### RUNDOWN:

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Speaker</th>
</tr>
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<tbody>
<tr>
<td>8:15am</td>
<td>Registration and light breakfast</td>
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<tr>
<td>9:00am</td>
<td>Opening remarks</td>
<td>Ms Susanna Lam</td>
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<td>Managing Director</td>
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<td>A.M. Best Asia-Pacific Ltd</td>
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<tr>
<td>9:05am</td>
<td>Keynote address</td>
<td>Mr Emmanuel F. Dooc</td>
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<td>Insurance Commissioner</td>
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<td>A.M. Best – EMEA &amp; Asia Pacific</td>
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<tr>
<td>9:15am</td>
<td>Introduction to A.M. Best and insurance credit rating</td>
<td>Dr Roger Sellek</td>
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<td>Chief Executive Officer</td>
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<td>A.M. Best – EMEA &amp; Asia Pacific</td>
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<tr>
<td>9:35am</td>
<td>A.M. Best rating and country risk methodology</td>
<td>Mr Moungmo Lee</td>
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<td>General Manager, Analytics</td>
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<td>A.M. Best Asia-Pacific Ltd</td>
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<tr>
<td>10:10am</td>
<td>Using risk management models in-house to manage natural disaster exposures</td>
<td>Mr Richard Austen</td>
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<td>Executive Partner &amp; CEO</td>
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<td>Catalytics Ltd.</td>
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<tr>
<td>10:25am</td>
<td>Coffee break</td>
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<tr>
<td>10:55am</td>
<td>The importance of ERM and CAT risk management for insurers</td>
<td>Mr Jeff Yeung</td>
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<td>Associate Director</td>
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<td>A.M. Best Asia-Pacific Ltd</td>
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<tr>
<td>11:30am</td>
<td>Panel discussion:</td>
<td>Mr Augusto P. Hidalgo</td>
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<td></td>
<td>Implementation of risk-based capital framework</td>
<td>President &amp; Chief Executive Officer</td>
</tr>
<tr>
<td></td>
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<td>National Reinsurance Corporation of the Philippines</td>
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<td></td>
<td>Ms Herminia Jacinto</td>
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<td></td>
<td></td>
<td>President</td>
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<td>Insurance Institute for Asia and the Pacific Inc</td>
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<td></td>
<td></td>
<td>Mr Emmanuel Que</td>
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<td></td>
<td>Chairman</td>
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<td></td>
<td>Philippine Insurers and Reinsurers Associations Inc. (PIRA, Inc)</td>
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<tr>
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<td>Mr Moungmo Lee</td>
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<td>General Manager, Analytics</td>
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<td>A.M. Best Asia-Pacific Ltd</td>
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<tr>
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<td></td>
<td>Ms Susanna Lam (Moderator)</td>
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<td>Managing Director</td>
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<td></td>
<td>A.M. Best Asia-Pacific Ltd</td>
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<tr>
<td>12:30pm</td>
<td>Closing address</td>
<td>Ms Susanna Lam</td>
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<td></td>
<td>Managing Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A.M. Best Asia-Pacific Ltd</td>
</tr>
<tr>
<td>12:45pm</td>
<td>Luncheon</td>
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</table>
Susanna SW Lam
Managing Director
A.M. Best Asia-Pacific Ltd.

Susanna Lam is the managing director of A.M. Best Asia-Pacific Ltd., where she leads A.M. Best’s operations throughout the Asia-Pacific region. Susanna oversees the ratings and news businesses of A.M. Best within the insurance and reinsurance sectors in the region, managing existing relationships and developing new relationships with key constituents in the insurance and broader financial services sectors. As a member of the Board, Susanna is responsible for ensuring that the compliance and regulatory requirements of the business are fulfilled.

Susanna has over 30 years’ experience in the reinsurance and insurance industry and is the former general manager – reinsurance department of Ping An Property & Casualty Insurance Company of China, Ltd, where, based in Ping An’s Shenzhen headquarters, she managed the company’s outwards and inwards reinsurance portfolios and headed both the treaty and facultative divisions. Prior to Ping An, Susanna was the director and general manager of Miller Insurance Services (Hong Kong) Ltd, where she set up their Hong Kong office and was responsible for developing and producing business in North Asia. Susanna was also formerly with Swiss Re, where she worked in the company’s Hong Kong and Sydney offices.

Susanna holds an ACII qualification and a diploma in management studies.
Atty. Emmanuel F. Dooc took his oath of office as Acting Insurance Commissioner on January 5, 2011. As the first appointee of President Benigno S. Aquino III to the post of Insurance Commissioner he held the office until the passage of Rep. Act. No. 10607, otherwise known as the Revised Insurance Code of 2012, which provides a 6-year fixed term of office to the Insurance Commissioner. Commissioner Dooc tendered his resignation to give the President a free hand to appoint a new Insurance Commissioner under the new Insurance Code but the President instead reappointed Commissioner Dooc for a fresh term of six (6) years under the new Code.

During his first term, the Insurance Commission had seen unprecedented growth of the Insurance Industry, particularly the life sector. The total assets have increased from P554.7 Billion to over P900 Billion in 2013. From P80.3 Billion total premium income in 2009, it rose to P200 Billion in 2013. The Insurance Penetration Rate increased from 1.02% in 2009 to 1.9% in 2013. The capital build-up program was successfully carried out and institutionalized in the Amended insurance Code which further increased the minimum net worth to P1.3 Billion in 2022 with scheduled gradual increases every 3 years between 2012 and 2022. The recent years also saw mergers and consolidation of smaller companies as well as voluntary and involuntary cancellation of licenses. The Insurance Commission was reorganized to further streamline its operations and make IC an efficient and effective regulator. Three (3) additional Deputy Commissioners were appointed and the total number of headcounts at the IC was significantly increased to enable IC to discharge its functions particularly the additional responsibility of supervising the pre-need industry following its transfer from the SEC to the IC. The IC with the support of the industry introduced other much needed reforms to grow the industry without sacrificing the interests of the insuring public.

With his appointment, Commissioner Dooc and his team have already formulated the banner program for the coming years. They include the review and rationalization of the tax structure for the non-life sector, eventual transfer of the HMO from the Department of Health to the IC, capacity building of the regulator, expansion of Microinsurance program, promotion of financial inclusion, development of disaster insurance, crop insurance and health insurance and effective implementation of the Amended Insurance Code among others, to better serve the public and the industry.

His term of office shall expire on December 4, 2019.
Introduction to A.M. Best and insurance credit rating

Dr. Roger Sellek
Chief Executive Officer
A.M. Best – EMEA & Asia Pacific

Roger Sellek is based in London and oversees A.M. Best’s ratings, information-services and news businesses throughout Europe, the Middle East, Africa and the Asia-Pacific region.

Prior to joining A.M. Best, Roger was Commercial Director for Lloyd’s of London for six years, responsible for the market’s strategic business relationships with its investor base, brokers, the rating agencies and the financial-analyst community. Shortly after joining Lloyd’s, Roger was appointed Head of Commercial Policy and subsequently became Managing Director of Lloyd’s Market Risk Unit, where he directed the development and application of the market’s risk-based capital system. He had earlier worked as a consultant to the Equitas Project, assuming management responsibility for the analysis of all non-APH liabilities.

In addition to 15 years of extensive experience and achievement in the insurance and reinsurance sectors, Roger has a long academic background, graduating with a BSc in mathematical physics from the University of Exeter and with a PhD three years later. Roger also holds an MBA in strategic management from Imperial College at the University of London and carried out post-doctoral research at the University of Cambridge. He has worked in a number of academic positions in the United Kingdom and overseas, including as a lecturer in applied mathematics at the University of Sydney, Australia. He also spent two years as the National Squash Coach for Thailand.
Introduction to A.M. Best and insurance credit rating

Roger Sellek
Chief Executive Officer
A.M. Best – EMEA & Asia Pacific

3 June 2014

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Introduction to A.M. Best

- Development of A.M. Best Ratings in Asia Pacific
- Drivers of Ratings Demand

A.M. Best – an overview

- Established in 1899, pioneered the concept of insurer financial strength ratings in 1906
- Headquarters in USA. Regional centres in London and Hong Kong. Representative offices located in Dubai and Miami.
- Provider of international ratings, financial data and news relating to the insurance industry
- Full-service global insurance rating capabilities
- Interactive ratings coverage exceeding 3,300 companies in over 80 countries
- Financial data coverage of over 16,000 companies in more than 130 countries
- Published market research through a broad range of Special Reports
- Extensive marketing and publishing capability to promote corporate ratings in local and international markets
- Named Best Global Rating Agency for five consecutive years by Reactions Global Awards, 2009 - 2013
Competitive strengths

- Only international rating agency focused on the insurance industry
- Leading position in the global reinsurance segment
- Leading position in international (re)insurance hubs
- World’s leading provider of insurer Financial Strength Ratings (FSRs) by company coverage

Leading coverage in insurance ratings

Global insurer interactive Financial Strength Ratings (FSRs)

Insurance specialisation means…

- Rating methodologies that are specific to the insurance industry
- Analysts who are insurance specialists and only analyse insurance companies
- Greater understanding of the insurance industry both globally and on a local level including growth markets
- Ability to provide specific indications as to the main drivers of a rating grounded in industry knowledge
- Focusing on the company, not the country’s sovereign rating
- Proven ability to rate start-ups, supporting industry development

Financial Strength Rating - FSR

- An independent opinion of an insurer’s financial strength and ability to meet its on-going insurance policy and contract obligations
- Not a warranty of a company’s financial strength
- Intended to be prospective
- Value depends upon the market credibility of the rating issuer
- Supported by impairment studies
- Relates to a single legal entity not a group

A.M. Best’s focus is on interactive rating analysis through engagement with senior management
**A.M. Best rating scales**

<table>
<thead>
<tr>
<th>Secure</th>
<th>Investment Grade</th>
<th>Vulnerable</th>
<th>Non-Investment Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+++</td>
<td>aaa</td>
<td>B</td>
<td>bb+</td>
</tr>
<tr>
<td>A+</td>
<td>aa+</td>
<td>B-</td>
<td>bb-</td>
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<td>aa-</td>
<td>C++</td>
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<td>c</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E</td>
<td>F</td>
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</table>

FSR = Financial Strength Rating  
ICR = Issuer Credit Rating  
E = under regulatory supervision  
F = in liquidation

---

**Best’s Statement File**

- *Best’s Statement File* is a ratings and financial database with historical and quantitative information.
- Facilitates research and analysis of companies, competitors, peers and markets in detail.
- Aides the identification of insurers and group members based on A.M. Best's analysis of corporate structures and ownership.
- *Best’s Statement File – Global* is a powerful tool for insurer assessment, peer review and market analysis. It provides timely and accurate data on more than 15,700 insurance companies.
- *Best’s Statement File – Asia Pacific* is a powerful reference and analytical tool for those focused on this important region. It provides timely and accurate data for 1,350 insurance companies in the Asia-Pacific region.

For more information please visit: [http://www.ambest.com/sales/StatementGlobal/](http://www.ambest.com/sales/StatementGlobal/)
Best's Underwriting Guide provides detailed reports for nearly 600 industries, business and municipal services – from small businesses like restaurants and antique stores to global industries like pharmaceutical manufacturing. We also cover emerging “green” industries like solar panel installers and biofuel producers. You'll quickly become familiar with every aspect of an industry and be able to evaluate exposures in all applicable lines of liability.

Best's Loss Control Manual reports are written for the on-site inspector who needs concise checklists of potential workplace hazards. The Manual contains nearly 600 reports that offer detailed descriptions and inspection checklist for various industries, business and municipal services – from small businesses like nail salons to global industries like bio fuel producers. It's also an ideal training tool for new risk managers.

**BestWeek**: Our weekly newsletters provide ratings information and analytical content in three regional editions:
- U.S./Canada
- Europe
- Asia-Pacific

**Best’s Review**: Best’s Review, the insurance industry’s premier news magazine, contains insightful monthly coverage of the worldwide insurance industry, giving you the information you need to make informed decisions about your business and career.
Introduction to A.M. Best

A.M. Best Asia-Pacific coverage

143 ratings* released across 20 territories as of 30th April 2014

*(include branch ratings)
Development of A.M. Best ratings in Asia Pacific

A.M. Best Asia Pacific Rated Companies by Region

A.M. Best Asia-Pacific: new ratings (yearly basis)

Introduction to A.M. Best and insurance credit rating 3 June 2014 15

Introduction to A.M. Best and insurance credit rating 3 June 2014 16
**Agenda**

- Introduction to A.M. Best
- Development of A.M. Best Ratings in Asia Pacific
- Drivers of Ratings Demand

**Why do insurers get rated?**

- **Business needs**
  - Entry to, and development of, credit sensitive market segments e.g. reinsurance, large commercial business, accessing US business in a local market
  - Demonstrate relative position of the company, create competitive advantage

- **Regulatory requirement**
  - Enhanced solvency requirements
  - Meeting regulatory requirements in certain jurisdictions

- **Internal driver**
  - Drive to improve corporate governance practices
  - A natural step in corporate evolution

- **External demand**
  - Need for statement of credibility ("passport") when expanding regionally/internationally
  - Due-diligence requirements on cross-border mergers, JV’s, etc.
  - Facilitates capital raising and reinsurance purchase
  - Desire for external endorsement of company’s (and CEO’s!) progress
Thank You

Roger Sellek
Chief Executive Officer
A.M. Best – EMEA & Asia Pacific

3 June 2014
A.M. Best rating and country risk methodology

Moung Mo Lee
General Manager, Analytics
A.M. Best Asia-Pacific Ltd.

MM Lee is the general manager of analytics at A.M. Best Asia-Pacific Ltd. MM has been with A.M. Best since 2000. He is responsible for the analytics of A.M. Best's ratings in the Asia-Pacific region. Prior to assuming his current role, MM served as the lead analyst for numerous companies in A.M. Best's Asia-Pacific portfolio.

Before joining A. M. Best, MM worked for Siemens AG and Hypo Bank in Germany.

MM received his bachelor's degree in economics from ChungAng University and his master's in economics from Seoul National University.
A.M. Best’s Philippines Seminar 2014

A.M. Best rating and country risk methodology

Moungmo Lee
General Manager, Analytics
A.M. Best Asia-Pacific Ltd

3 June 2014

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A.M. Best’s ratings

Financial Strength Ratings

• An independent opinion of an insurer’s financial strength and ability to meet its on-going insurance policy and contract obligations

• Not a warranty of a company’s financial strength

• Intended to be prospective

• Relates to a single legal entity not a group

• Value depends upon the market credibility of the rating issuer

• Supported by impairment studies
A.M. Best’s ratings

- **Balance-sheet strength** holds the highest weight across all rating levels. However, as the rating levels increase so does the emphasis on operating performance and business profile.
A.M. Best’s ratings

FSR = Financial Strength Rating
ICR = Issuer Credit Rating

FSR
A++
A+
A
A-
B++
B+
B
B-
C++
C+
C
C-
D

ICR
aaa
aa+
aa
a+
a
bbb+
bbb
bbb-

Investment Grade
Secure
Vulnerable

E = under regulatory supervision
F = in liquidation

A.M. Best rating and country risk methodology
3 June 2014

Cumulative average impairment rates (historical)

<table>
<thead>
<tr>
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<th>1-Year</th>
<th>5-Year</th>
<th>10-Year</th>
<th>15-Year</th>
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<tbody>
<tr>
<td>A++/A+</td>
<td>0.05%</td>
<td>0.64%</td>
<td>1.91%</td>
<td>3.72%</td>
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<tr>
<td>A-A-</td>
<td>0.17%</td>
<td>1.63%</td>
<td>4.69%</td>
<td>6.78%</td>
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<tr>
<td>B++/B+</td>
<td>0.77%</td>
<td>5.37%</td>
<td>10.19%</td>
<td>13.86%</td>
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<td>B/B-</td>
<td>2.17%</td>
<td>10.53%</td>
<td>19.09%</td>
<td>26.13%</td>
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<tr>
<td>C++/C+</td>
<td>3.73%</td>
<td>14.62%</td>
<td>27.07%</td>
<td>33.20%</td>
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<tr>
<td>C/C-</td>
<td>5.90%</td>
<td>18.40%</td>
<td>34.59%</td>
<td>46.44%</td>
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<td>D</td>
<td>7.57%</td>
<td>26.28%</td>
<td>42.33%</td>
<td>51.12%</td>
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Secure

Vulnerable

All

0.23%  2.05%  4.56%  6.78%
3.76%  14.88% 26.37% 34.10%
0.65%  3.54%  7.11% 10.04%

Agenda

1. A.M. Best’s ratings
2. Key rating criteria
3. Impact of country risk
Business profile

- Market share?
- Growth rate?
- Brand recognition?
- Captive business?
- Strong parent?
- Excellent management?

Business profile

Premium Composition
- Niche vs Diversified
- Protection vs Saving

Premium Growth
- Premium Rate vs Unit Volume
- Profitability

Competiveness
- Distribution Capabilities
- Brand Recognition

Management
- Alignment
- Adaptive to Changes

Insurance Market Risk
- Insurance Industry
- Regulations / Economy

Event Risk
- Financial Impact
- Risk Control
Operating performance

- Underwriting margin?
- Return on investment?
- Absolute level of earnings?
- Track record of stable earnings?
- Return on shareholders’ equity?
- Favorable market environment?
Operating performance

Underwriting Margin (%)

Return on Investment (%)

Margin on NPW (%)

ROE (%)

Profitability
- Stable vs Volatile
- High vs Low Fixed Costs

Revenue Composition
- Diversification
- Investment Income

Ability to Meet Plan
- Actual vs Forecast

Sustainability
- Consistency vs Volatility
Balance street strength

Business Profile  Operating Performance  Balance Sheet Strength

Enterprise Risk Management  Rating Recommendation  Country Risk

Balance sheet strength

• Absolute capital?
• Risk-based capital?
• Parental support?
• Low volatility of capital?
• Mutual structure?
• Government owned?
Balance sheet strength

Company Structure
- Holding Company
- Gov’t-owned / Public / Private

Capitalization
- Absolute / Risk-Adjusted
- Stress Testing

Adequacy of Reserve
- Prudent Assumptions
- Degree of Uncertainty

Financial Flexibility
- Equity
- Subordinated Debt

Liquidity
- Quality
- Diversification of Assets

Reinsurance
- Quality
- Coverage
Agenda

1. A.M. Best’s ratings
2. Key rating criteria
3. Impact of country risk

Country risk

<table>
<thead>
<tr>
<th>Business Profile</th>
<th>Operating Performance</th>
<th>Balance Sheet Strength</th>
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</thead>
<tbody>
<tr>
<td>Enterprise Risk Management</td>
<td>Rating Recommendation</td>
<td>Country Risk</td>
</tr>
</tbody>
</table>

A.M. Best rating and country risk methodology 3 June 2014
Country Risk: The risk that country-specific factors could adversely affect an insurer’s ability to pay its financial obligations.

Distinct from:

Sovereign Default Risk: Probability that a sovereign government does not pay back its debts on time and in their entirety.

- CRT-1: Superior stability. Predictable and transparent political environment, legal system and business infrastructure; sophisticated financial system with deep capital markets; mature insurance industry.
- CRT-2: Predictable and transparent political environment, legal system and business infrastructure; sophisticated financial system; mature insurance industry.
- CRT-3: Developing political environment, legal system and business infrastructure with developing capital markets; developing regulatory structure.
- CRT-4: Relatively unpredictable and non-transparent political, legal and business environment with underdeveloped capital markets; partially to fully inadequate regulatory structure.
- CRT-5: Unpredictable and opaque political, legal and business environment with limited or nonexistent capital markets; low human development and social instability; nascent insurance industry.
Country risk

Relationship Between Ratings and CRTs

<table>
<thead>
<tr>
<th>CRT-1</th>
<th>CRT-2</th>
<th>CRT-3</th>
<th>CRT-4</th>
<th>CRT-5</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>aa+</td>
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<tr>
<td>b-</td>
<td>b-</td>
<td>b-</td>
<td>b-</td>
<td>b-</td>
</tr>
</tbody>
</table>

y = -0.033ln(x) + 0.0987
R² = 0.6507

Country risk and insurance market development are correlated

Insurance Penetration (%) vs. Level of Country Risk Score

y = -0.033ln(x) + 0.0987
R² = 0.6507
Country risk

Country risk and insurance market development are correlated

\[ y = -0.033\ln(x) + 0.0987 \]

\[ R^2 = 0.6507 \]

- Level of Country Risk Score
- Insurance Penetration (%)

Source: A.M. Best data as at April 2014, exclude United States

Global rating distribution (exclude United States)

<table>
<thead>
<tr>
<th>Best’s FSR</th>
<th>Country Risk Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>A++</td>
<td>8%</td>
</tr>
<tr>
<td>A+</td>
<td>27%</td>
</tr>
<tr>
<td>A</td>
<td>42%</td>
</tr>
<tr>
<td>A-</td>
<td>20%</td>
</tr>
<tr>
<td>B++</td>
<td>3%</td>
</tr>
<tr>
<td>B+</td>
<td>1%</td>
</tr>
<tr>
<td>B</td>
<td>1%</td>
</tr>
<tr>
<td>B-</td>
<td></td>
</tr>
<tr>
<td>C++</td>
<td></td>
</tr>
</tbody>
</table>

Source: A.M. Best data as at April 2014, exclude United States
Thank You

Moungmo Lee
General Manager, Analytics
A.M. Best Asia-Pacific Ltd

3 June 2014
Using risk management models in-house to manage natural disaster exposures

**Richard Austen**

**Executive Partner & CEO**

**Catalytics Pte Ltd.**

Richard Austen is primarily a businessman with roots as an insurance and reinsurance expert. He started his career in Lloyd’s of London in 1972 working for the Lloyd’s broker Thompson Graham Ltd that later became Jardine Thompson Graham. He became actively involved in Asian reinsurance in 1974 and moved to Singapore in 1982 where he incorporated Singapore’s first regional specialist reinsurance broking business.

Adopting Singapore and Asia as his home, Richard has travelled extensively in Asia in pursuit of delivering reinsurance and corporate solution to clients. He has served on many Industry committees and spoken at numerous reinsurance conferences.

Over the past 3 decades of living in Singapore, Richard has helped incorporate and develop major regional insurance and reinsurance businesses, notably Jardine Lloyd Thompson, Arthur J. Gallagher, and Asia Reinsurance Brokers.

Outside the Insurance world, he has developed businesses in software, property, distribution, and manufacturing.

After surviving the 2004 Boxing Day Tsunami in Thailand, Richard was inspired to search for partners and collaborators to build Asia’s first catastrophe modeling firm Catalytics Pte Ltd, to be based on the principals of collaboration and quality and aimed at bringing affordable and user-friendly modeling into the hands of Asian corporations and institutions.

Richard is Chairman of Asiare Holdings and the Reinsurance Brokers Association (Singapore), a judge for the Asia Insurance Awards (AIR), a member of the ASEAN Natural Disasters Research Works Sharing (ANDREWS) committee and a member of the organizing committee of the Singapore International Reinsurance Conference.
Using Risk Management Models
In-house to Manage Natural Disaster Exposures

Mr. Richard Austen
Executive Partner & CEO
Catalytics Lte Ltd
3rd June, 2014

Catalytics Focus

Dedicated to the analysis and mitigation of Natural Catastrophe Risk in insurance and society

Focused on ASEAN natural catastrophe risk management
Fastest growing Nat Cat Modelling company in Asia


Collaborating with the ASEAN Insurance Council, ASEAN Associations, Universities, Government Institutions, Banks, Pools, Insurers, Reinsurers and Commercial Corporations.
Nat Cat Risk Management Tools

- Now models are affordable and available to domestic insurers
- Will help you: to reduce reinsurance costs and manage your aggregates by geocoded location, postal code or CRESTA zone.
- Increase premium income without increasing the cost of catastrophe protection. Understand and balance your nationwide aggregates
- Plan operations for catastrophic events, manage natural catastrophe exposures for reinsurance and net retention.
- Output links to Dynamic Financial Analysis software (URS) to assist with Risk Based Capital calculations
- Customize your modelling on an open, transparent platform in-house, not a “black box”.

Benefits of In-House Nat Cat Modelling

- Easy to use, models offer scientific justification for reinsurance purchases and act as a guide to management, and your board, regulators and shareholders for internal capital protection.
- Illustrate to your reinsurers how you manage your Nat Cat risks.
- Enlightenment, using today’s technology is to become a survivor
- You won’t be in the dark waiting for your brokers ‘annual flash gun shot’!
- Catalytic Models also offer:
  - A visual, graphical windows program that sits on a desktop
  - Allows the user to see the country, price risks and adjust assumptions
  - Visually combines Exposure and Seismicity to create risk maps
  - Automatically creates 3-d maps and risk visualizations
  - Based on local science (PHIVOLCS) + international seismic knowledge
  - Output accepted by reinsurers for the past 5 years
  - Includes local free training, user friendly and affordable
# In-House Risk Management

- Having the model in-house allows you to run aggregates monthly and track changes in aggregate risk when you decide.
- By tracking what you have and where you have it you gain the ability to predict your needs and plan ahead.
- Enables you to use reinsurance as a planned purchase instead of a reactive purchase (thus helps in saving money).
- Each monthly run your aggregates change, thus you can choose to manage it down or arrange protection and price.
- It empowers your company to self-determine needs according to your own strategy. It is not rocket science, just today’s “selfie”.
- Those Companies without the Catalytics risk management models are less informed than their competition.

---

# In-House Management Reports

- The following slides are examples of the type of reports you can expect to obtain from a monthly run of the Catalytics EQ model.
- OEP, and AEP curves, Conservative and Normal and comparisons run on run, or year on year.
- Split of geography by CRESTA Zone (or postal code if available).
- Excess of Loss layering structural indications vs return periods.
- Benefits of balancing CRESTA aggregates vs nationwide reinsurance exposures.
- Tracking changes in aggregates and reinsurance costs.
- Individual risk pricing vs cost of reinsurance.
### OEP and AEP Values

All figures in PHP

<table>
<thead>
<tr>
<th>Occurrence Exceedance Probability (OEP)</th>
<th>Aggregate Exceedance Probability (AEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Period</td>
<td>Normal</td>
</tr>
<tr>
<td>2000</td>
<td>1,153,617,174</td>
</tr>
<tr>
<td>1000</td>
<td>1,121,943,175</td>
</tr>
<tr>
<td>500</td>
<td>824,877,518</td>
</tr>
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<td>350</td>
<td>734,563,590</td>
</tr>
<tr>
<td>300</td>
<td>686,683,140</td>
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<td>250</td>
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<td>100</td>
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<td>10</td>
<td>47,089,124</td>
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<tr>
<td>5</td>
<td>18,481,414</td>
</tr>
</tbody>
</table>

---

### Individual and Aggregate Event Analysis

- **OEP**
- **AEP**
- **RI Capacity**

**Return period**

**PHP**

---

CATALYTICS PTE LTD
UOB Plaza 1, 80 Raffles Place #36-00, Singapore 048624 | T +65 6248 4738 | F +65 6248 4531 | www.catalytics.asia
Aggregate Risk Distribution

- Zone 8 - Northern Mindanao, 5%
- Zone 9 - Southern Mindanao, 5%
- Zone 7 - Visayas Provinces, 15%
- Zone 1 - North of Luzon, 7%
- Zone 6 - Central & South Luzon, 15%
- Zone 2 - Makati (Manila), 7%
- Zone 3 - Manila Bay (Reclaimed area), 0%
- Zone 4 - Sta. Cruz / Binondo area (MLA), 1%
- Zone 5 - Metropolitan Manila, except Zones 1, 2 & 3, 45%

Reinsurance Structure Analysis

- Per Individual Event Occurrence Loss - Return Period vs. Value (OPF)
  - 2013 KOL Reinsurance Structure
  - As at Sep 2013

-- Lines:
- L1: 600M
- L4: 425M
- L3: 309M
- L2: 154M
- L1: 75M
- D: 14M
Year on Year Comparison

![Graph showing Year on Year Comparison of OEP]

Year on Year Comparison of OEP

![Graph showing Year on Year Comparison of OEP]

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Benefits of Balancing Aggregates

THANK YOU

Using Risk Management Models In-house to Manage Natural Disaster Exposures

Mr. Richard Austen
Executive Partner & CEO
Catalytics Ltd Ltd
3rd June, 2014
The importance of ERM and CAT risk management for insurers

Jeff Yeung
Associate Director
A.M. Best Asia-Pacific Ltd

Jeff Yeung is an associate director at A.M. Best Asia-Pacific Ltd. Jeff joined A.M. Best in 2011.

Prior to joining A.M. Best, Jeff held the role of senior pricing actuary at Gen Re in Sydney. He has worked in Gen Re’s Hong Kong and Cologne, Germany, offices as well. He has more than 10 years of experience in the property and casualty reinsurance industry in markets that include Australia, Germany and China.

Jeff is a Fellow of the Casualty Actuarial Society, Fellow of the Institute of Actuaries of Australia and RMS Certified Catastrophe Risk Analyst. He is a member of the Casualty Actuarial Society Committee on Reinsurance Research. He received his BS in Actuarial Science from the University of Hong Kong.
The importance of ERM and CAT risk management for insurers

Jeff Yeung FCAS, FIAA, CCRA
Associate Director-Analytics
A.M. Best Asia-Pacific Ltd

3 June 2014

Disclaimer

The importance of ERM & CAT risk management for insurers 2

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The importance of ERM & CAT risk management for insurers 3 June 2014 2
Agenda

1. Enterprise risk management (ERM)

2. Catastrophe analysis in A.M. Best ratings
ERM defined …

“ERM is the *process* by which organizations in all industries assess, control, exploit, finance, and monitor *risks from all sources* for the *purpose* of increasing the organization’s short- and long-term value to its stakeholders.”

- CAS Committee on Enterprise Risk Management

ERM process steps

1. Establish context
   - Risk appetite
   - Risk culture
   - Authority & structure
   - Objectives setting

2. Risk identification

3. Risk assessment
   - Analyze / quantify impact & likelihood
   - Integrate
   - Prioritize

4. Treat and exploit risks

5. Monitor and review
1. Establish risk context - risk appetite

Risk Appetite

- May have a range of appetites for different types of risk
- Must be aligned under an overall risk appetite framework after all

To start with:
- Align with entity’s objectives
- Transparent communication

Reference to:
- Earnings
- Capital (regulatory, EC, …)
- Economic value (ROC, …)

Risk appetite statements examples:

**Capital Exposure**
- Capital at risk not to exceed X% of available financial resources over a Y-year horizon at Z% probability
- Maintain economic capital in excess of $X over Y-year horizon at Z% probability
- Maintain adequate capital to meet all obligations at Z% confidence level
- Maintain adequate capital to meet all regulatory capital requirements

**Earnings**
- IFRS earnings volatility not to exceed X% over a Y-year horizon at Z probability
- GAAP earnings will be within X% of target, Y% of the time

**Rating agency**
- Maintain rating at a specified level
- Maintain financial strength ratings with a Z% degree of confidence

**Value-at-risk**
- Single event loss not to exceed X% of value
- Single risk loss not to exceed X% of value
- Not engage in activity that will put long-term value at risk

**Liquidity, Cultural, Expectation, Other**
- Maintain liquidity ratios at specified levels
- Low appetite for reputational risk exposure
- Zero appetite for internal fraud activities
- Provide competitive long-term dividends
(1) Establish risk context - risk appetite

Risk Appetite

- is Subjective
- requires Ongoing Focus

= Fundamental of ERM

(2) Risk identification - major risk categories

**Underwriting Risk**
- UW Process
- Pricing
- Reserve Development
- Product Design
- Frequency, Severity
- Lapse
- Longevity, Mortality, Morbidity
- Policyholder Optionality
- Concentration

**Credit Risk**
- Default
- Downgrade
- Disputes
- Settlement lag
- Sovereign
- Concentration

**Market Risk**
- Equities
- Other Assets
- Currency
- Concentration
- Basis
- Reinvestment
- Liquidity
- ALM
- Interest Rate Sensitivity

**Operational Risk**
- Monetary Controls
- Financial Reporting
- Legal Controls
- Distribution
- IT Systems
- Regulatory
- Training
- Turnover
- Data Capture

**Strategic Risk**
- Competition
- Demographic/Social change
- Negative Publicity
- Rating Downgrade
- Customer Demands
- Availability

The Importance of ERM & CAT risk management for insurers

3 June 2014

9
(2) Risk identification
- define risks by source

<table>
<thead>
<tr>
<th>Source</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key personnel departure</td>
<td>Reputation damage</td>
</tr>
<tr>
<td>Economy downturn</td>
<td></td>
</tr>
<tr>
<td>Rating downgrade</td>
<td></td>
</tr>
<tr>
<td>Investment market shock</td>
<td></td>
</tr>
<tr>
<td>High cost of capital</td>
<td></td>
</tr>
<tr>
<td>Internal fraud</td>
<td></td>
</tr>
<tr>
<td>Reputation damage</td>
<td></td>
</tr>
</tbody>
</table>
(2) Risk identification
- define risks by source

<table>
<thead>
<tr>
<th>Source</th>
<th>Intermediate</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major CAT event</td>
<td>Rating downgrade</td>
<td>High cost of capital</td>
</tr>
<tr>
<td>Investment market shock</td>
<td></td>
<td>Reputation damage</td>
</tr>
<tr>
<td>Internal fraud</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(3) Risk assessment
- risk measures

Performance-related measures
- Variance
- Standard deviation
- Downside s.d.
- Below-target-risk (BTR)

Solvency-related measures
- Expected policyholder deficit (EPD)
- Probability of ruin
- Value at risk (VaR)
- Tail Value at risk (TVaR)

Source: "Overview of Enterprise Risk Management" Casualty Actuarial Society, Enterprise Risk Management Committee, May 2003
(3) Risk assessment
- quantifying operational & strategic risks

Challenges:
- Difficult to quantify (frequency and severity)
- Models not available
- Historical data limited

Practical solutions:
- Start with qualitative analysis, determine those risks that are material and prioritize
- Use of causal models, as opposed to parametric models
- Risk mitigation

Impact on Enterprise Value

(4) Treat and exploit risks
- manage risks

<table>
<thead>
<tr>
<th>Control</th>
<th>Financing</th>
<th>Exploit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversification</td>
<td>Hedging</td>
<td>Retention</td>
</tr>
<tr>
<td>Reduction</td>
<td>Risk Transfer</td>
<td></td>
</tr>
<tr>
<td>Prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Importance of ERM & CAT risk management for insurers 3 June 2014 16
(5) Risk monitoring - risk dashboard

Risk dashboard: graphical presentation of the organization's key risk measures (against respective tolerance levels)

<table>
<thead>
<tr>
<th></th>
<th>actual</th>
<th>target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underwriting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected UW margin</td>
<td>6.00%</td>
<td>5.50%</td>
</tr>
<tr>
<td>UY Loss ratio</td>
<td>68%</td>
<td>72%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewal rate</td>
<td>70%</td>
<td>78%</td>
</tr>
<tr>
<td>New business sold</td>
<td>$9.6 mil</td>
<td>$10 mil</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment yield</td>
<td>3.00%</td>
<td>2.80%</td>
</tr>
<tr>
<td>Duration of assets</td>
<td>4.4 years</td>
<td>4.7 years</td>
</tr>
</tbody>
</table>

Agenda

1. Enterprise risk management (ERM)
   - ERM and the rating process for insurance companies

2. Catastrophe analysis in A.M. Best ratings
A.M. Best’s ERM assessment - the main themes

Not “one size fits all”
ERM defined differently by each company
Reflects unique nature of the company

Development of internal capital models
A.M. Best will consider the use of company-provided capital models

A.M. Best’s ERM assessment

Quantitative & Qualitative
A balanced quantitative & qualitative review

ERM and rating process - ERM links the “3 Pillars”

Balance Sheet Strength
Operating Performance
Business Profile

Enterprise Risk Management
ERM and rating process - matching ERM capability with risk profile

A company’s risk management capability needs to meet its risk profile!

**Underwriting Risk**
- **Risk Profile**: High risk
- **Risk Management Capability**: Superior

**Credit Risk**
- **Risk Profile**: Moderate risk
- **Risk Management Capability**: Strong

**Market Risk**
- **Risk Profile**: Low risk
- **Risk Management Capability**: Good

**Operational Risk**

**Strategic Risk**

---

**ERM: story of two companies**

<table>
<thead>
<tr>
<th>Company A</th>
<th>Company B</th>
<th>&quot;Company A&quot; has stronger ERM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk culture</strong>: role and responsibilities</td>
<td>Establish a separate, highly qualified department, led by chief risk officer (CRO) who is a member of senior management</td>
<td>Risk management activities are embedded within various business lines</td>
</tr>
<tr>
<td><strong>Risk culture</strong>: appetite or tolerance</td>
<td>Establish risk tolerance or appetite in relation to earnings and capital on corporate level and by major LOB</td>
<td>Not defined</td>
</tr>
<tr>
<td><strong>Risk identification</strong></td>
<td>Identify and manage risk among (and within) the five categories of risk – underwriting, market, credit, operational, strategic</td>
<td>Different departments conduct risk management process separately</td>
</tr>
<tr>
<td><strong>Risk identification</strong></td>
<td>Ongoing process for identifying and managing operational risks (O.R.)</td>
<td>Operational risks are not captured</td>
</tr>
<tr>
<td><strong>Risk assessment</strong></td>
<td>&quot;What if&quot; scenario testing of unusual events (e.g. interest rate shock, stock market crash)</td>
<td>Financial planning process does not include stress testing</td>
</tr>
</tbody>
</table>
Risk management & BCAR

1. Enterprise risk management (ERM)
   - ERM and the rating process for insurance companies

2. Catastrophe analysis in A.M. Best ratings
Catastrophe analysis in A.M. Best ratings

Keys to strong catastrophe risk management:

<table>
<thead>
<tr>
<th>Data quality</th>
<th>Monitoring exposure</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Proper coding of loss exposure</td>
<td>• Monitor aggregate loss exposure accumulations</td>
<td>• Specific aggregate limits are established</td>
</tr>
<tr>
<td>• Auditing of exposure coding</td>
<td>• Exposure monitoring is a frequent and consistent process</td>
<td>• Reinsurance: ensure appropriate protection</td>
</tr>
<tr>
<td>• Most current Insurance-to-Value analysis</td>
<td>• Use several catastrophe modeling tools</td>
<td>• Catastrophe management is integrated into underwriting process</td>
</tr>
<tr>
<td>• Senior management’s firm commitment</td>
<td>• Consider potential deterministic loss scenarios</td>
<td>• Management establishes levels of acceptable exposure</td>
</tr>
</tbody>
</table>

Agenda

1. Enterprise risk management (ERM)
   • ERM and the rating process for insurance companies
2. Catastrophe analysis in A.M. Best ratings
   • Post-catastrophe evaluation
Post-catastrophe evaluation

- An analytical approach for evaluating weakened (re)insurers

**Post-catastrophe evaluation:**
What key factors will be evaluated after a rated entity is impacted by catastrophe?
Post-catastrophe evaluation –
Step I: stress test

Step I:
- If gross/net loss ≤ modeled estimates, our view of the company’s ability to meet obligations (probably) still holds
  - Rating actions are less likely
- If gross/net loss > modeled estimates, our view of the company’s ability to meet obligations has (probably) changed
  - Replace modeled estimates with gross/net loss
  - Re-run the Stressed RBC model / re-evaluate company’s risk management
  - Evaluate company’s ability to recover
  - Rating actions are more likely

Post-catastrophe evaluation –
Step II: liquidity / flexibility

Step II:
- We compare Gross Loss VS Available Liquid Assets
- Unavoidable reduction in balance sheet strength may be significant if
  - Gross loss is material
  - Amount of liquid assets is insufficient
- In case of liquidity shortfall, rating actions could take place, unless the company has (pre-arranged) credit facilities or alternative source of capital
Post-catastrophe evaluation –
Step III: risk management

Step III:
• If gross/net loss > modeled estimates, the modeled estimates provided by the company may not reflect the underlying PML
• Our view of the company’s ability to identify, measure, and manage risk may change
• **Rating actions could take place**, unless the company can justify the modeled estimates are still reasonable/reliable measures

Post-catastrophe evaluation –
Step IV: other issues

Step IV:
• Evaluate Business Profile / Future Operating Performance:
  - Management’s leadership, strategic focus, and risk appetite
  - Reinsurance pricing and capacity
  - Impact of actions taken by the company
• **Rating actions could take place**, if there is an adverse impact on the company’s business operation
Post-catastrophe evaluation – Step V: rating outlook

Step V:
• Updating our opinion:
• In general, if a catastrophe-exposed company has a good risk management practice in place:
  - Modeled gross/net PML tends to be conservative
  - Liquidity tends to remain sound relative to gross PML
  - The backbone of the company’s business operations tends not to be severely affected after a natural catastrophe
• Rating actions on these companies are less likely

Summary

1. ERM
   - 5 process steps, ongoing process
   - Holistic view
   - Value creation

2. ERM and rating process
   - Insurer’s ERM capability needs to meet its risk profile

3. Catastrophe analysis
   - Post-catastrophe evaluation: insurer’s balance sheet strength, risk management, operating performance and business profile will be reviewed
Panel discussion: 
Implementation of risk-based capital framework

Augusto P. Hidalgo 
President & Chief Executive Officer 
National Reinsurance Corporation of the Philippines

Augusto Hidalgo is currently Director, President and CEO of the National Reinsurance Corporation of the Philippines (“PhilNaRe”). He assumed the top position in PhilNaRe last April 1st, 2014.

Mr. Hidalgo brings to his new position more than 20 years of experience in international reinsurance and executive management. His most recent employment was with Peak Re, Hong Kong where he was Head of Mergers & Acquisitions. Prior to this posting, he was the Managing Partner of New World Financial, Canada from 2005-2012.

He started his career at IBM Asia Pacific in Tokyo in 1989. He returned to the Philippines in 1990 and worked with Arthur Andersen Corporate Finance Consulting. In 1992, he served as Senior Financial Analyst at EasyCall Communications. He then joined Swiss Re in 1996 and was Senior Underwriter based in Switzerland, Australia and Canada.

Mr. Hidalgo obtained his Bachelor of Science degree in Business Administration from the University of the Philippines. He completed his Master of Business Administration postgraduate work at the Kellogg School of Management at Northwestern University and the Schulich School of Business at York University.
Panel discussion:
Implementation of risk-based capital framework

Herminia S. Jacinto
President
Insurance Institute for Asia and the Pacific, Inc.

Herminia S. Jacinto or "Ming" as she is known among her friends and colleagues is a Certified Public Accountant and finished her Bachelor of Science in Business, Magna Cum Laude. She spent most of her working years as Head of the Accounting Department and later as the Chief Financial Officer of the FGU Insurance Corporation, the non-life insurance company of the Ayala Group of Companies in the Philippines.

She started her career in FGU Insurance Corporation in 1961 and moved to Universal Reinsurance Corporation in 1988 as Chief Financial Officer of the company. Her extensive training in non-life insurance and reinsurance qualified her therefore for the position of President and Chief Operating Officer of the UniversalRe to which she was appointed in January 1996.

Throughout her stay in both companies, she has been sent to various courses and seminars held either in the Philippines or abroad. She completed the Advance Reinsurance Course at the Chartered Insurance Institute (CII) in London in 1992 and took up courses on Finance, Investments, Government Regulations and Practice in the United States, Singapore, Hong Kong and Manila, of course.

In line with the company’s policy of thorough and sustained training in addition to exposing its executives to the insurance industry and the business sector as a whole, HS Jacinto has participated in many conferences either as a lecturer, speaker or resource person. She was a speaker in conference on "Emerging Insurance Markets" held in Hong Kong in October 1997. She was invited by the Bangladesh Insurance Academy to handle the topic "Internal Control and Early Warning Devices", a special course on Sound Business and Financial Practices in the insurance industry, in Dhaka, Bangladesh. Three years ago, she delivered the country report on the Philippine insurance industry in the 12th ICDC Congress held in Kathmandu, Nepal. She also attended the 14th Congress in New Delhi, India. She attended the various Conferences of the International Insurance Society, the latest ones of which were held in Mexico, Sydney, Vancouver and Hong Kong. She represented the non-life industry in the ASEAN Insurance Council Meeting held in Siem Reap, Cambodia last 2005.

Mrs. Jacinto has served the Insurance Institute for Asia and the Pacific in various capacities as President in 1998-2000, Chairperson in 2001 up to 2004 and 2006 to 2009. She was a Director of the Insurance and Surety Association of the Philippines, and served as its President in 1995. She was the Chairperson of the Philippine Insurers & Reinsurers Association (PIRA) in 2005 and continues as a Trustee of the same association until 2007. Mrs. Jacinto is currently Director of Generali Pilipinas Insurance and President of Insurance Institute for Asia and the Pacific, Inc.
Panel discussion:
Implementation of risk-based capital framework

Emmanuel Que
Chairman
Philippine Insurers and Reinsurers Associations Inc.

Emmanuel Que is currently the senior executive vice president and Board adviser of Charter Ping An Insurance Corp assisting the President in handling the over-all operations of the company.

Emmanuel has over 30 years’ experience in the non-life insurance and automotive industry and is the former senior vice president of PNB General Insurers Company, Inc., where he has a direct and active management of the business and operations of the corporation including directly supervising agents, employees and other subordinate personnel. Prior to PNB General Insurers, Emmanuel was the vice president and comptroller of Philippine Charter Insurance Corporation (now known as Charter Ping An) for 12 years after graduating from university.

Emmanuel is presently the chairman of Philippine Insurers and Reinsurers Association, an industry group of non-life insurers in the Philippines. He is a Certified Public Accountant and received his BS in Accountancy from De La Salle University in Manila.

Moung Mo Lee
General Manager, Analytics
A.M. Best Asia-Pacific Ltd.

MM Lee is the general manager of analytics at A.M. Best Asia-Pacific Ltd. MM has been with A.M. Best since 2000. He is responsible for the analytics of A.M. Best's ratings in the Asia-Pacific region. Prior to assuming his current role, MM served as the lead analyst for numerous companies in A.M. Best's Asia-Pacific portfolio.

Before joining A. M. Best, MM worked for SiemensAG and Hypo Bank in Germany.

MM received his bachelor’s degree in economics from ChungAng University and his master’s in economics from Seoul National University.
Panel discussion:  
Implementation of risk-based capital framework

Susanna SW Lam (Moderator)  
Managing Director  
A.M. Best Asia-Pacific Ltd.

Susanna Lam is the managing director of A.M. Best Asia-Pacific Ltd., where she leads A.M. Best’s operations throughout the Asia-Pacific region. Susanna oversees the ratings and news businesses of A.M. Best within the insurance and reinsurance sectors in the region, managing existing relationships and developing new relationships with key constituents in the insurance and broader financial services sectors. As a member of the Board, Susanna is responsible for ensuring that the compliance and regulatory requirements of the business are fulfilled.

Susanna has over 30 years’ experience in the reinsurance and insurance industry and is the former general manager – reinsurance department of Ping An Property & Casualty Insurance Company of China, Ltd, where, based in Ping An’s Shenzhen headquarters, she managed the company’s outwards and inwards reinsurance portfolios and headed both the treaty and facultative divisions. Prior to Ping An, Susanna was the director and general manager of Miller Insurance Services (Hong Kong) Ltd, where she set up their Hong Kong office and was responsible for developing and producing business in North Asia. Susanna was also formerly with Swiss Re, where she worked in the company’s Hong Kong and Sydney offices.

Susanna holds an ACII qualification and a diploma in management studies.
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