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Intelligent risk

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IN THIS ISSUE

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INTRODUCTION

Welcome to the first issue of *Intelligent Risk*, bringing all PRMIA members free access to knowledge and information about risk management for financial institutions as well as current information on PRMIA chapters, committees, academic partners, news and events. Intelligent Risk is an important part of PRMIA's effort to explore and understand the capabilities and challenges of risk management as a profession and a discipline.

The global financial crisis highlighted risk management shortcomings as well as its importance. There is much to learn, analyse and discuss if we hope to play a leadership role. At the same time, effective communication continues to be a particular challenge in risk management. Too many caveats, conditions and assumptions and we lose our impact and effectiveness along with our audience; too few and we undermine the integrity and utility of the message. Articles in this issue illustrate the value of exploring this tension honestly and with an open mind.

We open *Intelligent Risk* with an important letter from the Chair of the Board that brings readers up-to-date with recent and forthcoming changes at PRMIA. This issue also introduces a new regular section called Visions of Risk, edited by one of our most active and well-known founders, Bob Mark. *Visions of Risk* will provide insights from some of the most eloquent speakers and respected writers in financial risk management today.

Each issue of *Intelligent Risk* will also feature one of our *Academic Partners*. Working closely with leading universities and business schools, PRMIA develops a range of learning opportunities for every stage of a risk manager's career. Through our global academic partner network we offer accreditation, examination training, scholarships, research, and development programs in finance and risk management.

What's on the Web (or WoW! As we call it) is a compendium of recent articles and resources that we think you will find useful. It is designed as a "living" section so we invite members to share the most relevant, thought-provoking and well-written articles on financial risk management, governance, policy and regulation. We also encourage feedback on the sites and resources mentioned in our features and welcome additional recommendations.

PRMIA has over 60 chapters holding regular meetings for discussion, networking and career advice as well as major sponsored events. In each issue *Chapter Report* highlights the activities of a different chapter. Regional directors interested in submitting a profile of their chapter should contact Katie Gittins at katie.gittins@prmia.org. Also, please let us know well in advance of any forthcoming major events in your chapter so we can publicize it in *Intelligent Risk*.

Following our regular sections are the latest PRMIA news, details of training opportunities, profiles of our leaders and details of our committees. A huge volunteer effort by the executive, the board, regional directors and the committee members provides PRMIA members a vibrant global network of opportunities, events and activities. We look forward to profiling many of them in *Intelligent Risk*.

MICHAEL H. MARTIN, Editor
michael.martin@centuryrisk.com

Michael H. Martin is a sustaining member of PRMIA, a senior examiner for Office of Comptroller of Currency and founder of a management consulting firm. He has written on business and risk management for Fortune, BNet and other publications. The views expressed do not necessarily represent those of the OCC.

PRMIA

PRMIA has over 60 chapters and more than 70,000 members worldwide. We are a not-for-profit member-led association, founded in 2002 by a large group of leading risk professionals and academics – some are profiled on page 20. We are dedicated to the free exchange of ideas aimed at advancing the standards of the risk management profession. Our certifications are taken in over 90 countries. www.prmia.org

LETTER TO PRMIA MEMBERS

PRMIA has recently undergone some significant management changes. As a result the new Board has been working hard to build new strategies and business models to support our vision to become the premier association for risk managers in financial institutions.

The new structure of our organization will be revealed over the coming months: several new volunteer committees governing such things as Ethics, Events, IT and Communications are now operating and new staff members are being appointed to support them. We are also improving the business and management of our Chapters, so that in future we can provide better centralised support to our members at the grass-roots level.

We currently employ more than a dozen talented, committed and very hard-working professional staff in the Northfield office, now led by Jodi Lundell, and this number will soon be increasing. Jodi was originally hired in 2005 as our Director of Training, and due to her leadership the whole area of training operations has been highly successful. Her skills have always been hugely valued by the board, so we are delighted to have promoted her to Chief Operating Officer at the start of this year.

> "PRMIA has been and always will be a locally-oriented association … led by the needs of our individual members."

PRMIA has been and always will be a locally-oriented association. Under our new management the Regional Directors and their chapters will again be playing a dominant role in building and sustaining our global organization. We should be led by the needs of our individual members, with an emphasis on local activities rather than on centralised products rolled out in an institutional framework.

Reciprocally, PRMIA members are valued for their dedication to raising standards in the risk management profession. Our association is not here just for the self-advancement of individuals – we share a common belief that our profession requires a higher standard of qualifications, akin to those of medical doctors and lawyers – and that risk managers should not be regarded as second class citizens just because risk management is not a budget centre.

So, you may well ask: how can you play your part in the changing risk landscape?If you like what you read in *Intelligent Risk*, pass it on – post it on forums and email it to friends. You have the authors emails – so why not respond?

> "PRMIA members are valued for their dedication to raising standards in the risk management profession."

If you are not yet a sustaining member, consider all the benefits of engaging – free webinars, free e-access to the Journal of Risk Management in Financial Institutions, and many other tools for your education and advancement in the profession.

Numerous opportunities for career growth, networking and keeping pace with changes in risk governance and risk management are available, and your Regional Directors stand ready to assist you in your career ambitions. If you are not already attending local Chapter meetings, find out what's on and attend them – introduce yourself to the Chapter Directors, Steering Committee and other like-minded individuals. All these things will help PRMIA grow into the association that the global financial risk management community needs.

Thanks to the untiring efforts of all our staff and volunteers, PRMIA has never looked in better shape than it does today. But we still have a long way to go before our vision becomes reality. I really hope that you will be inspired to help us, and yourselves, along the way.

PROFESSOR CAROL ALEXANDER, Chair of the Board
chair@prmia.org

A STRESS TESTING PERSPECTIVE
Insights on risk management to the global risk community

MICHEL CROUHY, DAN GALAI, ROBERT MARK

The financial crisis has highlighted a number of shortcomings in risk management. Models are powerful tools but necessarily involve simplifications. Risk metrics, models and ratings are not ends in themselves and must not become obstacles to risk identification. Expert judgment and critical analysis are always necessary. Overall, the risk control/risk management function must be more transparent about limitations of risk metrics and models in practice, and find ways to improve their capabilities and effectiveness.

VaR (Value-at-Risk) has been a standard model in the banking industry since the late 1990s. It serves as a useful risk measure during normal market conditions. However, the recent crisis highlighted its limitations when liquidity dries up or large tail events occur. Such events are a common feature of financial crises and VaR, as a static model, does not adequately capture their impact. VaR analysis as commonly practiced also fails to address volatility jumps and changing correlations and misses important non-linearity in structured products such as subprime CDOs. Many VaR models focus on hypothetical mark-to-market (MtM) changes but fail to model risk related to collateral calls (e.g. on a repo transaction), credit-related downgrades, operational risk events (e.g. fraud) and so on.

Combining VaR with additional risk-measurement tools such as stress tests adds qualitative judgement to quantitative rigour. Exposures in trending markets over multi-year time periods (e.g. during bubbles) and instruments with non-linear price movements (e.g. exotic derivatives) are not easily captured by the traditional VaR model (e.g. a dramatic jump in an implied volatility surface for an exotic option). Stress and scenario analyses complement VaR by assessing losses that result from unlikely but realistic market conditions.[1] Stress tests and worst case scenarios should include business cycle stresses as well as event specific "tail risks." For example, markets with low historical volatility may experience large discrete movements reflecting the intersection of market risk, trading liquidity risk and credit risk for corporate bonds. Risks related to account concentration, correlation, and liquidity must be considered, as should on- and off-balance sheet assets and liabilities.

Of course, pricing risk in stress markets is not easy. Stress testing margin calls for a levered hedge fund, for example, requires significant information about where the firm is "today" as well as where it could be at any point in the future. Liquidity risk can also be difficult to measure. *Funding liquidity risk* describes potential challenges to meeting collateral and margin calls, difficulty accessing capital markets, or not being able to tap other financing sources when funds are required. *Trading liquidity risk* means not being able to exit a trading position within a desired period of time, or only at a firesale price. Metrics such as cash-flow-

[1] Scenario analysis involves a holistic approach in which all the risk factors are assumed to change simultaneously according to a specific market event, characterized as extreme but plausible and relevant. Stress analysis usually refers to techniques in which only one factor or parameter is changed, maintaining the others unchanged. See, e.g., Crouhy M., D. Galai and R. Mark, 2006, *The Essentials of Risk Management*, McGraw Hill, pp.173-179; Rowe D., 2006, From VaR to Stress Testing, Risk Magazine, December; Schachter B., 2010, Stress Testing and Scenario Analysis, *The Encyclopedia of Quantitative Finance*. and Ray, C. *Extreme Risk Management,* McGraw-Hill, *2010*

at-risk (CFaR) and liquidity-at-risk (LaR), while not perfect, can help capture the amount of liquidity risk in adverse markets.

Superior stress testing establishes an integrated view of risk that stresses components on an individual as well as an aggregate basis, while modeling extreme events in significant detail. Effective scenario analysis takes into account events unfolding over time, for example a quarter of limited liquidity during which it becomes impossible to hedge positions in a timely manner. They also require context. How would (did) a hypothetical (historical) stress test event unfold over time? (This can be as important as the final outcome.)

Forward-looking stress and scenario tests must specify length, speed and magnitudes of events and describe the dynamics between transactions (e.g. unstable correlations that move towards one or minus one in stressed markets).

Scenarios must also address correlations between risk factors and distinguish between static and dynamic scenarios, i.e., one-period vs. multi-period frameworks. While trading liquidity risk rarely factors into traditional VaR analysis, a multi-period framework can incorporate hedging strategies to protect against losses in illiquid markets over time and incorporate management intervention as part of the picture. Well-developed, they form an integral part of the management culture in a way that has meaningful impact on business decisions.

> "We believe it makes sense to incorporate integrated stress test results into setting risk appetite. However, it remains an open question whether it is wise to use stress tests to determine economic capital and regulatory capital... These new rules to derive regulatory capital could lead to the absurd situation where the amount of regulatory capital is greater than the exposure of the portfolio. To the extent that determining capital levels is a function of the desired confidence interval to protect the institution against default, incorporating stress testing considerations appears to muddy the waters."

Importantly, since individual firms strengths and weaknesses are different, there is no "one size fits all" approach to stress testing. Scenarios must be "severe" but "plausible" for *that* firm. Effective stress tests should highlight specific weaknesses and surface "hot spots" visible under extreme conditions. Worst-case scenarios must measure "knock-on" risks like the unexpected write-downs and collateral calls that devastated AIG, which had to post about $50 billion in collateral to offset drops of more than $400 billion in the value of securities it insured.[2] Most importantly, stress testing needs to be part of a dialogue between senior management and the risk function about the most relevant stresses, scenarios and potential impacts.

Management response is a critical component to risk modeling as well. A stress test committee that collects practical views from risk takers and managers should identify *"warning signals"* to be incorporated into governance responsibilities and reports. The stress test committee should also determine the required feedback such as who acts on the results of the stress test and the appropriate follow up with the risk takers in case of any violations of limits (e.g. exceeding either soft stress test limits or hard stress test limits). Additional activities include developing *"contingency action plans"* to deal with catastrophic situations in advance, including written plans that connect plans to the procedures established to set stress limits. Ultimately, stress test limits

[2] Reportedly, no scenario was run at AIG that considered the impact of a sharp drop in housing prices on collateral calls and write-downs. See Wall Street Journal Europe, November 3, 2008.

should be approved by the board based on the risk appetite of the firm. Methodologies and policies must be appropriately consistent across multiple factors and business units.

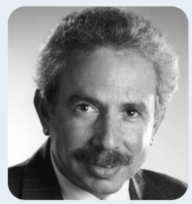
We believe it makes sense to incorporate integrated stress test results into setting risk appetite. However, it remains an open question whether it is wise to use stress tests to determine economic capital and regulatory capital. Capital required based on the VaR approach was typically a function of a desired credit risk rating (e.g., a AA institution has a 4 to 6 bp probability to default within the next 12 months). Basel II regulatory calculations did not originally account for stress tests either. Now, following the financial crisis of 2007-2009, regulators require banks to add "Stress VaR" as part of regulatory capital calculation.[3] These new rules to derive regulatory capital could lead to the absurd situation where the amount of regulatory capital is greater than the exposure of the portfolio.[4] To the extent that determining capital levels is a function of the desired confidence interval to protect the institution against default, incorporating stress testing considerations appears to muddy the waters.

We welcome your views on the role stress testing should play when determining the economic capital and regulatory capital.

ABOUT THE AUTHORS

Dr. Michel Crouhy is the Head of Research and Development at NATIXIS French Investment Bank. michel.crouhy@natixis.com

Dr. Dan Galai is the Abe Gray Professor of Finance and Business Administration at the School of Business Administration, the Hebrew University in Jerusalem. Currently he is the Dean of the School. He is currently the Co-Regional Director of the PRMIA Israel chapter. dan@sigma-pcm.co.il



Dr. Robert Mark is the Managing Partner and Chief Executive Officer, Black Diamond Risk. He is a PRMIA Board member; Treasurer of the Executive Committee; and Chair of the PRMIA Finance committee. bobmark@blackdiamondrisk.com

The authors of this article wrote the *Essentials of Financial Risk Management* (McGraw-Hill, 2006) — the best-seller that is adopted as the sole course text for our Associate PRM certificate. All of the authors are founding members of PRMIA.

[3] Revisions to the Basel II market risk framework, July 2009

[4] The new rules to calculate the amount of regulatory capital in the trading book can be summarized by the formula:

$$\text{Capital} = \max\{(\text{VaR}, 3^*(\text{average VaR over 60 days})\} + \max\{\text{StressVaR}, 3^*(\text{average StressVaR over 60 days})\} + \text{IRC}$$

where VaR is measured at the 99% confidence level over a 10 day period, StressVaR is computed using data from a stressful period such as 2007-2008, and IRC (incremental risk charge) is the CreditVaR over a one-year period at the 99.9% confidence level.

Assume for illustrative purpose that volatility under stressed market conditions is 3 times volatility in a normal market environment and returns are normally distributed, so that StressVaR is 3 times NormalVaR, neglecting IRC for the purpose of the exercise.

Now suppose that the portfolio has an annualized volatility in normal market conditions of 10%. Then, over 10 days, the standard deviation is 2%. The 10-day standard deviation in stress conditions is thus 6%, according to our (not unreasonable) assumption. The sum of these, i.e. 8%, must be multiplied by the 99% standard normal critical value of 2.33, and then by a multiplier of at least 3. Assuming a green zone model, i.e. a multiplier of 3, regulatory capital under the new rules (and ignoring the IRC) is $2.33 \times 3 \times 8\% = 56\%$ of the portfolio exposure.

Note that under our simple, but illustrative, assumptions the new regulatory capital charge will always be 4 times the capital charge without the stressed component. For instance, with a well-diversified and partially hedged portfolio, having an annualized volatility of 5% and an old regulatory capital of 7% of the exposure, the new charge will be 28%. But with a partially diversified and lightly hedged portfolio having normal volatility 15% and a stress volatility of 60%, the new rules lead to a capital charge of 105% of the size of the portfolio, which, if the positions are long, is higher than the maximum loss that could be incurred on this portfolio.

THE CHANGING RISK LANDSCAPE

CAROL ALEXANDER

Risk management now lies at the centre of the greatest economic change since the industrial revolution. As the balance of power moves from Europe and North America towards the east, members of our truly global association should take stock. This article suggests some radical reforms to risk management culture and legislation aimed at stabilizing the global economy.

In the face of public outcry Goldman just announced that pay, perks and bonuses in 2010 totalled almost $15bn – that's more than the annual GDP of Iceland or of most Central Asian and African countries![1] Last year Goldman's senior executives we paid about a thousand times more than the average US wage. Even bailed-out AIG now has bonuses topping $100m. Ex London trader Joseph Cassano, reported to be responsible for $500bn of AIG losses, received $280m in salary and bonuses over eight years and $1m a month afterwards in consulting fees.

The culture of greed and the stark failure of banks to protect client's money without government intervention during the credit and banking crises should spur great changes in law, regulation and the risk management of financial institutions. To prevent a crisis of similar or even greater proportions, governments and financial institutions must learn from their mistakes and modify their behaviour. What follows is a purely personal perspective on the recent crisis and the ways we need to reform financial risk management.

CAUSES OF THE CRISIS

With encouragement from the press, public opinion has placed the blame for the crisis squarely on the shoulders of bankers. At bonus time in 2009 the UK employees of Goldman Sachs were advised against carrying identifying luggage and warned not to walk alone in dark places. A senior British politician referred to bankers *"…as spivs and gamblers, who did more harm to the British economy than Bob Crow (a union leader) could achieve in his wildest Trotskyite fantasies, while paying themselves outrageous bonuses underwritten by the taxpayer. There is much public anger about banks and it is well deserved!"*

This statement cleverly deflects attention from political decisions that precipitated the events of 2007–8. The repeal of the Glass-Steagall Act separating commercial and investment banking activities granted commercial banks the licence to join the "spivs and gamblers" in the casino. Poorly conceived public policy on housing in the US and global loose monetary policies coupled with a credit-creating spending spree enabled the shadow system to exploit mispriced credit risk to book immediate gains and pocket huge bonuses. Finally, Alan Greenspan's low interest rate policy deprived commercial banks of historically profitable loan business for an extended period, prompting banks to respond by pursuing the most lucrative alternative revenue sources available. In this light, commercial banks were understandably following one of the fundamental rules of competition – survival of the fittest!

REGULATION

The *Turner Review*, the UK regulatory response to the banking crisis, recommended revision and re-structuring of the business models and strategies by boards and senior management at banks. The review highlighted two serious faults in risk management: the misguided application and unwarranted faith in statistical risk models and an inappropriate focus on

[1] See http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)

detailed risk calculations. In contrast, the Basel Committee takes a more introspective, "bottom up" approach.

The July 2009 Revisions to the Basel II Market Risk Framework is characterized by "navel gazing," stuffed with proposals for detailed measurement and calls for more regulatory capital to cover previously ignored risks.

Developing additional models and measuring minutiae to compute "incremental" risk charges for valuation model risk, stressed VaR and so forth should boost the risk management profession. The demand for better qualified risk analysts and new risk assessment software will surely increase. Under the Basel proposals, however, regulatory capital would be greatly increased for the same amount of risk. As a result, new and innovative products with high risk and high returns will be discouraged. Commercial banks may have to fall back on their traditional loan business. If this trend takes hold, the risk management industry as we know it may well contract.

"We may even consider laws requiring the individuals who extract the most capital from a bank to be held *personally* accountable for extraordinary losses. It is morally right that those who are paid massively when times are good should also be held personally accountable when times are bad."

I am not in favour of the Basel recommendations because no amount of regulatory capital could cover the losses created by the banking crisis. Inadequate risk models were a contributory factor, but they were not the cause. Although plans to reform risk management regulation are welcome and overdue, the buck stops with the economic decision makers, including regulators. Standards within the regulators have been, on the whole, very low for a very long time. Regulatory requests for policy backing to impose more risk-based and intrusive supervision in this context are misguided.[2]

"FAT CATS"

A better approach starts with the business models and strategies of bank management. We must focus on individuals and the structures that enable them to pay themselves huge bonuses when times are good without placing their gains at risk if their decisions have disastrous long-term consequences.

In practice, the skills these people have are not so wonderful or rare that their salaries and bonuses can be morally justified. But huge payments to these individuals are not a problem economically. Income tax pays for public services and high salaries boost consumer demand via the Keynesian multiplier effect. In fact, greed can and should be used as a tool for improving the risk landscape.

Rather than naively increasing the powers of regulators, new laws should encourage senior executives to limit risks and prevent them from funding huge losses with taxpayer money.[3] Salary and bonuses should be linked to long-term (5+ year) performance. We may even consider laws requiring the individuals who extract the most capital from a bank to be held personally accountable for extraordinary losses.[4] It is morally right that those who are paid massively when times are good should also be held personally accountable when times are bad.

Establishing and maintaining higher standards in financial risk management will require boards to reform their strategies, and executives to reform their business models in ways that provide strong incentives to improve internal risk management practices.

[2] See also http://www.dmrra.com/publications/Risk%20Magazine/201012%20Regulators%20Double%20Down.pdf

[3] For example, see Title IX Subtitle E of the new Dodd-Frank Act

[4] With exemption if the governance, decision processes, policies, controls and limits are built and executed on solid foundations.

AGENDA FOR REFORM

Certain changes to corporate governance and risk governance would improve the culture and practice of risk management in financial institutions.

- Including representatives of bondholders into corporate governance when equity reaches a dangerously low level would introduce an element of prudence that is currently lacking. Bank shareholders need not concern themselves with losses beyond their investment since losses beyond that point are borne by bondholders. Exceptionally risky decisions may seriously affect bondholders' wealth, yet under our present standards the board answers only to shareholders;

- The risk contribution of each activity to the aggregate, enterprise-wide risk should be considered by the board and senior executives, who should have both the knowledge and the incentive to limit risks. Distributed risk governance should be based on a trade-offs, such as a cost of economic capital, without explicit and strict adherence to risk limits at all times. Activities that contribute greater return on capital can expand and those that under-perform are starved of capital. It is essential, however, that activities should not be considered in isolation.

Most large banks employ few senior executives and even fewer board members who sufficiently understand risk. Perhaps financial risk management was not a discipline when they were younger. Although it may take a generation or more, I believe that the board and executives of most banks will eventually be drawn from a field of highly-qualified risk analysts and managers who mastered their profession in their youth.

We also need a catalyst in the educational system supporting risk management. We no longer rely on quacks and apothecaries for our physical health.[5] But we trust the health of the global economy to unqualified practitioners without demanding entry requirements, rigorous examination or lengthy training. Other professionals such as lawyers, engineers, university professors and architects have formal standards that are abjectly absent for risk management professionals.

Of course, creating an incentive for educational reform by holding those in authority to account is only the first step on a long, arduous journey. Higher standards cannot be achieved through internal graduate training programmes designed to meet only the interests of the institutions. Individuals in professional and academic communities working towards altruistic goals and higher global standards must take the lead on reform in risk management education.

RISK MANAGEMENT AND ANALYSIS

The richness and depth of the subject matter attracted me to risk analysis and, later, to risk management. Initially a mathematician, my current academic interests lie mainly in developing better pricing and risk models, improving the accuracy of hedging and establishing proper risk assessment methodologies.[6] Now, more than twenty years on, I confess that I am dismayed by the

> "We no longer rely on quacks and apothecaries for our physical health. But we trust the health of the global economy to unqualified practitioners without demanding entry requirements, rigorous examination or lengthy training."

[5] On this point, a humorous, simplistic but slightly alarming summary of the strategy of the US Federal Reserve is accessible on http://www.youtube.com/watch?v=PTUY16CkS-k

[6] A good risk manager will know when to rely on such models; the better they are, the more they can be relied upon.

progress of our profession. Because the middle office is not a profit centre, risk managers and analysts are regarded as second class citizens – often even by themselves. The title "Analyst" carries less prestige than Manager – already one step down from "Associate"!

This has to change. Both risk managers and risk analysts have a critical role in the new risk landscape. The position and status of a senior risk analyst should be akin to that of consultant surgeon, granted only to professionals holding a suite of prestigious qualifications. All risk analysts in banks, asset management and insurance companies should have several years of specialist university education, with rigorous and demanding public examinations, followed by apprenticeship with accredited institutions. Senior risk analysts require the financial knowledge to understand the pricing and hedging of complex financial instruments, plus the statistical know-how to assess the risks taken by the traders, portfolio managers and those on the sell side. They must also understand the limits of formal risk assessment models and know when to look beyond the results of models and take action based on structural trends the models miss.

Consider the role of the Chief Risk Officer. Just as the chief registrar in a hospital requires skills different from those of a heart surgeon, a Chief Risk Officer does not need the detailed quantitative and financial knowledge of his senior analysts, although this would certainly help communication. Strong CROs must be independent and capable of looking beyond risk models to ponder business and systematic risks beyond the reach of data driven statistical analysis provided to them. As David Koenig points out in his commended article for the M-prize,[7] a successful CRO requires excellent communication skills. Internal lines of communication are easily distorted in complex, hierarchical organizations. Risk appetite and business strategy necessarily reside at board level. Unfortunately, by the time decisions reach the risk originators the message can change substantially. Similarly, when issues arise with traders and other risk originators, by the time information reaches senior management it may be too late to act.

One possible way to increase the status of risk managers is to give CROs the duty to sign-off on risk reports. Furthermore, when risk analysts are as highly qualified as lawyers, they should be as well-resourced and well-paid as the legal team.

I hope that suitable professional qualifications for risk managers and risk analysts will soon become a legal requirement. There are several international risk management associations, each with its own set of risk management levels, requirements and certificates. None of these can yet attest to the higher standards to which we must aspire to achieve global financial stability.

ABOUT THE AUTHOR

Professor Carol Alexander is Chair of Risk Management at the ICMA Centre, Henley Business School at Reading and Chair of the Board of PRMIA. She was also Chair of our Academic Advisory Council from 2002 and with Elizabeth Sheedy she conceived and edited PRMIA's *Professional Risk Managers Handbook*. Click here for more information on purchasing the book.

Many thanks for editorial review by Michael Martin and for useful comments on early drafts from David R. Koenig, co-founder of PRMIA; David Rowe, an ex-board member who is continuing his voluntary activities for PRMIA as a member of the finance and education committees, and as Chair of the Training sub-committee; and Tom Day, Vice-Chair of the Board of PRMIA.

[7] See http://www.managementexchange.com/hack/risk-capital-commons-distributive-and-networked-governance

RISK MANAGEMENT UNDER BASEL III
Technological challenges

GEORGE MUTEMA

The recent financial crisis exposed serious weaknesses and in some cases outright failures in risk measurement and management practices. As the global economy slowly recovers, banks' risk appetite will increase in search of higher returns, and this will put immense pressure on the risk departments to keep up their vigilance.

In response to the crisis, and foreshadowing the new Basel III regulatory reforms, banks are considering whether to invest in data and technological infrastructure in order to have a holistic approach to risk management. However, as the economy recovers, the biggest danger is complacency. There will be the temptation to scale back or postpone IT projects, but the crisis has shown that investment in risk systems and resources needs to keep pace with business development.

The new Basel III regulations are aimed at ensuring that banks are able to accurately measure their risk exposures under stressed situations and they have sufficient capital to ensure their survival. The implied message from the regulators is that banks need to be prepared for the next financial crisis. The supervision of banks is likely to become more intrusive, with regulators and senior management asking for more frequent risk reporting and this may yet demand greater investment in risk systems and resources.

RISK REPORTING

The "whole firm" view of risk being demanded by regulators and senior management will place a heavy demand on data and technological infrastructure. Banks will have to produce reliable and on-demand reports but this will be a challenge as most risk managers are frustrated by issues such as data quality, multiple data stores and unreliable infrastructure. This is often the result of continued reliance on unintegrated legacy systems, as the cost of replacement with more modern, fast and powerful technology is deemed too high. As most banks do not have robust systems in place to meet these demands, it is inevitable that the risk management budget will have to increase. Having a system that can more accurately measure regulatory exposures will become a competitive advantage.

A HOLISTIC APPROACH

A key weakness emerging out of the financial crisis was the lack of "enterprise risk management" which involves the integrated measurement and management of all relevant risks. The crisis revealed the extent of the interaction between market and credit risk. There has been a lack of ownership for traded credit risk, with market risk departments thinking them to be primarily credit risk instruments, and the credit risk department regarding them as market risk as they sat in the trading book. One of the proposals to overcome this issue is for banks to calculate and manage CVA (credit valuation adjustment). The calculation and attribution of CVA is highly complex and will need systems that can perform quick and accurate calculations (pre-deal) and assist traders in correctly pricing risk and maximising profit.

However, there are challenges in trying to fully integrate market and credit risk. Market risk information such as interest rate curves is easily available and can be applied by all market participants.

Credit risk information, on the other hand, is more difficult to obtain, less reliable and often institution-specific. Another obstacle is reconciling the different time horizons over which the risks are measured. Credit risk horizons are typically long-term whilst market risk horizons are very short term.

SHORTCOMINGS OF VAR

It is widely accepted that VaR is less reliable in abnormal market conditions – arguably the time when reliable risk measurement matters most. Current VaR models typically do not capture migration and default risk hence they underestimate potential losses on credit related products. The incremental risk charge (IRC) and stressed VaR (SVaR) are meant to supplement VaR in measuring traded market risk.

The financial crisis has also highlighted the importance of stress testing in supplementing VaR calculations. Traditional stress testing has been done on a stand-alone basis and the results evaluated side-by-side with VaR estimates. The challenge now is on how to integrate stress testing into the formal risk modelling so that risk managers can have a single, integrated set of risk estimates to work with. Regulators are also encouraging banks to perform reverse stress tests, which identify the risks that would lead an institution to fail. Systems will have to be able to aggregate data in a timely way and cope with the many simulations generated to enable stress testing across the entire business.

The 'new norm' is that banks will be operating in a highly regulated environment characterised by intrusive supervision. Investment in systems that are fast, powerful and can accurately measure regulatory exposures will be an advantage. Regulators and senior management will be demanding transparency and reliability in risk reporting.

ABOUT THE AUTHOR

George Mutema is a Senior Business Analyst-Market Risk with SunGard Adaptiv.

MACQUARIE UNIVERSITY

ELIZABETH SHEEDY

BACKGROUND

The Master of Applied Finance (MAF) program offered by Macquarie was one of the first degree programs accredited by PRMIA. The MAF is a specialist finance degree but (unlike many quantitative finance programs in North America and Europe) it does not specifically target the mathematically gifted. Students select from specialisations in Risk Management, Investments, Corporate Finance and Instruments/Valuation. Students specialising in Risk Management choose from electives such as Credit Portfolio Management, Modelling Market Risk, Managing Operational Risk, Derivatives Valuation, Debt Capital Markets, Exotic Options, Ethical Risk in Finance, Balance Sheet Management, Risk and Portfolio Construction and Swap Book Management. In 2010, 278 graduates completed the program in four teaching centres: Beijing, Melbourne, Singapore and Sydney.

RESPONDING TO RECENT EVENTS

The global financial crisis caused all participants in the finance industry to re-examine themselves; Macquarie, as an educator of finance professionals, is no exception. Over the last few years we have reflected on what we can do differently or better to prepare our graduates for the realities of risk management in the workplace. What useful input can we provide to the industry more generally?

The MAF has always had a compulsory unit called Financial Risk Management. Our commitment to maintaining this requirement is even stronger in light of recent events. Too often risk management has been viewed as the job for 'quants' or the responsibility of a specialized risk management team. A robust risk culture means that everyone in an organisation has both risk knowledge and a commitment to risk management.

We have, however, changed the structure of this unit. We cover fewer topics in greater depth. Superficial knowledge of risk models can be incredibly dangerous by creating a false sense of security. We aim for deep knowledge, with opportunities in the curriculum for critical analysis and application of quantitative models. We expect students to reflect on crucial assumptions underlying the models and how they might be violated in the real world. The syllabus includes not only quantitative risk models (credit and market), but also risk governance, incentive schemes and behavioural finance. Our graduates leave us with a rounded perspective on risk; generally models are not the core problem in a risk management disaster but rather the people (mis)using them due to ignorance, incentive conflicts and behavioural biases.

Some technical courses (e.g. Modelling Market Risk) incorporate an increased emphasis on communicating technical concepts to a non-technical audience. This helps create more understanding between 'quants' and their non-technical colleagues in the workplace.

RESEARCH AT MACQUARIE

A striking feature of the finance industry in Australia is the lack of dialogue with academics. For most practitioners, the typical research paper is completely inaccessible and therefore mystifying. At Macquarie we believe practitioners benefit from greater awareness of the research literature and that research is more relevant and useful when researchers are better attuned to industry issues.

In 2010 we experimented with initiatives designed to address these problems. We hold an irregular series of free lunchtime "Finance Professionals" seminars in CBD premises. One example was a seminar given by Associate Professor Elizabeth Sheedy. The seminar examined recent papers published in the area of liquidity risk and discussed their implications for risk managers. The seminar was given in both Sydney and Singapore and attracted large crowds in both locations. There is enormous interest from practitioners in the latest research findings provided they are presented in a manner that is accessible and if the research is related to their day-to-day work.

ABOUT THE AUTHOR

Elizabeth Sheedy is Associate Professor, Macquarie Applied Finance Centre, Macquarie University, member of the PRMIA Education Committee and the Chair of the Academic Partnership Subcommittee

REGULATORY POLICY AND FINANCIAL REFORM (#RPFR)

THOMAS DAY

In this day and age it is critical to have access to the right information, at the right time and in sufficiently summarized form. Maximize the signal-to-noise ratio, as they say.

This feature is about the global regulatory reform agenda. With the financial landscape changing at such a rapid pace it is virtually impossible to keep up with the pronouncements, official papers, and new ideas being generated. Whether the issue is stress-testing, over-the-counter (OTC) derivatives, remuneration practices, risk-adjusted performance measurement, or the need for more and better quality capital, the barrage of issues seems unyielding. Below are some of the links we have found to be particularly useful on Regulatory Policy and Financial Reform. We hope you find these sites useful, and we look forward to hearing from you on other sites that might be profiled in our next installment of WoW!

UNITED STATE SENATE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS
http://bit.ly/DC_SBC

Rating: ★★★★

One of the most important committees in the United States is the Senate Banking Committee (SBC). With the retirement of Senator Chris Dodd, a democrat, the committee leadership passes to Senator Tim Johnson (D-South Dakota) and the Ranking Member remains the same, Richard Shelby (R-Alabama). The tone and agenda of the SBC is important given that the House of Representatives (House) has seen its leadership changed from Democrat to Republican. With this House change, it is expected that the Grand Old Party (GOP, that is "Republicans") will seek to overturn elements of the Dodd-Frank Act (DFA) that are seen to be particularly troubling to the industry, including the OTC reforms and the establishment of the Consumer Financial Protection Bureau (CFPB). This link is also quite useful in that it hosts some good videos that, if for no other reason, are usually entertaining to watch.

THE FINANCIAL SERVICES AUTHORITY (FSA)
http://bit.ly/FSA_UK

Rating: ★★★

The United Kingdom's Financial Services Authority (FSA) has been one of the most active and thought-provoking regulators over the recent period of turbulence. While seemingly more rules-based than its United States brethren, the FSA is often at the forefront of regulatory change and proposals. Its website is rich in content with useful elements of prudential regulatory guidance. For example, the "handbook" section of the site provides useful guides to various business models and its FSA library populated with content on emerging and current topics that often supplement pronounce-ments from the Basel Committee on Banking Supervision (BCBS) and other macro-prudential policy-making bodies. The site has a lot of useful information but its overall friendliness is not ideal, its search capabilities could be enhanced and its "social networking" capabilities improved.

DEFAULTRISK.COM, THE WEB'S BIGGEST CREDIT RISK MODELING RESOURCE
http://bit.ly/defaultrisk

Rating: ★★★★★

This site isn't a direct link to a regulation or policy site. However, many of the research documents here relate to the models contained within the Basel 2 and Basel 3 Pillar 2 aspects of the BCBS Capital Accords. Full of article after article on credit risk modeling, loss estimation, correlation modeling, and other technical articles, this is a site that must be visited at least once per week. The site has been recognized time and again for pulling together great papers and its "Top Ten" section is definitely worth reviewing.

CENTRAL BANKERS' SPEECHES: THE LAST 3-MONTHS
http://bit.ly/BCBS_speeches

Rating: ★★★★

While not necessarily the best bed-time reading, what is being said by central banks the world over is of critical importance to risk managers. Keeping up with the nuances and policy innuendo in the speeches collected by the BCBS is of utmost importance and, believe it or not, can often be inspiring. It is not uncommon for us to read through some of these speeches and, based on the time that staff have spent preparing the banker's remarks, it is inevitable that the ideas and thinking contained in the material is not only timely but informative, often steeped with new insights and elegant anecdotes, and thought-provoking in ways that elevate your risk-management "game" to a new level. We encourage all risk departments and managers to be aware of these speeches and, if you don't mind the increased volume in your e-mail, we recommend that you subscribe to their RSS feed or the e-mail "push" service that will put updated speeches right into your in-box every day. We might also drop in the Federal Reserve's own link to its testimony and speeches at: http://bit.ly/FRB_speeches and the BCBS's publications and research archive at: http://bit.ly/BCBS_research

DODD-FRANK REGULATORY REFORM RULES
http://bit.ly/RegReform

Rating: ★★★★★

This is, literally, your one-stop shop for all the rules being promulgated underneath the U.S. DFA. Like DefaultRisk.com, it is worthwhile reading WoW just for this one link alone! Many thanks to the St. Louis Federal Reserve for pulling this excellent utility together. The site lists all rules that are open for comment, proposed, and final rules. When you combine this site with the ABA's Dodd-Frank Tracker (see: http://bit.ly/ABA_DFT), you become an unstoppable machine of knowledge, understanding, and policy and regulatory power! The http://bit.ly/SIFMA_DFA site also is worth exploring.

If you would like to "tweet" your views on an existing feature please do so in your tweets @PRMIA, and remember to add the hash-tag # for indexing purposes (a group's name is given in brackets after the title of the feature, eg. hash RFPR). Alternatively, or in combination, you can also post your views through our LinkedIn site at http://linked.in/PRMIA_Global

ABOUT THE AUTHOR

Thomas Day is the Managing Director of Risk Solutions and Policy, SunGard Ambit. He is a PRMIA Board member; Vice Chair of the Executive Committee; Regional Director of the PRMIA Washington DC Chapter; Advisory member of the Atlanta Steering Committee; and member of the PRMIA training committee. dc@prmia.org

HONG KONG CHAPTER

The People's Republic of China is preparing to take centre stage in the global economy. According to IMF forecasts GDP will almost double over the next 5 years and the Yuan will take its place along with Dollar, Euro, Sterling and Yen in the currency basket. One of the many foundations for this growth has been the standard of higher education from the west, with Chinese students in top-ranked Finance or Economics Masters courses all over Europe and the USA.

As financial market liberalization follows a decade of banking reform the People's Republic will play a key role in determining the health of the global economy. Destabilization of financial markets is the greatest threat and professional education in financial risk management is on the critical agenda. The Republic is eager to absorb more knowledge from the west and by choosing PRMIA you select the higher standard of knowledge that is your responsibility.

PRMIA currently has three chapters in China – Beijing, Hong Kong, and Shanghai. Featured below is the largest of these chapters, Hong Kong.

PRMIA HONG KONG

Led by Co-Regional Directors Bowen Lau, Principal Consultant Greater China for Oracle Financial Services Software and Simon Fung, Associate Director, Protiviti, this chapter has nearly 6000 members. Last year they hosted several events on risk governance, liquidity risk, evaluation of insurance products and other topics in risk management. They have strong relationships with leading local universities such as the University of Hong Kong and Hong Kong University of Science and Technology, partnering in many of their seminars and programs.

In 2011, the chapter aims to:

- Increase recruitment from major financial institutions and our university partners to broaden the reach of PRMIA.
- Expand the steering committee even further so that we can improve our services and increase the number of events.
- Conduct an industry-wide CRO survey with an objective to cover non-financial sectors. If this is successful, it will be continued and will expand to other regions in China.
- Hold high-level events on high-profile topics, expanding their reach of speakers and sponsors.

If you would like to find out more about our Hong Kong chapter and its activities, contact Bowen Lau or Simon Fung at hongkong@prmia.org and take a look at the Chapter's website on http://bit.ly/PRMIAHongKong

HONG KONG STEERING COMMITTEE

Tony Cheung
Director of Asia Pacific, HW Worldwide Limited

Kenneth Chu
Vice President, Kingold Group

Alexander Grawert
Partner, Oliver Wyman Financial Services

David Herratt
Consultant – Asia, Hampden Agencies Limited

Amelia Ho
Senior Manager, Manulife

Jean-Remi Lopez
Business Consultant, Sungard

Johnson Ng
Manager, PricewaterhouseCoopers

Pierre Noel
Director, KPMG

Ka Pui So
Associate Professor, The Hong Kong University of Science and Technology

Steve Tunstall
Group Risk Manager, Cathay Pacific Airways

Clement Wong
Assistant Professor, University of Hong Kong

PRMIA'S NEW EXECUTIVE

PRMIA's Regional Directors unanimously supported the nominations for the new Executive last November and the new Committee began operations on 1st December 2010. The Chair of the Board is **Carol Alexander**, Professor of Financial Risk Management at the ICMA Centre, now part of the new Henley Business School at Reading. She has been a dedicated PRMIA volunteer for almost a decade, pioneering many of our educational and academic activities through her chairmanship of the Academic Advisory Council. A mathematician by training [PhD in Algebraic Number Theory] she moved into quantitative finance during the 1990's through working and consulting for various banks, asset managers, funds and software companies. She is well known to many of our members through her public speaking and writing, including numerous books, academic papers and professional articles on quantitative finance and Risk Management, and as co-editor of our *Professional Risk Managers' Handbook*.

Vice-Chair of the Board is **Thomas Day**, the Managing Director of Risk Solutions and Policy at SunGard Ambit, where he is a key source of thought leadership and business advice for the company and its clients. Tom has over 20 years experience in banking, risk management and supervision including senior roles in the US Treasury, the OCC and the Federal Reserve. As regional director of our Washington D.C. chapter he is one of the Committee's key links with the local activities of PRMIA. Tom's energy, enthusiasm, comprehension, skills and high-level contacts combine into a potent catalyst for the changes in our organization today.

Robert Mark now moves from Vice-Chair to Treasurer. Bob is Managing Partner and CEO of Black Diamond Risk (a leading consultant firm specializing in corporate governance, risk management, risk software and compliance). Prior to founding Black Diamond, he was first Corporate Treasurer then CRO of CIBC. He has been deeply committed to and involved with PRMIA since its foundation, being one of our association's co-founders. His current role is to head our new Finance Committee. He holds a PhD in Applied Mathematics, is a well-known writer (e.g. co-author of the Essentials of Risk Management) and the founding executive director of the Financial Engineering Masters Program, UCLA Anderson School. Bob's strength, stability and broad experience are key ingredients for guiding PRMIA's management successfully towards our goals.

Our new secretary is **Oscar McCarthy, PRM**. Oscar is currently a strategic risk advisor at ABN Amro Markets. He has more than a decade of professional experience in risk management of commercial and investment banks and holds a PhD in Mathematics. As founder and Regional Director of the PRMIA Netherlands chapter (established 2007) and, prior to this, an active volunteer in the London chapter, Oscar provides another key link with our local activities. He brings the ethical consideration, thoroughness and responsibility that the governance of any global association requires to properly serve its members.

CHANGES TO PRMIA BOARD

Four new members have joined the PRMIA Board of Directors. **Thomas Day**, **Oscar McCarthy**, and **Wong Chae Sing** were voted in by PRMIA members during the recent annual election and soon after the Board named **Dominik Dersch** to replace **Geoff Kates**, who stepped down from the Board in December. We extend our gratitude to Geoff for having served as Chair of the Board for many years.

Thomas Day (representing Americas), and **Oscar McCarthy** (representing EMEA) are featured in the Executive Committee article on left.

Wong Chae Sing, Asia/Pacific representative, brings over 17 years of experience in banking, brokerage, risk management and risk advisory projects focussing on the Asia Pacific region. Currently Senior Vice President/Head of Asia Business Risk Management, Marsh, he continues to implement risk management solutions for many Chinese enterprises. Chae Sing is dedicated to raising risk management standards. To this end, he was a key figure in setting up our new chapter in Shanghai. Chae Sing is also co-director of our Beijing chapter.

Dominik Dersch, PRM, is a freelance consultant (Dominik Dersch Beratung) and trainer for financial and corporate risk management. He and has a PhD in and more than twenty years professional experience in academia, the deregulated energy market, the hedge fund industry and investment banking. Dominik, an active member of PRMIA since 2003, is regional director of our Munich chapter and an active member of the Regional Director Support and Standards Committee. In 2007 he was a finalist for our PRM Candidate of the Year Award.

The outgoing Board members remain dedicated to achieving PRMIA's vision: **David Streliksi** continues as regional director of our Geneva chapter; after his tireless work as Treasurer of the Board, retiring Board member Sunando Roy will join the new Finance Committee led by Bob Mark (see Executive Committee above); David Rowe will also join the new Finance Committee, as well as remaining responsible for Training within the Education Committee, led by Professor Paul Glasserman of Columbia University, one of our Academic Partners.

Jodi Lundell, recently appointed COO, says: "On behalf of PRMIA's 74,000 members I would like to say a very big thank you to all the outgoing Board members for their years of service and the countless hours they have volunteered toward making PRMIA's mission a reality. I would also like to welcome our new Board Members and look forward to their participation in building the future of PRMIA."

CHIEF OPERATING OFFICER RETIRES

After five years as COO, David Millar retired at the end of 2010. David was instrumental in expanding the global reach of PRMIA, focusing his efforts on volunteer and business partner relationships as well as on PRM and Associate PRM exams. During retirement, Mr. Millar will continue as an independent trainer, consultant, and writer/journalist and will remain an active PRMIA volunteer.

Carol Alexander, recently appointed Chair of the Board, says: "We wish David a long, happy and healthy retirement. Thank you for your terrifically hard work with our chapters, on developing certifications and publications and on expanding PRMIA business in China."

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

Changes in the economy during the past year have increased the demand for risk management training at all levels. In response, our training is evolving in line with member's needs. PRMIA's training committee, comprised of volunteer risk professionals from around the world, recognises the diversity in this renewed demand. Some members want online access to a variety of topics delivered in brief, focused learning sessions. Others request classroom training that is intensive and comprehensive, and are willing to commit significant time and money to this. PRMIA has developed a wide-ranging program that meets all of these needs.

ONLINE SERVICES

Available anytime, anywhere in the world with an internet connection.

WEBINARS

Most of our webinars are free to sustaining members. They are the perfect option for busy people with little time or money spare, but who recognise the immense value of self-education. PRMIA webinars bring the international thought leaders in risk management live to your screen. Ask them a question and participate in questions to the audience. Or, being recorded, you may prefer a time and location that is more convenient than the broadcast slot. Already a global market leader in risk management webinars, we are expanding our schedule even further during 2011. Just watch your e-mail and check the website for updated schedules on http://bit.ly/PRMIAWebinars

PROFESSIONAL DEVELOPMENT

PRMIA offers over 700 online professional development courses, all of which can be customized to your personal or corporate needs. Delivered individually or as a corporate package, online training is extremely cost-effective, with most courses priced at only US $25. Special pricing is available for corporate licensing of any online course or course combination. See http://bit.ly/PRMIAOnlineTraining

EXAMINATION PREPARATION

PRMIA offers access to multiple resources to assist candidates in the exam preparation process. These resources include printed publications, online training, webinars, classroom training and DVDs. A full list of online exam preparation material is on http://bit.ly/PRMIAExamPrep

CLASSROOM TRAINING

Intensive and Comprehensive

CUSTOMIZED COURSES

Customized courses are held in-house or at specialised training venues. One-to-one consultation with our specialist training staff ensures that the learning experience is tailor-made to your requirements. Our goal is to provide training that is flexible and sensitive to delegates' needs, knowledge and background. Enquiries: training@prmia.org

OPEN ENROLMENT COURSES

Open enrolment courses meet the needs of members who prefer to interact and network with other risk professionals while receiving a more rigorous training experience. All our courses are taught by risk management industry practitioners and university faculty, offering a unique blend of teaching. We have several classroom courses scheduled over the next few months and our schedule will continue to develop throughout 2011 as we receive feedback and guidance from members and leaders. Click here for a list of upcoming courses.

PRMIA

"This short course on risk management (Complete Course in Risk Management) crams more into its 20-week span than many other certificate or even degree level courses. The professors are excellent and the material ensures a solid foundation in the subject. I would unhesitatingly recommend this course."

Jay Namputhiripad, Director, Risk Management, Federal Home Loan Banks Office of Finance

CAROL ALEXANDER
Chair of Financial Risk Management ICMA Centre, Henley Business School at Reading

PRMIA Involvement
- Chair, Executive Committee
- Chair, Publications Subcommittee
- Education Committee
- Co-Editor, PRM Handbook
- Former Chair, Academic Advisory Committee
- 2006 Higher Standard Award

Term Expiration: 2012

THOMAS DAY
Managing Director of Risk Solutions and Policy, SunGard Ambit

PRMIA Involvement
- Vice-Chair, Executive Committee
- Regional Director, Washington DC Chapter
- Member, Training Subcommittee
- Advisory Member, Atlanta Steering Committee

Term Expiration: 2013

DOMINIK DERSCH
Principal Consultant, Dominik Dersch Beratung

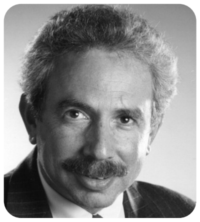
PRMIA Involvement
- Regional Director, Munich Chapter
- Member, Regional Director Support and Standards Committee
- 2005 PRM Focus Award Winner
- 2007 PRM Candidate of the Year Finalist

Term Expiration: 2011

OSCAR MCCARTHY
Strategic Risk Advisor, ABN Amro Markets

PRMIA Involvement
- Secretary, Executive Committee
- Regional Director, Netherlands Chapter
- Former Deputy Regional Director, London
- Former Member, Education and Standards Committee

Term Expiration: 2013



ROBERT MARK
Managing Partner & Chief Executive Officer, Black Diamond Risk

PRMIA Involvement
- Treasurer, Executive Committee
- Chair, Finance Committee
- Co-Author Associate PRM Textbook — *Essentials of Risk Management*
- Former Vice-Chair, Executive Committee
- Former Chair and Founder PRMIA Blue Ribbon Panel

Term Expiration: 2011

BUD HASLETT
Executive Director, Research Foundation and Head, Risk Management and Derivatives, CFA Institute

PRMIA Involvement
- Member, Finance Committee

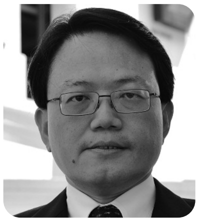
Term Expiration: 2012

COLIN LAWRENCE
Director, Prudential Risk Division, Financial Services Authority (FSA)

Visiting Professor, Risk Management, Cass Business School

PRMIA Involvement
- Steering Committee, London Chapter

Term Expiration: 2012



PHANG HONG LIM
Group Chief Risk Officer, CIMB Banking Group

PRMIA Involvement
- Member, Regional Director Support and Standards Committee
- Former Regional Director, Singapore Chapter

Term Expiration: 2011

CHAE SING, WONG
Senior Vice President/ Head of Asia Business Risk Management, Marsh

PRMIA Involvement
- Co-Regional Director, Beijing Chapter

Term Expiration: 2013

PRMIA was established in 2002 by a volunteer group of risk industry professions with the vision of anchoring the new association in ethical guidelines, transparency and testing standards, providing courses and publications that would be better than anything offered by others in the risk profession whilst always committed to non-profit ideals of service. Listed below is this committed group of individuals.

EMERICO AMARI
Senior Partner, MACFIN Group Management Consultants

- Regional Director, Italy
- Former Member, Education and Standards Committee

JEAN-MARTIN AUSSANT
Member of Parliament for Nicolet-Yamaska

- Official opposition critic for the economy, financial institutions and international commerce
- Québec National Assembly

JOHN PAUL BROUSSARD
Associate Professor, Rutgers School of Business – Camden

- Former Member, Ethics Committee

MICHEL CROUHY
Head of Research and Development at NATIXIS French Investment Bank

- Co-Author Associate PRM Textbook – *Essentials of Risk Management*
- Co-author of chapter in PRM Handbook

DAN GALAI
Dean, The School of Business Administration, The Hebrew University, Jerusalem Israel

- Co-Regional Director, Israel
- Co-Author Associate PRM Textbook – *Essentials of Risk Management*
- Former Member, Blue Ribbon Panel

FRANK HAYDEN
Principle, Risk and Decision

- Member, PRMIA Ethics Committee
- Reserve Member, Regional Director Support and Standards Committee
- Former Regional Director, Houston Chapter

KRUSKAL HEWITT
Senior Advisor, Risk Management, J-Power

- Member, Exam Committee
- Member, Ethics Committee
- Former Member, Ethics and Standards Committee

GEOFF KATES
CEO, Lepus

- Member, London Steering Committee
- Former Member, Board of Directors
- Former Chair, Executive Committee
- Former Regional Director, London Chapter

DAVID R. KOENIG
Chief Executive Officer, The Governance Fund Advisors, LLC

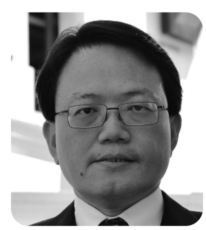
- Member, Ethics Committee
- Former Executive Director
- Former Chair, Board of Directors
- Former Member, Education and Standards Committee
- Former Regional Director, Mpls.
- Former Member, Regional Director Support and Standards Committee
- Former Member, Academic Advisory Committee
- 2007 Higher Standard Award

ANDRZEJ KULIK
Head of Middle-Office at BRE Bank in Warsaw, Poland

- Regional Director, Poland Chapter
- Former Board Member
- Former Vice Chair, Executive Committee
- Founder, Regional Director Committee

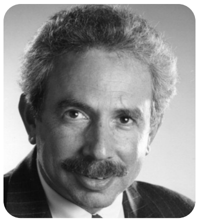
DARREN LANGER
Head of Portfolio Management, Tyndall Investment Management Limited

- Former Regional Director, Sydney Chapter
- Former Vice Chairman



PHANG HONG LIM
Group Chief Risk Officer, CIMB Banking Group

- Member, Regional Director Support and Standards Committee
- Former Regional Director, Singapore Chapter



ROBERT MARK
Managing Partner and Chief Executive Officer, Black Diamond Risk

- Treasurer, Executive Committee
- Chair, Finance Committee
- Co-Author Associate PRM Textbook – *Essentials of Risk Management*
- Former Vice-Chair, Executive Committee
- Former Chair and Founder PRMIA Blue Ribbon Panel

DAN ROSEN
CEO, R² Financial Technologies

- Member, Toronto Chapter Steering Committee
- Former Regional Director, Toronto Chapter
- Author, two chapters of PRM Handbook

NAWAL ROY
Managing Partner, Shobhit Capital Group

- Former Member, Interim Board of Directors
- Former Member, Education Committee
- Former Regional Director, New York Chapter

SETH SHAPIRO
Senior Vice President and Risk Strategist, Kibble and Prentice/USI

- Co-Regional Director, Seattle Chapter

SERGEY SMIRNOV
Director of Financial Engineering and Risk Management Laboratory, Head of Risk Management and Insurance Department at State University – Higher School of Economics (Moscow)

- Member, Russia Chapter Steering Committee
- Member, Exam Sub-committee
- Former Regional Director, Russia
- Former Member, Education and Standards Committee

LARS SODERLIND
Senior Advisor, Market and Liquidity Risk, Swedish FSA

- Former Regional Director, Sweden Chapter
- Former Steering Committee Member, Sweden Chapter

ZVI WIENER
Professor, Head of Finance Department, School of Business Administration, Hebrew University of Jerusalem

- Co-Regional Director, Israel
- Former Co-Chair, Education and Standards Committee

DEBBIE WILLIAMS
Director of Marketing, R² Financial Technologies

- Member, Boston Chapter Steering Committee
- Former Regional Director, Boston Chapter

EXECUTIVE

Carol Alexander, Chair
Chair of Financial Risk Management, ICMA Centre, Henley Business School

Thomas Day, Vice-Chair
Managing Director of Risk Solutions and Policy, SunGard Ambit

Robert Mark, Treasurer
Managing Partner and Chief Executive Officer, Black Diamond Risk

Oscar McCarthy, Secretary
Strategic Risk Advisor, ABN Amro Markets

FINANCE

Robert Mark, Chair
Managing Partner and Chief Executive Officer, Black Diamond Risk

Bud Haslett
Executive Director, Research Foundation CFA Institute

David Rowe
President, David M. Rowe Risk Advisory

Sunando Roy
Advisor – Inspection, Central Bank of Bahrain

Alexander Shipilov
VP, Investment Banking Audit, TD Bank Financial Group

EDUCATION

Paul Glasserman, Chair
Jack R. Anderson Professor of Business, Columbia Business School

Carol Alexander
Chair of Financial Risk Management, ICMA Centre, Henley Business School

George Jabbour
Professor of Finance, George Washington University School of Business

David Rowe
President, David M. Rowe Risk Advisory

Elizabeth Sheedy
Associate Professor, Macquarie Applied Finance Centre, Macquarie University

Kalyan Sunderam
Advisor, Bahrain Institute of Banking and Finance

ACADEMIC PARTNERSHIP

Elizabeth Sheedy, Chair
Associate Professor, Macquarie Applied Finance Centre, Macquarie University

Alain Belanger
Associate Professor, Department of Finance, Université de Sherbrooke

Zhongyan Chen
Professor, Department of Applied Finance, Renmin University of China

John Cotter
Professor, University College Dublin

Antoine Frachot
Head of Groupe des Ecoles Nationales d'Economie et Statistiques – France, Scientific Advisor AON Global Risk Consulting

Luis Seco
Professor of Mathematics, University of Toronto, Director of RiskLab Toronto, President and CEO of Sigma Analysis and Management Ltd.

PUBLICATIONS

Carol Alexander, Chair
Chair of Financial Risk Management, ICMA Centre, Henley Business School

Joel Bessis
Professor of Finance, HEC Paris

Don Chance
James C. Flores Endowed Chair of MBA Studies and Professor of Finance, Louisiana State University

Jonathan Howitt
CRO, Evolution Group

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Stanislav Seltser, Chair
Software Engineer, SunGard

James Flowers
Quality Assurance Engineer, eOriginal Inc.

Michael Delk
Developer, delkDev

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Advisor, Bahrain Institute of Banking and Finance

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Senior Advisor, Risk Management, J-Power

Markus Hirschberger
Senior Hedging Analyst, Munich RE

Krzysztof Jajuga
Professor, Wroclaw University of Economics

Christoph Obenhuber
Risk Manager – Market Risk, Volksbank AG

Sergey Smirnov
Director of Financial Engineering and Risk Management Laboratory, Head of Risk Management and Insurance Department at State University – Higher School of Economics (Moscow)

Scott Warner
Senior Consultant, Avantage (UK) Limited

Peter Wood
Director, Undergrad Business and Accounting Programs, Faculty of Mathematics, University of Waterloo

Liu Yuping
Vice President, Wells Fargo

TRAINING

David Rowe, Chair
President, David M. Rowe Risk Advisory

Thomas Day
Managing Director of Risk Solutions and Policy, SunGard Ambit

Greg Goeller
Chief Risk Officer, Standard Bank CIB Africa

Christopher Laursen
Vice President, NERA Economic Consulting

Daniel Rodriguez
Chief Risk Officer, Global Arbitrage Trading and the Americas Equity Division at Credit Suisse

REGIONAL DIRECTOR SUPPORT AND STANDARDS

Faruk Patel, Chair
Chief Analyst, Risk Management, National Bank Financial Group

Warren Murdoch, Vice Chair
Consultant, AMXI

Mark Abbott
Managing Director, Head of Quantitative Risk Management, Guardian Life Insurance, USA

Syed Ahmad
Senior Financial Economist, Federal Housing Finance Agency

Yerram Raju Behara
Director, Development and Research Services Ltd.

Laurent Birade
Senior Risk Consultant, SAS

Dominik Dersch
Principal Consultant, Dominik Dersch Beratung

Sven Ludwig
Regional Manager Business Development, Sungard

Mario Schlener
Associate Director, Navigant Capital Markets Advisers

Alberto Sanyuan Suen
CEO, Ascent Brasil and Professor of Finance, UMESP

Reserve Members

Karina Carrero
Project Manager, BAC Credomatic Network

Carlos da Costa
Commodity Futures Specialist, ScotiaMcLeod

Frank Hayden
Principle, Risk and Decision

Ikhtiar Kazi
Director, Institutional Sales and Business Development

Phang Hong Lim
Group Chief Risk Officer, CIMB Banking Group

Andy Stalmanis
Head of Market Risk Oversight, Lloyds Banking Group

PRMIA

Future issues of *Intelligent Risk* will carry details of other PRMIA committees including Ethics, Communications, Regional Chapters and Research.