order to anchor the real value of their sales.

Perhaps oil producers implicitly resumed this peg in the mid-1970s, arguably by adjusting oil production according to what produced a reasonably constant gold price of oil. This would add a fundamental rationale to the observed empirical relationship. **Figure 2** shows how the value of oil in gold was destabilized in the mid-1970s, but then stabilized by the end of the 1970s.

historical relationship between gold and oil

figure 02



Graph based on Hammes and Wills, 2005, Figure 1.

the essential concepts that enabled financial derivatives markets to flourish

For the US, though, the solution to dealing with floating rates has been the use of financial derivatives. There have been two essential concepts that have enabled financial derivatives markets to flourish. The first is the use of math to attempt to conquer financial risk. For all financial exposures, one looks for underlying risk factors, which can then be aggregated at the portfolio level. These portfolio-level risk factors can then be hedged through derivatives. The second concept is the development of appropriate business models. Financial derivatives have enabled market participants to choose what type of risk-bearing they will specialize in, and which types of risk they can lay off to other risk-bearing specialists.

The Use of Math to Conquer Financial Risk

The following seven mathematical concepts have been useful in managing financial risk: (1) bond math; (2) Modern Portfolio Theory; (3) the application of the no arbitrage principle; (4) the Taylor expansion; (5) parsimonious modeling techniques; (6) Value-at-Risk; and (7) event-risk measurement. We will briefly describe each concept below.

1. Bond math

We can dissect bond risk at the security and portfolio level through measuring the relevant instrument's exposure to interest-rate risk. Then with this dissection of interest-rate exposure in a bond portfolio, one can decide if any of the various exposures are desirable, and whether any of these exposures should be hedged with interest-rate derivatives.

2. Modern portfolio theory: Thinking in terms of risk units

One concept essential for the development of financial hedging instruments is to be able to think of portfolios in terms of risk units. This was achieved in the 1950s with Harry Markowitz's Modern Portfolio Theory, which was explained in Elton and Gruber (1997). Markowitz "formulated the portfolio problem as a choice of the mean and variance of a portfolio of assets." An "investor ... [should] choose his or her preferred portfolio, depending on individual risk-return preferences." "The important message of the theory was that assets could not be selected only on characteristics that were unique to the security." "Rather, an investor has to consider how each security co-moves with all other securities." By "taking these co-movements into account," one could "construct a portfolio that has the same expected return and less risk than a portfolio constructed by ignoring the interactions between securities."

The later development of Value-at-Risk for monitoring a portfolio of diverse derivatives instruments was a natural extension to the way of thinking that had begun with Modern Portfolio Theory.

3. No arbitrage principle for derivatives pricing

The no arbitrage pricing approach, which is summarized in Box 1, was a seminal conceptual development for the valuation of derivatives.

Box 1

” *“The no arbitrage pricing or contingent claims pricing approach for valuing a derivative proceeds as follows:*

1. *Start with a description (model) of the future payoff or price of the underlying asset across different possible states of the world.*
2. *Construct a portfolio of underlying assets that has the same... payoff as the derivative.*
3. *Set the price of the derivative equal to the value of the replicating portfolio.”*

Source: Carpenter (2011), Slide 3.

We can apply this approach to both forwards and options. For forwards, the price should equal the cost of buying the security and carrying it over to maturity, which, in turn, is equal to the spot price plus the cost-of-carry minus the benefits-of-carry. While for options, a dynamic description of valuation is required. Essentially one can dynamically replicate the changing value of the option on an asset by buying and selling the underlying asset in proportions determined by the option's changing delta. The sum of the profits and losses from this buying-and-selling activity becomes the option's value, once one takes the present value of each of these gains and losses. The option's value cannot deviate from this summation; otherwise, there would be an arbitrage opportunity. Black and Scholes came up with a closed-form mathematical equation for this dynamic replication, assuming one can continuously carry out this replication over infinitesimally small time intervals.

3. Taylor expansion

Another useful concept is the Taylor expansion; please see Box 2. This formula underlies bond duration and convexity as well as all the various Greeks used in option risk measures.

Box 2

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x - a)^n = f(a) + \frac{f'(a)}{1!} (x - a) + \frac{f''(a)}{2!} (x - a)^2 + \frac{f'''(a)}{3!} (x - a)^3 + \dots$$

Source: Tsishchanka lecture notes, accessed on 4/9/14

5. Parsimonious modeling techniques

Another key concept is to come up with models for a complex portfolio of securities and derivatives using only a handful of factors. In other words, one wants parsimonious models. Then if a portfolio can be described by a handful of risk factors, it will be easier to design macro hedges using a handful of derivatives for that portfolio.

Vannerem and Iyem (2010) explain that “yield curve dynamics can be described by [three parameters: the shift, twist, and butterfly] STB movements. These three movements are the driving factors of interest-rates changes across the term structure. They capture between 90 and 98% of interest rate variation in most developed markets ...”

This type of modeling is an excellent response to Milton Friedman’s 1977 call for an examination of “how the whole term structure of yields ... [could] be described more compactly by a few parameters,” as cited in Nelson and Siegel (1987).

As summarized in Vannerem and Iyer (2010):



“The Shift / Twist / Butterfly movements are, in order of importance, as follows:

- 1. Shift, which captures the changes in the level of the yield curve*
- 2. Twist, which captures the change in the slope of the yield curve*
- 3. Butterfly, which captures the changes in the curvature of the yield curve”*

Analogous work has been done in asset allocation with factor models. Factor “models are generally classified in three groups: fundamental, statistical, and econometric,” wrote Wolfe (2008).

In Figure 3, Callan Research (2012) provides an illustration of “factors, grouped by type of exposure across different categories. ... For example, macroeconomic factors are applicable to most asset classes while equity and fixed income factors deconstruct characteristics within those two broad asset classes.”

figure 03

illustrative sampling of factors and potential groupings

MACROECONOMIC	REGIONAL	DEV.ECON.GROWTH	FIXED INCOME	OTHER
GDP GROWTH	SOVEREIGN EXPOSURE	SIZE	DURATION	LIQUIDITY
PRODUCTIVITY	CURRENCY	VALUE	CONVEXITY	LEVERAGE
REAL INTEREST RATES	EMERGING MARKETS (Institutions + Transparency)	MOMENTUM	CREDIT SPREAD	REAL ESTATE
INFLATION			DEFAULT RISK	COMMODITIES
VOLATILITY			CAPITAL STRUCTURE	PRIVATE MARKETS

“Other types of factors include liquidity, leverage and private markets, for which marketable proxies are challenging to find. It is possible to reconstitute an asset class from these building blocks. Cash would be the combination of real interest rates and inflation. And core bonds would add some of the elements that are under the ‘fixed income’ heading. Investors can gain exposure to factors via investable proxies, although some factors are easier to access than others,” as explained in Callan Research (2012). For our purposes, we note that derivatives enable one to use a factor-modeling approach in portfolio construction.

6. Value-at-Risk

Another crucial mathematical concept for derivatives development is the Value-at-Risk (VaR) metric. VaR summarizes the expected worst loss over a target horizon within a confidence interval. While VaR is useful, it has to be used jointly with other measures.

7. Event risk

Using long-term data, one can directly examine the worst performance of a derivatives position under similar circumstances in the past. In practice, such a measure can sometimes be larger than a Value-at-Risk measure based on recent volatility.

To illustrate this concept, one example portfolio consisted of a long Russell 2000 vs. a short S&P 500 futures trade and a long Municipal Bond vs. a short U.S. Bond futures trade. These trades were normally unrelated. But during a scenario test of the portfolio's sensitivity to event risk, which is shown in Figure 4, one finds that the combination of the two trades resulted in an exposure to a liquidity shock. The short legs of each spread were the more liquid of the pair. Both of these trades were at risk to a flight-to-quality event as happened during the Fall of 1998.

evaluation of portfolio event risks

figure 04

EVENT	Maximum loss
October 1987 stock market crash	-4.11%
Gulf War in 1990	-4.12%
Autumn 1998 bond market debacle	-6.42%
Aftermath of September 11 attacks	-3.95%

WORST CASE EVENT	Maximum loss
Autumn 1998 bond market debacle	-6.42%
Value-at-risk based on recent volatility and correlations	-3.67%

Source: Till and Egleeye (2003), Table 5.

One can use event-risk measurements to decide on the appropriate leverage level for a portfolio.

Part II

in the next edition

In Part 2, we will finish discussing the essential concepts that enabled financial derivatives markets to flourish by covering what the appropriate business models are for commercial participants to successfully use financial derivatives. Part 2 will conclude with a discussion of how market participants seem to be once again searching out stable valuation benchmarks as an anchor of value rather than exclusively relying on financial derivatives for conquering volatile financial risks.

endnotes

This two-part series is excerpted from a presentation given by the author on February 10th, 2014 at a joint meeting in Chicago of the following two professional organizations: the Professional Risk Managers' International Association (PRMIA) and the Chartered Alternative Investment Analyst (CAIA) Association. This presentation, in turn, was excerpted from a full-day seminar given by the author to representatives of the China Foreign Exchange Trade System, a sub-institution of the People's Bank of China, in December 2012.

The views expressed in this article are the personal opinions of Hilary Till and do not necessarily reflect the views of organizations with which Ms. Till is affiliated.

author

Hilary Till

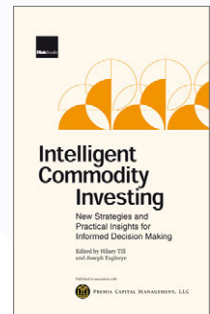
Principal, Premia Risk Consultancy, Inc.

Co-Editor, "Intelligent Commodity Investing"



Hilary Till is a co-founder of Premia Capital Management, LLC, a Chicago-based proprietary trading firm. In addition, Ms. Till provides advice on risk-management and derivatives trading issues through Premia Risk Consultancy, Inc. She is also a Research Associate at the EDHEC-Risk Institute and is the co-editor with Joseph Eagleeye of the bestselling Risk Book, *Intelligent Commodity Investing*.

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✂ A proposal for identifying actual relationships

by **Edward Thomas Jones**

introduction

Quantitative models are extensively used by financial institutions to describe the relationship between the economic environment and, among other things, specific portfolios' performance, profitability, and capital requirements. In addition to helping institutions meet regulatory requirements, such models have become an integral part of the risk management and planning decision process. Following the economic crisis, however, regulators globally have become increasingly wary of quantitative risk models. The use of highly complex models can jeopardise sound risk management to the extent that financial institutions place undue reliance on them. Part of this problem is that quantitative models rely on historical relationships that might not be correctly specified. This paper introduces the theoretical assumptions behind the most common statistical measure of association (i.e. correlation) along with its limitations, and proposes an alternative measure which can be used to form the basis of quantitative risk models. A working example is provided to highlight how the two different statistical measures can yield different conclusions from the same dataset.

Identifying the true relationship

Correlation is a popular tool in the financial industry to explain the relationship between the movement of financial assets as well as economic data series. Its simplicity allows it to be easily calculated and understood by both technical and non-technical individuals within the industry; a correlation value can sit anywhere between -1 (perfect negative relationship) and +1 (perfect positive relationship). However, correlation is unstable and can be of very limited use (see Pearl, 2000). For example, two equal groups from the same dataset (up to one date and beyond that date) could result in very different relationships between the series being implied by their correlations. In addition, correlation analysis is only valid for stationary series (i.e. those with a mean and variance that don't change over time; see Alexander and Dimitriu (2002) for this condition). This condition usually requires prior de-trending of prices before performing correlation analysis, which results in loss of valuable information. De-trending the data series before any analysis removes any possibility to detect a common trend and the interpretation of the relationship becomes difficult when different approaches are taken to de-trend both series.

An alternative statistical measure to correlation is cointegration. The aim of cointegration is to detect any stochastic trends in the series and use these trends for a dynamic analysis of correlation. The main advantage of cointegration analysis, as compared to the standard concept of correlation, is that it enables the use of the entire information set when the series are non-stationary. Furthermore, a cointegrating relationship is able to explain the long-run behaviour of cointegrated series, whereas correlation usually lacks stability, because it is a short-run measure of co-dependency. While the amount of historical data required to support the cointegrating relationship may be large, the attempt to use the same sample to estimate correlation coefficients may face many obstacles such as outliers and volatility clustering.

Engle and Granger (1987) proposed a simple two-step (residual-based) approach for performing cointegration analysis. Other tests for cointegration have been developed, including the Johansen procedure that allows the testing of several series (unlike Engle and Granger approach that only test two series). The first step of the Engle-Granger approach involves regressing one variable on the other and calculating the residuals. The second step involves applying the Augmented Dickey-Fuller (ADF) test for unit root on the residuals. Under the null hypothesis that the series are not cointegrated, the residuals should be non-stationary. Rejection of the null is evidence the residual is stationary, i.e. that the series are indeed cointegrated.

Following its introduction by Engle and Granger, cointegration has grown in popularity by econometricians as it allows them to analyse non-stationary variables without the loss of any information. However, its use in the financial industry has been limited thus far, mainly due to the fact that the standard in portfolio and risk management is the correlation of asset returns. However, these correlations do not always reflect the true relationship between series.

commodities and financial markets

The following example considers the relationship between the commodities and financial markets and illustrates the different conclusions that can be borne from the two methodologies. There has been a surge in the role of commodities within the financial industry over the past decade. The financial returns and diversification qualities from commodities have attracted the attention of investors, while financial institutions have come to pay particular attention to the asset class given its reflection of real economic activity and a major source of inflationary pressures.

Lombardi, et al. (2010) proposed that over the past decade, there has been a remarkable rise in commodity prices, which was driven by various factors including the demand from China for raw industrial inputs and increase in food consumption. This surge in prices attracted institutional and retail investors to this asset class, which further helped drive prices upwards. Further, the money created by the quantitative easing and fiscal stimulus of the Central Banks and governments flowed into risk assets, such as commodities and equities. The emergence of a 'risk-on/risk-off' attitude among investors, in which investors piled in and out

of risky assets depending on the latest headline, caused prices to fluctuate depending on market nerves. This also resulted in the asset classes beginning to show a strong positive relationship.

The role of commodities as inputs in the production process suggests that this asset class will share a negative relationship with equity prices (where equity prices are a discounted value of future dividends). If input prices increase, firms will see their profits decrease, all else being equal, and will therefore have less cash to pay out as dividend. This suggests that commodity prices are driven by physical supply and demand; however, it is now acknowledged that this is not the case (Kilian, 2009).

correlation vs. cointegration numerical example

The correlation and cointegration approaches described above provide a framework for determining the relationship between commodity and equity prices. Changes in commodity prices over time are captured by the S&P Goldman Sachs Commodity Index (SPGSCI). This weighted index is based on the last five years average quantity of global production of each commodity. Its diverse composition and coverage of all sectors allows it to be used in determining the relationship between commodity and equity prices. The S&P 500 (S&P) is one of the most commonly followed equity indices and it is considered one of the best representations of equities performance. The performance of both indices between 2008 and 2013 is shown in Figure 1.

The S&P 500 and S&P Goldman Sachs Commodity Index performance post 2007 financial crisis



The performance of the indices differed immediately following the 2007 financial crisis; while the SPGSCI continued its trend to reflect the ongoing commodity super cycle, the S&P continued a downward trend given the financial turmoil initially observed in 2007.

After a correction to the SPGSCI trend, both indices showed upward movement having hit their lows in early 2009. While the S&P showed a steady upward movement, the SPGSCI showed rapid growth until 2011 before levelling off to a level not much higher than what it was at the beginning of the period. The correlation between the both indices between 2008 and 2013 was 0.72, which would imply a strong positive relationship between the S&P 500 and SPGSCI: both commodities and equities move together over time.

The ADF test is used to determine if both series are stationary, which is one of the requirements for correlation analysis. Before calculating this test, it is necessary to decide upon the number of lags to be included in the tests. Too many lags could increase the error in the forecasts; too few could leave out relevant information. By using the Schwarz's Bayesian Information Criterion, both series are found to have a lag of one day. The ADF test was run for both the S&P and SPGSCI with a lag of one day and a trend assumed in both series, and both series were found to be non-stationary (i.e. with a unit root). In addition, the Mackinnon test shows that both series are integrated of order $\{1\}$. These results imply that the correlation result of 0.72 is unreliable because the series are non-stationary and does not reflect the true relationship between commodity and equity prices. Given the non-stationary nature of the series, it would be possible to calculate the first differences of the series and then proceed to calculate the correlation on these new values if they are found to be stationary; however, this approach would result in a loss of information.

To ensure full use of the available information, cointegration provides a suitable methodology to determine the relationship between both non-stationary series. The first step of this approach is to estimate the long-run equation using OLS regression, with the SPGSCI as the independent variable and the S&P as the dependent variable (the decision of the independent/dependent variables is based on the assumption the commodities are a major input for over half of the companies within the S&P). These residuals are shown in Figure 2.

Residuals over time



If the residuals are found to be a stationary process, then the relationship will be cointegrated. Again, the ADF test is used to determine if the series has a unit root. The residuals are found to be non-stationary and, therefore, commodity and equity prices are not cointegrated; that is, there is no long-run average relationship between commodity and equity prices, which contradicts the correlation results.

Cointegrated financial assets must be driven by the same underlying factors so that they share a long-run equilibrium relationship. As no cointegration relationship is found, the result implies that commodity and equity prices are, on the whole, driven by different factors over this period that are not related to both. While it is not possible to rule out that the flow of money from quantitative easing was a driver of price changes in both series, the results also point to assets specific drivers of prices, such as industrial demand for raw commodities. An alternative explanation for this non-relationship is that approximately half of the companies included in the S&P are currently not reliant on commodities as inputs and, therefore, their profits (and thus, their equity price) are not directly impacted by changes in commodity prices.

conclusion

Correlation as a measure of relationship is unstable and can lead to incorrect assumptions when developing quantitative models for the financial industry. When statistics show that two series are highly correlated, then there is a temptation to think of them moving side by side with both series growing together. Similarly, highly negative statistical correlation would imply that the series go in opposite directions. Both of these assumptions would be incorrect. When developing highly complex quantitative models it is important to capture the true nature of the interaction between the underlying series. Incorrectly specified relationships can, among other things, endanger sound risk management and cause incorrect decisions to be made in the planning process. An alternative measure of relationship is cointegration, which is considered a more robust statistical measure given its ability to explain long-run behaviours and make use of the entire information set. Incorporating cointegration into the development of quantitative models will ensure that historical relationships are correctly specified, thus aiding the accuracy and appropriateness of such models. As a final point, any relationships assumed by quantitative models should also be supported by business intuition, and not be based on statistical calculations alone regardless of the methodology used.

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author

Edward Thomas Jones, PhD
Stress Testing Manager, Bank of Ireland



Edward Jones has extensive experience working in the area of credit risk modelling and analysis. He is currently a Stress Testing Manager working

for Bank Of Ireland, where he is responsible for modelling and forecasting non retail credit portfolio performance under different economic scenarios. Prior to this, he was responsible for developing and calibrating IRB credit risk models and has provided his quantitative expertise to a number of projects across the Bank. Before embarking on his banking career, Edward was a lecturer in quantitative methods at the University of Bangor and continues to give guest lectures on the application of quantitative techniques in the banking industry. He holds a PhD in Economics and a postgraduate and undergraduate degree from the University of Bangor.

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☒ all on the same train, but heading in different directions

Risk attitudes among insurance company management and implications for forming a Risk Culture

by **Alice** Underwood, **Michael** Thompson & **David** Ingram

abstract

Insurance company managers are surveyed to discern their alignment with four risk attitudes predicted by Plural Rationality Theory. Each company management team is shown to contain a mix of beliefs, but not always the same mix. Since each belief is tied to a different expectation for appropriate risk management, there are inherent conflicts with a risk management culture that is tied to a single belief. The paper concludes with descriptions of hybrid risk management cultures that would have some appeal to various pairs of the four beliefs.

what culture is not

Many discussions of ERM include Risk Culture as one important component of a successful ERM program. But in some cases, Risk Culture is no more than a term of art to suggest a particular set of behaviours accompanied by risk management mission and vision statements. For this discussion, the authors will assume that the term refers to how things are seen, done and justified at the various levels of the business. That assumption causes us to rule some things out. So, we will start with a statement of what the term “culture” does not mean in this paper.

Culture is not the explanation of last resort

Sometimes “culture” is dragged in only when other explanations – economic, demographic, organisational and so on – are inadequate: explanations of the kind “Oh well, it must be cultural then.”

- Evident corporate shortcomings associated with the recent financial crisis are often put down to “culture”; hence all the talk about the need for a “change of culture.”
- This line of reasoning has also blossomed, in recent years, in the study of international relations: the “world society” literature, for instance, holds that a set of “Western/modern” norms have gained global legitimacy, even in regions where it doesn’t make “objective economic sense” to adhere to those values.

Culture is not a veto on comparison

In understanding Risk Culture, it is not useful to assume that each culture is unique and can only be understood in its own terms (as expressed in anthropologist Clifford Geertz's notion of thick description¹). For instance, if one ventures a generalization such as that human societies share the notion of up-and-down, some anthropologist shouts "Not in my tribe!" In recent years, this "hermeneutic" or "post-structural view" has taken the social sciences by storm. But as Harry Eckstein observed², in the absence of any attempts to test and compare, thick descriptions are just "very high level travel literature."

Culture is not the uncaused cause

This paradigm explains "why did he do that?" with "because his culture told him to."

- Pointing to "Asian values" is an example of this solecism.
- So too is the "culture wars" thesis (e.g. Samuel Huntington) in which the culture-carriers – the members of the various blocs: Islamic, Christian and so on – are pitted against one another because they are Islamic, Christian etc.
- Likewise with the various proponents of organisational culture – Hofstede, Hampden-Turner, Trompenaars – who are so heavily relied-upon in much of the work on Risk Culture.

Though often dressed up in impressive swathes of reasoning, and bolstered by extensive statistics, all these are not explanations - just elaborate ways of saying "I don't know."

what culture is

The authors have worked together for almost five years developing articles and papers that describe a view of Risk Culture using an adaptation of the work originated by Mary Douglas that is now called Plural Rationality Theory³. This framework for discussion of culture relies on two independent and measurable dimensions - hierarchy and attachment - which result in four quadrants, linked to four different views of risk in the world and four fundamental types of Risk Cultures.

- Low hierarchy, high attachment: **Conservator** culture sees the world as dangerously risky, requiring a very careful approach to risk taking, and often seeks to minimize risk.

¹ / Geertz contrasts a factual observation of a man winking with a "thick description" that puts the wink into the context of the culture: e.g. "rapidly contracting his right eyelid" vs. "practicing a burlesque of a friend faking a wink to deceive an innocent into thinking conspiracy is in motion." Geertz, Clifford. "Thick Description: Toward an Interpretative Theory of Culture." In *The Interpretation of Cultures*. New York: Basic Books (1973)

² / R. Ellis, M. Thompson. **Culture Matters**. Westview Press (1997)

³ / The most complete exposition of this work, a compilation of six articles published over four years and titled "Rational Adaptation for ERM in a Changing Environment," was recently published by **InsuranceERM**, at www.insuranceerm.com.

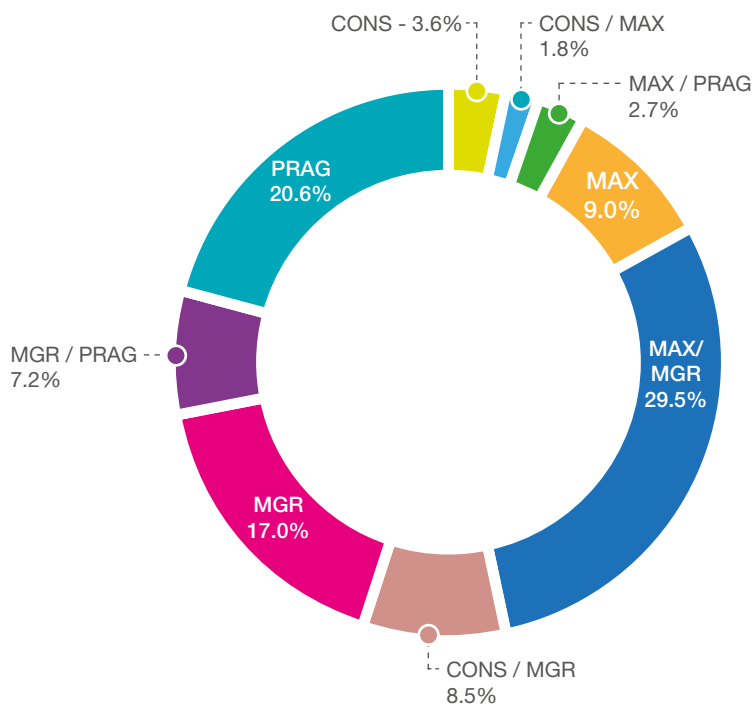
- High hierarchy, high attachment: **Manager** culture sees the world as moderately risky, and risk as something that can be tamed. This culture most closely aligns with the ideas usually put forward as ERM.
- Low hierarchy, low attachment: **Maximizer** culture expects any losses to be recoverable from subsequent gains, and accepts risks when compensation (price) is right.
- High hierarchy, low attachment: **Pragmatist** culture sees unpredictability in the world, and often chooses to avoid commitments and over-concentration in any one type of risk.

Traditional ERM tends to tacitly assume that risk management is “best” when a single Risk Culture – the Manager culture – is universally adopted. But each of the four Risk Cultures can be found within most companies - and, as will be shown in the next section, within most management teams.

survey of risk attitudes

Karl Dake developed a survey of risk attitudes in the 1990s and used it as part of a massive research into consumer attitudes⁴. Dake’s survey was adapted by Ingram to take the questions from the household domain into the business setting. To date, about 200 insurance executives from eleven companies in the insurance sector have completed the survey. Each person’s survey results provide a score between -10 and +10 for each Risk Culture. A score of 5 or above indicates a preference for that Risk Culture; a score of -5 or lower indicates active disagreement. Chart 1 illustrates that individual responses fall into 9 groups.

Chart 1: Distribution of risk preferences for 200 individual survey respondents



About half showed a clear preference for one and only one of the four cultures. The other half gave answers that indicated agreement with two of the four cultures.

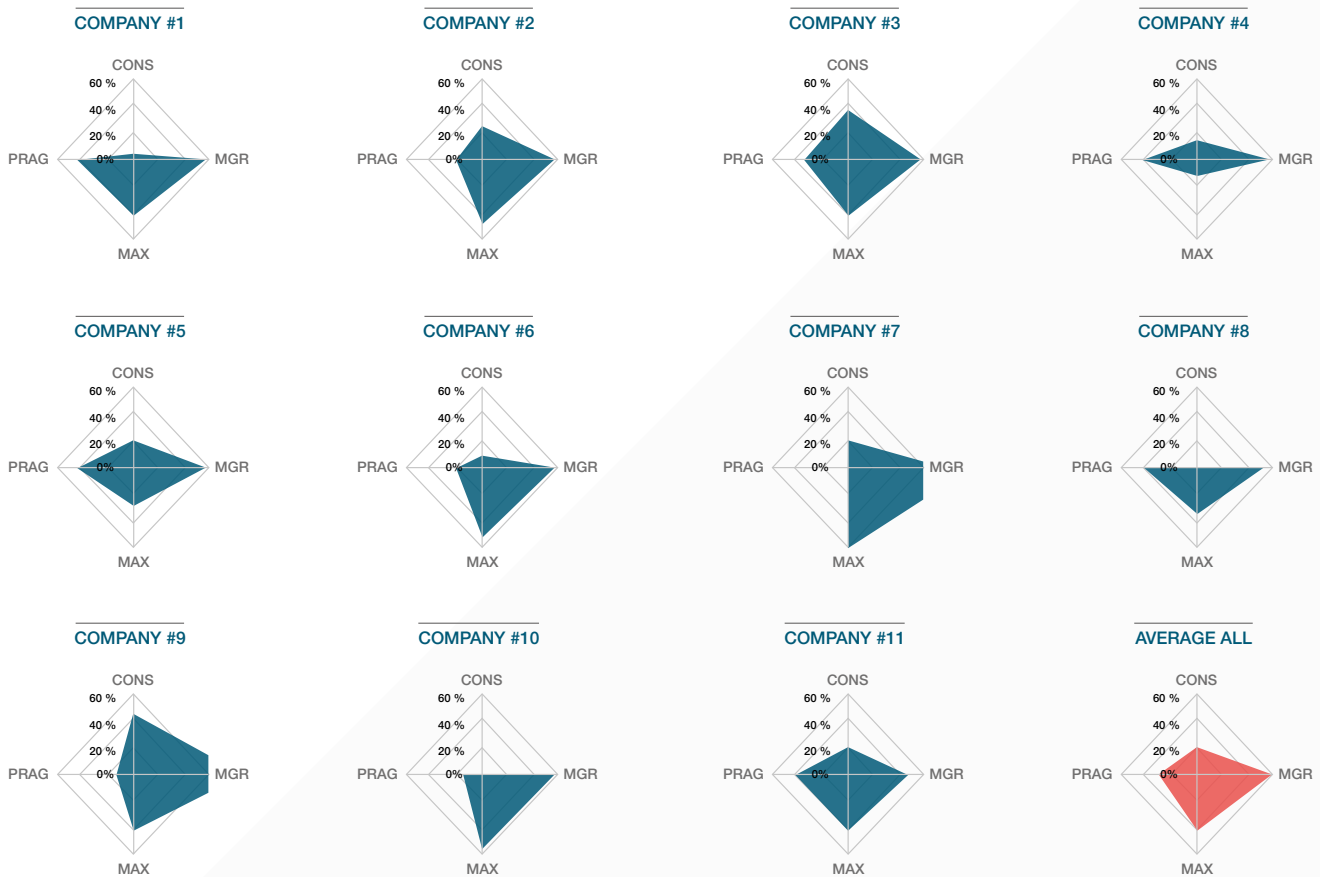
This chart indicates that ERM in its “purest” form would only really appeal to the 17% of respondents who indicated a preference for the pure Manager culture. However, another 45% of the responses (MGR/PRAG, CONS/MGR and MAX/MGR) showed some leaning towards the Manager culture. This suggests that a form of ERM based on the Maximizer/Manager blended Risk Culture would get the widest support, aligning directly with 29.6% and at least partly with approximately 75%.

Many Chief Risk Officers describe their job and the objectives of their risk management programs as involving collaboration with the business units in support of profitable risk taking, rather than focussing solely upon the negative aspects of risk. In fact, a large segment of risk managers advocate redefining the word “risk” to include favourable as well as unfavourable variations in outcomes. Apparently they are seeking to find aspects of the Maximizer culture to merge into the Manager dominated ERM structure. These risk managers have empirically reached the same conclusion as the survey indicated: that they will gain the widest acceptance for a risk management program that is a Maximizer / Manager blend.

In order to be effective, a risk management program must be more than “lip service” to an otherwise ignored standard⁵. In other words, for true effectiveness ERM must align with corporate culture. is, then, a Maximizer/Manager ERM the “best” sort of ERM?

Not necessarily. To varying degrees, the predominant risk preference differs from company to company. The following charts show survey results for each of the eleven companies separately.

Chart 2: Average risk preference by company



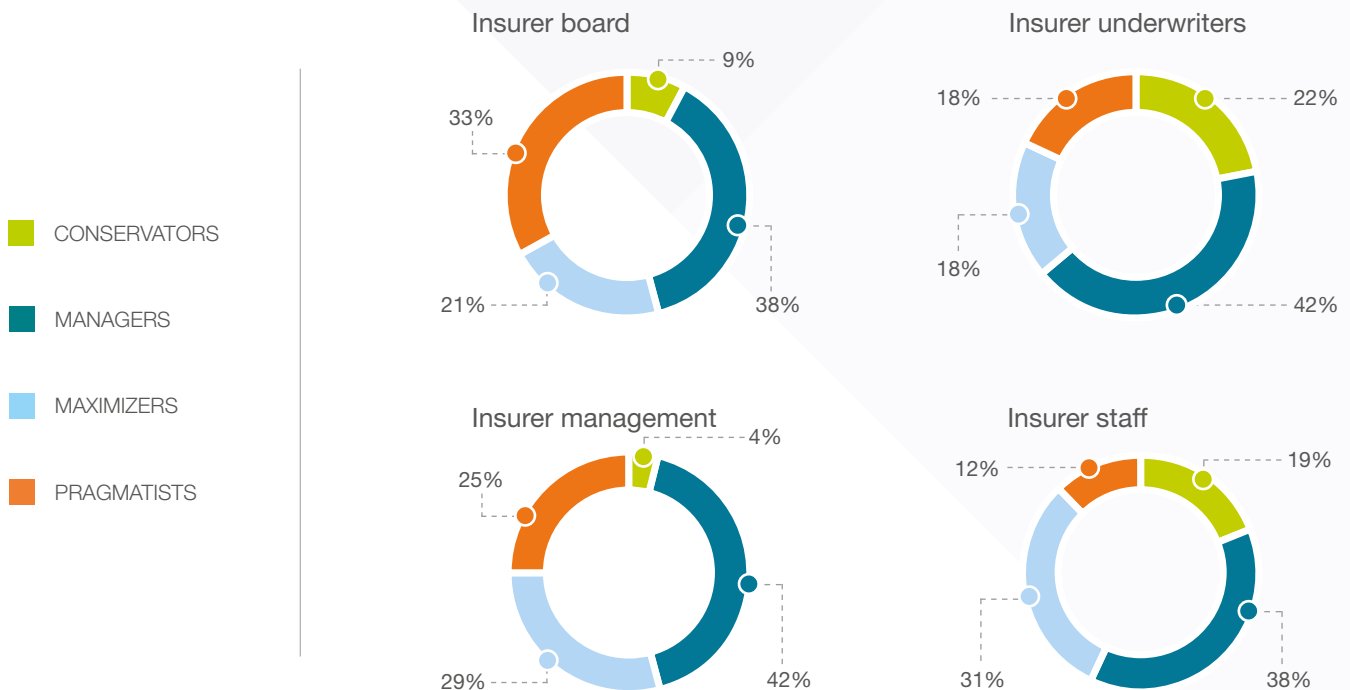
⁴ / See K. Dake and M. Thompson, “Making ends meet, in the household and on the planet.” *GeoJournal* 47: 417-424 (1999)

⁵ / See D. Ingram, “A Giant Risk Management Entertainment System.” *WillisWire* (2013)

Different shapes indicate different cultural preferences at each company. Companies 3 and 11 have preferences that are very much like the overall average, but the other nine companies vary significantly. Companies 7 and 9 each show very high agreement with the Manager culture and might do well with the “pure” ERM approach. Companies 1, 4, 5, and 11 had significant minorities favouring the Pragmatist culture. Companies 3 and 9 have the highest fraction of people favouring the Conservator culture.

Another layer to this puzzle of culture is the issue of **who** in the company favoured each culture. The results differed somewhat by type of position (Chart 3).

Chart 3: Average risk preference by type of position held



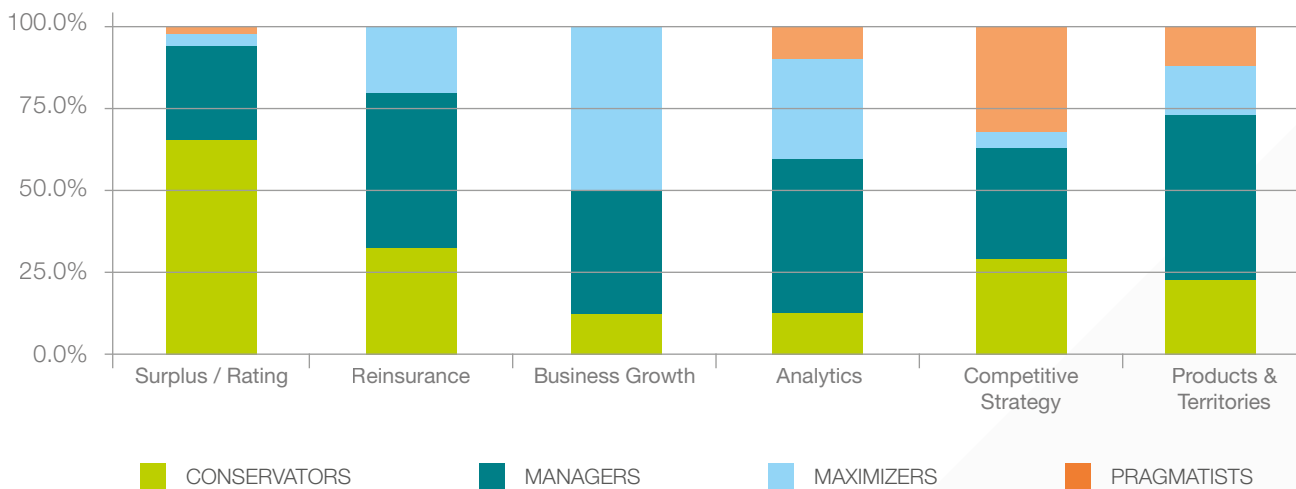
Of the four groups, top management contains the highest percentage of Maximizers and the lowest percentage of Conservators. When survey results were presented to one management team and it was pointed out that no one in the group favoured the Conservator culture, their response was “That would be [Joe]; he retired last year and our meetings have had many fewer arguments since then.”

Board members surveyed had slightly fewer Maximizers and slightly more Conservators. That they would have somewhat less appetite for risk than top management is probably appropriate and desirable given their respective roles, but the lack of dramatic differences makes sense seeing that board members are usually top managers somewhere else. Underwriters and middle management, on the other hand, showed a much higher concentration of Conservators. This is clear evidence that the top management ideology that populates mission statements and vision statements may not be shared with the middle management at a fundamental cultural level. A significant slice of middle management may well see top management’s ideology as too aggressive.

perceptions of corporate risk approach

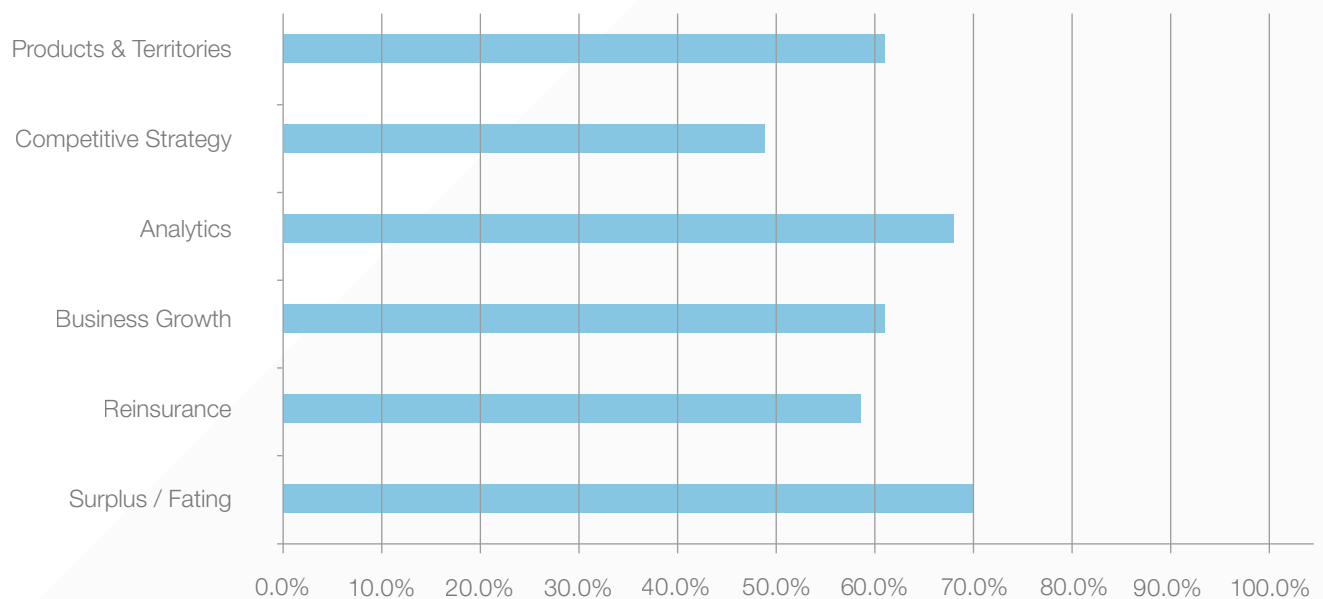
For seven of the eleven companies surveyed for risk preferences, there were six additional questions about the management strategy applied for specific areas of risk. The possible answers were designed to reference one or another of the four Risk Cultures. The strategies of fourteen additional companies were assessed by Willis Re staff; Chart 4 shows the percentages of these 21 insurers that had a strategy tied to the approach favoured by one or another of the four Risk Cultures for managing a particular risk area.

Chart 4: Percentage distribution of perceived company strategy by risk area for 21 insurers



Within the seven companies where we had data by individual, we found that there was limited agreement about what the actual strategy was for their company (Chart 5).

Chart 5: Average level of agreement on company strategy among seven management groups



This confusion (less than 70% agreement) might be an indication of poor communication among company management, but a separate study of eight insurers' approach to five major categories of risk indicated that insurers actually do employ two or more of the distinct risk management strategies that would be preferred by one Risk Culture or another⁶. Only two of these eight insurers favoured the same strategy for all four risk types as well as for enterprise-level risks; one had a Conservator strategy for all, and the other had a Pragmatist strategy for all (Pragmatist strategy often includes a variety of approaches for managing risks). Two of the other six insurers used two distinct risk management strategies, and four used three strategies. Both of the two-strategy firms used a Manager approach for some risks and a Pragmatist approach for others. Of the four three-strategy firms, two used Manager, Conservator and Pragmatist; the other two used Maximizer and Manager, one with Pragmatist and the other with Conservator.

The senior risk officer of one firm divided up the firm's risks by the variations in risk strategy:

- Natural Catastrophe Risk is managed primarily through diversification of exposures by type of natural catastrophe (earthquake, hurricanes and other high wind events and floods) and by diversification of locations – a Pragmatist strategy.
- Other Insurance Risks follow a Maximizer strategy: they work hard to make sure that they sell the insurance at the right price, and risk is of low concern.
- Operational Risk is managed with a purely Conservator strategy: the company is not paid for taking these risks, so they want no more risk of loss than absolutely necessary. They choose operational risk controls based upon cost/benefit.
- Management of Credit and Investment Risk splits into two regimes: — Long-term asset allocation goals are set with an efficient frontier Manager approach. — Tactical variations on the strategic asset allocation goals are based on short-term market outlook: a Maximizer approach.

⁶ / Unpublished study to be presented at ICA 2014 in Washington DC.

⁷ / See the article "ERM: Four Ways to do God's Work" in "Rational Adaptation for ERM in a Changing Environment," **InsuranceERM** (2013)

risk cultures

The four risk preferences can be aligned with four risk management strategies⁷. But, applying the idea of Plural Rationality, many other aspects of Risk Culture emerge. The following table gives a brief outline of some aspects of the four cultures. As mentioned several times, the Manager culture is a fairly tight match with “textbook” ERM Risk Culture.

PRAGMATIST

MANAGER

To moderate the risk profile, insurer seeks to undertake a broad range of activities whose risks are unrelated, and maintain an appropriate balance among activities; the key limit in this risk management system is the concentration limit	Top-down risk management process uses an economic capital model as key reference point for risk; the key limit applied is the amount of economic capital each activity generates
Constantly monitor major risks, staying alert for any change that would skew the spread of risk	ERM systems often used to optimize the risk portfolio by calculating the best opportunities
Periodic rebalancing of investments is a diversification strategy	ERM integrated with planning cycle will include capital budgeting process, incorporating capital requirements and expected return on capital for planned future business
No fixed expectation for surplus level, rating, business growth or usage of reinsurance	Expect their business to grow at about the same rate as the market in general
Little reliance on models and analytics	Incentive system tied to risk-adjusted financial results
Approach to competition varies from year to year and by situation	Expect to hold capital at a level determined by internal model
Usually have activities in several very different businesses	Will set a target for company credit rating and painstakingly work to fulfil rating agency expectations
Not interested in emerging risks; prefer more tangible issues	Calculate the exact benefits of diversification
Will try many new opportunities, but may not commit enough resources	Interested in emerging risk but not typically skilled in dealing with the level of uncertainty involved
Will experience smaller losses	May miss new opportunities while analysing; may be a fast follower. Will experience moderate losses in poor environment.
	Importance of a person in the company depends on how many people work for them

risk cultures

MAXIMIZER	CONSERVATOR
Focus on the valuation/pricing of risk, applied on a transaction by-transaction basis	Seek to restrict exposure to potential losses or risks
Insurers focus on combined ratio	Emphasize the internal audit function and other ways of controlling operational risks, careful risk underwriting and tight exposure limits
May use economic capital and a cost-of-capital approach to standardise pricing risk margins	Non-underwriting risks (e.g. interest rate and equity exposures) typically managed via asset-liability matching and hedging, often operated with a zero loss target
Establish risk limits related to the amount prices may deviate from “standard” by-the-book rates	Often emphasize stress tests to help prepare for the worst-case situation
Tend to hold the minimum capital needed to keep the lowest rating that customers/distributors will tolerate	Not highly concerned with growth; often accept below-market growth
Expect to grow significantly faster than the market; achieve high profit growth in the right environment	Spend significant resources preparing for emerging risks
Low reliance on quantitative analysis, except for pricing	Rarely take up new opportunities; may finally try a new business right at the peak, and then suffer decline of profits and growth
Tend to concentrate as much business as possible in the most profitable segments	Experience smaller losses in unfavourable environments
Not concerned about emerging risks before they emerge	Flat organization chart; tend to have many large meetings where everyone gets a say
High interest in competitors; seek to win	
Highly interested in taking up new opportunities; not a follower	
Experience larger losses in unfavourable environments	

hybrid cultures

Just as there are hybrid risk preferences, there can be hybrid Risk Cultures. Through the boom times leading up to the financial crisis, many CROs found that their role was to facilitate business, not to be the “Doctor No” of the company. They adopted a hybrid of Manager and Maximizer approaches as the ERM program.

The statistics on the insurance executives surveyed suggest that a Manager/Maximizer hybrid should fit with most management teams. However, in different times or with different management teams, Manager/Conservator or Manager/Pragmatist hybrids might be more successful. Looking at Chart 2, at least one management group (Company 4) would probably prefer the Manager/Pragmatist blend. In addition, there are situations where circumstances force management's hand, regardless of preference. One company in our study had experienced a major loss, and ran under a Conservator/Manager hybrid for five years until the firm worked its way out of the consequences of their loss – even though not a single person on the management team favoured the Conservator Risk Culture.

conclusion

Based upon the sample evidence, it seems reasonable to tentatively conclude that a “pure” ERM approach, strictly aligned with the Manager Risk Culture, is probably not going to suit most insurers' leadership. Nor will it match up with most risk management strategies currently in place.

The above discussion of risk preferences provides a starting point for thinking about Risk Culture in a way that is not simply “black/white, on/off.” Almost all companies will find each of these four risk preferences within their staff, and most within their management team. To develop a successful Risk Culture for the firm, this possibility should be an important consideration.

authors

Dave Ingram

Executive Vice President at Willis Re North America in New York where he provides ERM advisory services to insurers

Michael Thompson

He is an anthropologist and senior research scholar affiliated with the risk and vulnerability programme at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria.

Alice Underwood

Executive Vice President at Willis Re North America in New York where she leads the Analytics team. The team provides actuarial analysis, rating agency advisory, natural catastrophe modelling and ERM advisory services to insurers.

☒ managing risk and hitting your objectives, with analytics in the cloud

by **Daniel Melo**

abstract

Cloud services are democratizing access to Big Data analytics, optimization and decision management. Rapid application development (RAD) and cloud-based community marketplaces are changing the way we think about analytic investment. Banks can leverage these technologies to quickly turn insights into better operational decisions and turn traditional champion-challenger testing into a learning dynamo that drives continuous improvement.

byline

In the quest to grow responsibly while managing risk, and stand out in a competitive marketplace by providing superior service to customers, a handful of financial services companies are rising above the rest. The top performers are leveraging state-of-the-art analytics in ways that distinguish them from the pack. These companies have invested heavily in Big Data analytics and real-time decision management to better understand consumer behavior and its context; not just what is happening, but why. They're using this deeper insight to act with ever-greater speed, relevance and value to customers.

Financial institutions face a shifting, complicated risk management landscape. There may be new regulations put in place that require updated forms of compliance management, model management, or stress testing. There may be new data that has to be incorporated into decision making, or there may be new reporting requirements. There may be new schemes dreamt up by criminals to defraud consumers. Collections and recovery alone is a risk-management endeavor fraught with customer service minefields. Purchasing and installing hardware to address such challenges puts a strain on internal IT resources, and carries a steep price tag.

That's why the cloud is fast becoming a very attractive technology platform for banks. Proper use of analytics in the cloud can help banks efficiently and effectively make risk-based decisions related to, for example, loan originations, account management, and loan portfolio management. Not only is it often cheaper and faster to deploy systems in the cloud than in traditional IT environments, it is flexible and conducive to innovation because everything can be updated instantly, as-needed.

The cloud gives banks a more streamlined risk-management environment. This, in turn, often translates into more capacity to process more loans, greater agility to rapidly comply with new regulations, the ability to easily model numerous scenarios and test portfolios under many conditions (and then implement appropriate changes quickly), and the cloud ensures that a bank always has access to the latest version of their preferred risk-management software.

analytics pinpointing delinquency

Automated, intelligent communications is at the heart of how top analytic performers work and interact with customers. Analytically driven insights can trigger decisions, which trigger actions that are executed via omni-channel strategies, and these can deliver a seamless customer experience. The cloud makes these solutions easier to implement for a larger universe of institutions by dramatically lowering the cost of deployment.

For one European bank, 78 percent of customers receiving automated communications said it improved the overall level of service they were experiencing. The bank also saw a 23 percent rise in ticket value per debit card spend. A retail finance company also using automated communications for collections increased right-party contacts by 42 percent and immediate payments by 30 percent.

Deciding the appropriate time to contact customers is sometimes a difficult choice, especially for sensitive situations like collections and recovery, but with smart communications based on analytics it doesn't have to be awkward. Many businesses assume that customers will not respond to communications outside of normal working hours or via 'unusual methods', but in today's hyper-connected world, that is no longer the case.

Black Horse, part of the Lloyds Banking Group, now uses a combination of interactive SMS texts and automated payment capture, so that its customers can easily pay overdue debts. Black Horse customers who have not paid by their due date receive an SMS, which includes the option for the customer to request an immediate call back, or for them to make a payment using an autopay facility. This approach has increased the amount paid per plan by 25 percent, and the number of successful payment arrangements with overdue customers by an impressive 9 percent.

There are fraud-management implications as well. For example, most banks currently call customers to check on a suspicious pattern in credit card charges. However, top performers are carrying out more multifaceted communications that can now be implemented within reasonable budget parameters thanks to the cloud, such as sending automated SMS or email messages if a transaction is out of pattern. New cloud-based technology enables card issuers to automatically check every suspicious transaction to see whether the POS is in the same location as the cardholder's mobile phone. Such **proximity-smart technology** allows the cardholder to verify legitimacy quickly and without embarrassment or fuss. If fraud is underway, banks can provide automated resolution or the option for human agent assistance.

efficiencies and opportunities

Industry leaders have implemented the infrastructure and technologies to analyze huge volumes and wide varieties of data, but the cloud makes Big Data infrastructure available as a service on a consumption or subscription basis. Any organization across the globe can rapidly harness the processing power required for a new initiative in customer centricity, scaling up with growth. A wide variety of analytic technologies are also available, including machine learning algorithms for automated data mining, text and speech analytics, predictive models, and economic impact models.

There is far less expense and risk involved in trying new ways to solve business problems and deliver better service to customers in the cloud. Cloud-based analytics enable virtually any organization to deploy solutions at a cost that's up to 80 percent less than comparable solutions in traditional environments. Correctly coupled, these tools are focused on creating applications that have analytics-driven decisioning at their core. They include domain-specific application frameworks with libraries of predictive customer characteristics, extensible data models, process templates and rapidly adaptable user interfaces. The cloud also makes it easier to share learning and replicate successes across organizations, raising return on investments. Moreover, organizations may be able to monetize their work by making it available for fellow cloud participants.

driving intelligent actions from big data insights

Banks should always look for ways to deepen insights and improve employees' perception of customer behavioral context. This can be achieved by analyzing existing data in new ways. For example, a time-to-event model can examine time log data from point-of-sale systems to predict how likely a customer behavior is to occur within a specified period of time. The cloud provides access to this and many other analytic technologies and makes it easier for all organizations to tap into new data sources. For one of our clients, analyzing text and combining the insights extracted from it with insights from traditional structured data improved predictive model performance by 8 percent.

As analytics pull context and meaning from incoming data streams, analytic experts can bring this intelligence immediately to bear on operational decisions, and therefore boost efficiency and, hopefully, profitability. To enhance this process, they're increasingly embedding analytic decision making into all their customer-facing applications, and cloud analytics provide access to domain-specific applications with embedded decisioning. Or, cloud users can tap into decision engines that will execute virtually any combination of analytic models and business rules to perform decision services for other applications, including legacy systems.

By leveraging cloud-based analytics, banks can ensure consistent customer treatment, even if that treatment is ultimately delivered through diverse, distributed customer touchpoints and legacy applications. The cloud allows critical decisions to be centralized and coordinated, even when customer interfaces are distributed and minimally connected.

A key benefit of cloud-based analytics is that banks can mathematically ascertain the best win-win situation for themselves and their customers. Increasingly, industry leaders are employing decision modeling with mathematical optimization to identify the best strategy for achieving a goal, such as maximizing profit, while balancing multiple objectives and constraints (time, budget, physical capacity, human resources, etc.). The cloud provides access to optimization engines and decision modeling templates, which clearly show the impact of optimization. Performance improvements across a wide range of decisioning use cases—new account originations, marketing, collections—are generally 15 to 20 percent.

One bank that has developed an “optimization culture” has encountered great success from driving round after round of improvement in its credit-line management strategies. The initial round of optimization sent incremental profit per account up by more than \$7 within 12 months of execution. The latest round has already raised it by \$5 per account after just four months. The bank is also applying optimization to collections and settlement decisions, as well as to pricing.

An online European bank that needed to fully exploit the cost advantages of being an online-only bank used a cloud-based originations solution to implement lean, automated processes that put control over lending policies in the hands of the bank’s business users. The system also incorporates parameter-based functions that make the process of adapting to conditions in new regional markets largely automatic, which just shows what can be achieved with cloud-based solutions.

Customer expectations for products and services are being set by a handful of leaders who have invested heavily in analytics-driven decision management. Increasingly, customers simply take it for granted that banks know what they want, and are acting in accordance with individual customer needs. Cloud-based analytics allow any bank to meet these expectations.

author

Daniel Melo

Senior Director, Fair Isaac Advisors

Daniel Melo is a Senior Director with Fair Isaac Advisors, FICO’s consulting practice. He blogs on the [FICO Banking Analytics Blog](#).

PRM candidate of the year

by **Janet** Tritch

PRMIA has named **Ewelina Zajac** with BRE Bank in Poland as the 2013 PRM™ Candidate of the Year winner. **Vidmantas Kniuksta**, Senior Analyst at SEB Bank in Lithuania, was named the 2013 PRM™ Cross-Over Candidate of the Year recipient.

This award program annually recognizes top Professional Risk Manager (PRM™) candidates from around the world. The PRM designation program, comprised of four exams, is the global standard for the world's top financial risk professionals, having received public endorsements from both business and universities. A PRM assures that the holder has the required broad knowledge and understanding, qualitative and quantitative, that risk managers must bring to the job.

Ms. Zajac's and Mr. Kniuksta's PRM exam scores were the highest of all PRMIA members who earned their PRM designation between January 1 – December 31, 2013, qualifying them for the distinction of 2013 Candidates of the Year. Mr. Kniuksta obtained his PRM by passing Exams I, II, and III, along with the Associate PRM exam, which is recognized as a cross-over exemption for PRM Exam IV. This qualifies him as the PRM Cross-Over Candidate of the Year.

PRMIA is also pleased to name **Andy Ford**, Investment Director at Standard Life Investments in Scotland, as its 2013 Associate PRM Focus Award recipient. Mr. Ford achieved the top score of the year on the Associate PRM exam during 2013. The Associate PRM is a PRMIA certificate program intended for staff entering the risk management profession, or those who interface with risk management disciplines on a regular basis, such as auditing, accounting, legal, and systems development personnel who want to understand fundamental risk management methods and practices.

here are this year's winners





PRMIA

Risk Management
Challenge

2015

The Professional Risk Managers' International Association (PRMIA) is hosting the international PRMIA Risk Management Challenge (PRMC) in 2015 across Canada, the US and the EU. Each location will host a preliminary Regional Challenge, and the winners for each location will convene in Minneapolis, MN in early 2015 for an International Challenge.

The PRMIA Risk Management Challenge provides undergraduate and graduate students from multiple disciplines the opportunity to solve realistic business problems with a risk management focus. This year, participants will be given two case studies that will simulate up-to-date and real-life risk management challenges. Ultimately, the PRMC aims to develop and strengthen professional and social relationships across students, faculty, and risk professionals.

STRATEGIC OBJECTIVES

- Promote the financial services sector on national and international levels through an International Risk Management Challenge hosted in Minneapolis, MN in 2015
- Develop analytical and decision-making skills of future leaders from universities across Canada, US and EU
- Identify top talent amongst competitors for potential employment opportunities
- Create networking opportunities for students interested in pursuing risk careers
- Understand both hard and soft skills required to work in both IT and Enterprise functional areas
- Understand strategic importance of risk management by aligning analysis to strategic direction

2014 PARTICIPANT OVERVIEW

- 92 teams, 344 competitors, 38 schools, and \$9,200 prize for the international championship team!

HOW IS THE COMPETITION STRUCTURED?

The Challenge begins in early January with the Preliminary Round, which is conducted online. The top teams from that round are chosen to advance to the Regional competitions which will take place in:

- New York
- London
- Toronto
- Ireland
- Chicago
- Vancouver
- Montreal

The winners of the Regional Round will then travel to Minneapolis, Minnesota to compete in the International Championship round of competition on March 6, 2015. One winning team will be chosen and will win up to a **US \$10,000 cash award**.

REGISTRATION

Teams of three to four members must register together with the nearest local participating chapter. All team submissions are evaluated on their approach to their cases and, if successful, are chosen to enter the regional and national finals.

To register your team, visit www.prmia.org/prmc and select your local participating chapter. The registration fee is US \$100 per team. The registration deadline is December 24, 2014.

ANASTASIA GRIDASOVA

Imperial College Business School, MSc Risk Management and Financial Engineering

"The PRMIA Risk Management Challenge marked a turning point in my professional development having blurred the distinction between theory and practice. It gave me a flavour of how various difficulties arising in a company might be addressed. Being exposed to real-life cases that are still much talked about provided a great opportunity to deepen my knowledge in the risk sphere as well as sharpen my strategic thinking. I managed to learn from high-profile industry practitioners and share my ideas with peers who are as curious and ambitious as I am. I believe this challenge is a must for those who are eager to get closer to the financial world, are not afraid to challenge themselves, and seek to have an unforgettable experience."

PRMIA Awards - 2013 Higher Standard Award

with David Rowe

We are pleased to announce that Dr. David Rowe has been chosen as the winner of the 2013 PRMIA Higher Standard Award. This prestigious award is granted to an individual who has significantly impacted the global practice of risk management, provided a substantial contribution to the mission of PRMIA and its members, and shows an ongoing commitment to the highest standards of the profession. Dr. Rowe now joins the list of previous respected winners, including Dr. Colin Lawrence, Dr. Dan Rodriguez, Prof. John Hull, David R. Koenig, Prof. Carol Alexander, and Prof. Robert Merton.

Dr. Rowe is currently the Senior Strategist for Risk and Regulation with Misys in London. Before joining Misys, Dr. Rowe founded and ran his own risk management consulting firm, David M. Rowe Risk Advisory, and served as a Senior Advisor to Kamakura Corporation. Prior to forming his own firm he spent eleven years with SunGard, most recently as Executive Vice President for Risk Management.

Earlier in his career Dr. Rowe spent more than 25 years in the banking and economic forecasting industries. He is a frequent contributor to Risk magazine, where he has written the monthly Risk Analysis column since late 1999, and has appeared at numerous conferences and seminars over the past 20 years.

We asked Dr. Rowe about his motivations and his contributions to PRMIA and industry activities.

Can you tell us about your involvement with PRMIA and the risk management industry?

I served on the original PRMIA Blue Ribbon Panel in the early days of the organization's history and later was on the Board for three years. More recently I have been serving on the Finance Committee where I helped design and implement more transparent financial reports. This particularly involved development of detailed year-to-date budget estimates based on known structural circumstances (for example the dates when certain irregular expenses fall due and are paid) as well as the monthly pattern of past financial performance. This provides an effective benchmark against which to compare year-to-date actual figures and is the basis for calculating meaningful Y-T-D financial variances. Such information helps empower the Board to meet its governance responsibilities.

I also am serving on the PRMIA C-Suite Committee, and I chaired the first PRMIA CRO breakfast roundtable discussion in London this past May.

Why have you decided to take such an active role both in PRMIA and in the risk community? Are there any of PRMIA's initiatives to which you are especially committed?

One of the great things about our profession is that risk managers decided a long time ago that good practices are a public good. One firm is better off, not worse off, if its customers and even its competitors have sound risk management practices. This has fostered a spirit of sharing insights and techniques that goes all the way back to the mid-1980s when risk management began to emerge as a distinct profession in its own right.

I am especially delighted at how the Internet and audio/visual technology has allowed such sharing to go global. This enables colleagues in remote locations, who have limited opportunities to see leading practitioners in person, to watch presentations and seminars over the web both live and through video streaming. Being the source for such material is a very important contribution that PRMIA makes to the risk management profession and is an essential part of meeting its commitment to being a truly “International Association”.



As the winner of this year's award, you were given the opportunity to select a student in the field of risk management to receive an award of US\$1,000 to be donated by PRMIA to the school of the student's choice for further education for the student. Who did you select to receive this award?

Under the guidance and recommendation of the Economics department at Carleton College, my alma mater, Ben Huang was named the recipient of this year's Higher Standard Award scholarship.

Ben is a senior Economics major at Carleton and is currently a summer analyst in Piper Jaffray's investment banking division. He will pursue a career in investment banking upon graduation.

Ben shares his thoughts on receiving the scholarship, “I honestly could not be more honored to receive this award. I think what PRMIA stands for is important, and to be nominated by the Carleton economics department truly means a lot to me. Looking back at what has happened during the past decade in the banking industry, I know how important it is to make risk management a part of the banking system. Organizations like PRMIA are critical to students as a source of career support and potential employment.”

London C-Suite Roundtable

Kevin Cuff & David Rowe

On May 15, PRMIA hosted its first C-Suite Roundtable in a recent series of the program – held for nearly 15 CROs in London. The PRMIA C Suite Roundtable took place at the Accenture offices in London on May 15, 2014 from 730A – 10A GMT. David Rowe, Senior Strategist, Risk and Regulation at Misys was the moderator of the event.

The following attendees were present: Diane Cote, Herve Geny, Jose Morago, Markus Krebsz, Peter Hughes, Colin Lawrence, Kathryn Kerle, Moorad Choudhry, Bob Stribling, David Rowe (Moderator), Peter Bradshaw, Ashley Davies, Andrew Collingsworth, Paul Lawton, Justin McCarthy (PRMIA Vice-Chair), Kevin M. Cuff (PRMIA Executive Director), Alex Voicu (PRMIA Staff), Andy Condurache (PRMIA Staff).

Justin McCarthy, PRMIA Vice-Chair of the Board and PRMIA C-Suite Committee Chair provided introductory remarks and introduced Dr. David Rowe as the moderator for the morning's discussion.

David serves PRMIA in multiple capacities, from the Finance Committee to the C-Suite Committee. He is a former member of the Board of Directors. David recently received the PRMIA Higher Standard Award for outstanding contribution – PRMIA's highest volunteer award.

The conversation was centered around the development of risk management, using stress testing and scenario analysis on enterprise-wide exposure being a requirement in today's uncertain economy.

The following broad topics were included in the course of the regulatory discussion:

- Is the increase of bank regulatory requirements resulting in greater systemic threats from non-bank financial institutions?
- Is the fundamental problem that banks are “Too Big to Fail”, or are the biggest banks really “Too Big to (Risk) Manage”?
- Shortcomings of professional institutional management have contributed to the wave of new regulations. Rightly or wrongly, the general public and politicians believe that large organizations are poorly managed.
- Despite recognized technical shortcomings, many issues are more about leadership and culture.
- The size of a bank's balance sheet does not necessarily translate into more effective management or the best understanding of a compliance culture to deal with the overall regulatory environment.

- Increased regulations reflect a view on the part of regulators, politicians and the general public that there have been systemic failures in risk management.

The following broad topics were included in the course of the technology discussion:

- The complexity of controls inevitably leads to greater reliance on technology.
- Technology can support decision making and help institutions comply with complex regulatory requirements, but it cannot replace a healthy and pervasive risk culture throughout an organization.
- Making institutional data more transparent and searchable is essential to improved flexibility and adaptability of risk management. What is needed is the means to bring analysis to bear reliably and quickly to address new questions as they emerge.

The following broad topics were included in the discussion of the landscape of geopolitical strife/ political integration around the euro-zone and elsewhere:

- Scotland independence – future of the Eurozone
- Ukraine & Russia
- China

David and Kevin Cuff concluded remarks by expressing great appreciation for Accenture's hosting and supporting the event. All of the attendees felt a worthwhile expression for the opportunity to collaborate outside of the constraints of the corporate office. The entire group was unanimous in support of working toward another discussion before the end of the calendar year. PRMIA concluded that a full effort would be explored to host an additional event in London in 2014 and to look for a calendar of events (quarterly) to be hosted throughout 2015 and beyond.

PRMIA's C-Suite program and roundtable discussions are closed-door, Chatham House Rule (comments are not to be attributed to specific participants outside the attendees) discussions that will focus on ways and strategies to address:

- The accelerated compliance demands of multi-disciplined businesses and the costs associated with growing regulatory requirements;
- The importance of technology, data integration and flexible analytics for supporting enterprise-wide risk decisions;
- The changing economic landscape of geopolitical strife in the Ukraine, a possible renewed upheaval in the Eurozone, etc. as a backdrop of today's economy.

Imperial College Business School

Imperial College London is ranked in the top 10 universities globally. The Business School is a core part of the College, which is reflected in the high standard of teaching and research. It is among just 1% of business schools worldwide to have achieved accreditation from AMBA, AACSB and EQUIS, in recognition of the excellence of its degree programmes and proving our position as one of the world's most elite business schools.

Imperial is situated at the very heart of cultural London and close to the City, the capital's financial and business hub. This proximity offers students at the Business School a unique opportunity to visit and learn from leading global organisations, with the added advantage of attracting numerous guest speakers from industry. Students are regularly exposed to working professionals and alumni within all the top financial institutions, encouraging networking to raise their awareness of career options and company cultures. One example is the Finance Industry Careers Course which takes place at the start of MSc Risk Management and Financial Engineering and includes careers workshops and guest speakers from investment banks, asset management firms and other financial services companies.

The Business School provides a dedicated careers team for the exclusive use of its Master's students. They work with students to help identify career and professional goals, and equip them with the tools to achieve them. The Business School also takes an integrated approach to career development by strategically incorporating careers training into the MSc programme timetable.

MSc Risk Management & Financial Engineering

Now celebrating its 10th anniversary, the MSc Risk Management & Financial Engineering programme is a highly quantitative programme tailored to high-calibre and technically-minded graduates wanting a deeper, more analytical study of risk management and financial engineering than is found in general finance programmes.

This one year, full-time programme is taught by a combination of our outstanding faculty and industry practitioners from the City, providing a good mix of the latest research findings from the Business School's Risk Management Lab and unique industry developments from professionals working in the field.

This one-year programme, accredited by PRMIA, ensures students benefit from a unique blend of rigour and relevance, providing graduates with the quantitative and practical skills required for a successful career in the hugely competitive, yet rewarding sector of financial services.

author

Lara Cathcart, PhD

Senior lecturer in finance, Imperial College Business School

Faculté des sciences de l'administration, Université Laval

Located in one of North America's most vibrant and historic French-speaking cities, FSA ULaval is leading the way towards a new concept for business administration, as Québec's unique position combines international flair with proximity to major centres of innovation.

Choosing to study in business administration at Canada's oldest university means access to the world's most elite certifications—including AACSB International and EQUIS—as well as a study in world-class programs. FSA ULaval's large and experienced faculty will also give you the skills to drive the expansion of ethical and sustainable businesses around the globe with courses taught in both French and English.

From the diversity, history, and dynamism of Québec City to new frontiers abroad, the world of business is yours to discover.

Université Laval, a major university

Since its founding, Université Laval has been training, equipping, and guiding the decision makers who've grappled with the major issues of society. Through the advancement and sharing of knowledge, its culture of excellence, and its global outlook, our academic community contributes to the development and international profile of our province. Still today, with the world at a crossroads, Université Laval plays a bigger role than ever in Québec City and on the national and international scene, both as a catalyst for change and a visionary institution where knowledge, curiosity, and innovation are part of everyday life.

MBA in Finance

Manufacturing and financial companies look for managers who can meet the challenges of the globalization of trade, the risk of international operations, the multiplication of forms of financial securities and who can adapt to the ongoing challenges in finance.

The MBA in finance from FSA ULaval is recognized by and prepares for the CFA Institute exams allowing access to the CFA professional title.

This 45-credit program includes applied courses often based on real case studies, an integrative essay and the CFA Institute exam preparation.

Professional M.Sc. in Finance

Recognized by the CFA Institute, the professional M.Sc. in Finance prepares students to develop complex financial strategies that will help decision-making in a context of uncertainty in risk management, investment and portfolio management. Students will also develop their expertise in the field of financial planning, investment and corporate mergers.

This 45-credit program is primarily intended for persons who hold a bachelor's degree or an equivalent degree in one of the following areas: Business administration, science (actuarial science, geology, mathematics, informatics, physics, statistics), engineering, economics or a related field.

learning opportunities

In the current environment risk education is not just a choice, it is a necessity.

Since the global recession began in 2008 the demand for risk management training has dramatically increased at all levels. In response, our training is evolving in line with member needs. PRMIA recognizes the diversity in this renewed demand and has responded by providing a library of risk education tools, delivered in brief via online and webbased training solutions, as well as through live classroom and customized in-house training. All platforms are created and delivered by leading industry experts. Watch your e-mail and check the website for current training schedules.

UPCOMING OPEN ENROLLMENT COURSES

MANAGING ENTERPRISE RISK IN A NEW ENVIRONMENT

Offered jointly by PRMIA & Kellogg School of Management

Chicago / October 2-3, 2014, 8:30 A.M. - 5:30 P.M.

More details [here](#)

ADVANCED PRACTICE OF OPERATIONAL RISK MANAGEMENT FOR THE FINANCIAL SERVICES

Featuring **Ariane Chapelle**

Munich / October 13-14, 2014, 9:00 A.M. – 5:00 P.M.

More details [here](#)

MODEL RISK

Featuring **Vijay Krishnaswamy** and **Laurent Chauvet**

London / November 7, 2014, 9:00 A.M. – 5:00 P.M.

More details [here](#)

ADVANCED FUNDAMENTALS OF FINANCIAL RISK MANAGEMENT

Offered jointly by PRMIA & Fordham University

New York / November 12-14, 2014, 9:00 A.M. - 5:30 P.M.

More details [here](#)

OPERATIONAL RISK MASTER CLASS: MEASUREMENT, MANAGEMENT, AND LEADERSHIP

Featuring **Russell Walker**

New York / December 8-9, 2014, 8:30 A.M. – 5:30 P.M.

More details [here](#)

CALL FOR ARTICLES

Article submissions for future issues of Intelligent Risk are actively invited. Articles should be approximately 1,000–1,500 words, single spaced, and cover a topic of interest to PRMIA members. Please consult the submission guidelines located at the end of the publication prior to submitting your article. Please send all article submissions that you wish to be considered for publication to iRisk@prmia.org. Chosen pieces will be featured in future issues of iRisk, archived on PRMIA.org, and promoted throughout the PRMIA community.

I-RISK SUBMISSION GUIDELINES

Follow these instructions regarding the format of your articles and references.

Article Submission - Please send all article submissions that you wish to be considered for publication to iRisk@prmia.org

File Format - Please prepare your work using Microsoft Word, with any images inserted as objects into the document prior to submission.

Abstract - Please present a brief summary or abstract of the paper on the page following the title page.

Author Biography - Please include a biography, not exceeding 150 words, for each of the contributing authors listed. All biographies must be included at the end of the article.

Author Photo - Please provide a professional photograph to be included with your article. The photo must be submitted as a separate file in jpeg or tiff format.

Exhibits - Remember to attach all elements relevant to the paper (tables, graphs, charts and photos) on separate and individual pages at the end of the article. Please denote all tabular and graphical materials as Exhibits, and designate them using Arabic numerals, successively in order of appearance in the text.

Exhibit Presentation - Please ensure that tables and other supplementary materials are organized and presented consistently throughout the paper, because they will be published as is. You may submit exhibits produced either in color or black and white. Use the exact same language in consecutive appearances; indicate all bold-faced or italicized entries in exhibits; arrange numbers consistently by decimal points; use the same number of decimal points for the same

types of numbers; center headings, columns, and numbers correctly; and incorporate any source notes when required. Consistency of fonts, capitalization, and abbreviations in graphs throughout the paper is required, and all axes and lines in graphs must be labeled in a consistent and coherent manner. Paste all graphs into Word documents as objects, and not as images, allowing access to the original graph. Please supply source materials for graphs such as Excel files.

Equations - Please present equations on separate lines. All equations must be aligned with the paragraph indents, but not followed by any punctuation. Use Arabic numerals at the right-hand margin to number equations consecutively throughout the article. Use brackets to indicate all operation signs, Greek letters, or other such notations that may be ambiguous.

Reference Citations - In-text citations of authors and works must be represented as: Smith (2000). Use parenthesis for the year, not brackets. Similarly, references within parentheses must be represented as: "(see also Smith, 2000)."

References List - A reference is a source that is actually cited in the text. Please formally list only articles previously cited, using a separate alphabetical references list at the end of the article.

Author Guidelines - PRMIA categorically values literary excellence in selecting articles for publication. To enhance clarity and coherence, we urge the use of simple sentences comprising of a minimal number of syllables per word.

Please follow these recommendations in the interests of meeting PRMIA's publication standards, and to accelerate both the evaluation and editorial process. The review process will take up to 4-8 weeks. The author will receive articles due for revision, as well as those while accepted, departs in large part from these guidelines.

Finally, PRMIA reserves the right to return to an author for reformatting purposes, any article, which is accepted for publication that deviates from the aforementioned standards. The editors always reserve the right to make further changes to your work for consistency and coherence.



INTELLIGENT RISK

knowledge for the PRMIA community

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