ING Enterprise Risk Management

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Corporate Insurance Risk Management

April 2008
www.ing.com
At a glance – ING Group

**Business line Contribution to res 1H 2007**

**Insurance**
- **Insurance Europe**
  - Pre-tax* results (€mn)
  - 2005: 2,021
  - 2006: 2,328
  - 2007: 1,840
  - Contribution: 19%

- **Insurance Americas**
  - Pre-tax* results (€mn)
  - 2005: 1,979
  - 2006: 1,992
  - 2007: 2,059
  - Contribution: 22%

- **Insurance Asia/Pacific**
  - Pre-tax* results (€mn)
  - 2005: 447
  - 2006: 621
  - 2007: 576
  - Contribution: 6%

**Wholesale**
- Pre-tax* results (€mn)
- 2005: 2,299
- 2006: 2,525
- 2007: 2,399
- Contribution: 25%

**Retail**
- Pre-tax* results (€mn)
- 2005: 1,815
- 2006: 1,932
- 2007: 2,062
- Contribution: 22%

**ING Direct**
- Pre-tax* results (€mn)
- 2005: 617
- 2006: 717
- 2007: 530
- Contribution: 6%

**Key positions**
- **Insurance Europe**
  - Leading life insurer in the Netherlands
  - Market leader in life & pensions combined in CE

- **Insurance Americas**
  - A leading US life insurance and wealth manager
  - #1 P&C insurer in Canada
  - A leading pensions provider in Latin America

- **Insurance Asia/Pacific**
  - #2 foreign life insurer in Asia
  - #2 asset manager in Asia

- **Wholesale**
  - #1 global real estate manager
  - #2 Wholesale Bank in the Netherlands
  - #1 in Benelux

- **Retail**
  - Top-3 bank in the Netherlands
  - #4 retail bank in Belgium
  - #4 bank in Poland

- **ING Direct**
  - #1 global leading direct bank with 20.3m customers

**Principal locations**
- Netherlands
- Belgium
- Luxembourg
- Spain
- Central Europe
- Eastern Europe
- United States
- Canada
- Mexico
- Brazil
- Peru
- Chile
- Argentina
- Australia/NZ
- Japan
- Korea
- Taiwan
- China
- Malaysia
- India
- Thailand
- Hong Kong
- Netherlands
- Belgium
- United States
- South America
- United Kingdom
- Asia Pacific
- Central Europe
- Netherlands
- Belgium
- Poland
- Romania
- Turkey
- India
- China
- Canada
- Spain
- Australia
- France
- USA
- Italy
- Germany/Austria
- UK

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* Underlying
Risk management organisation
ING’s international Insurance Risk Management organisation

Global network of 700+ combined risk / actuarial professionals in 45+ business units in 30+ countries
ING risk governance framework ensures the risk appetite is cascaded through the Group

**Risk strategy**

- **Risk appetite**

**Governance**

- **3 lines of defence**

**Execution**

- **Value creation / risk taking**

**ING’s risk governance framework**

<table>
<thead>
<tr>
<th>1st line of defence</th>
<th>2nd line of defence</th>
<th>3rd line of defence</th>
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</thead>
<tbody>
<tr>
<td><strong>Business lines</strong></td>
<td><strong>Risk</strong></td>
<td><strong>Internal audit</strong></td>
</tr>
<tr>
<td>• Business line managers have primary responsibility for day to day risk management..</td>
<td>• Formulate high-level policies, limits, risk appetite</td>
<td>• Assurance of the overall effectiveness of internal controls</td>
</tr>
<tr>
<td>• ..and bear the consequences of losses</td>
<td>• Provide oversight, challenge and support to optimise the risk/reward trade-off</td>
<td>• Financial, operational, compliance and risk management</td>
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Alignment between risks taken and the Group risk appetite
## ING focused on all roles of risk management

<table>
<thead>
<tr>
<th>Risk Disclosure</th>
<th>Purpose</th>
<th>Examples</th>
</tr>
</thead>
</table>
|                 | Our risks and strategy are transparent to internal and external stakeholders to support an appropriate evaluation | • Investor disclosures – substantially improved in 07/08  
• IFRS 7 Risk Paragraph  
• Basis for Solvency II/QIS 4 |

<table>
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<th>Risk Strategy</th>
<th>Purpose</th>
<th>Examples</th>
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|               | Delegated authorities are consistent with the overall Group strategy for profitable growth and the Group’s risk appetite | • Establish Risk Appetite  
• Strategic Planning: EC/limits/value metrics  
• Capital Management & Planning |

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<th>Risk Reporting/Controlling</th>
<th>Purpose</th>
<th>Examples</th>
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|                           | Our risk profile is transparent, e.g. “no surprises”, and consistent with authorities and limits delegated by the Group | • Risk Dashboard at EB level  
• MVaR limit structure  
• EC and MV Surplus quarterly  
• Innovative EC system ties to market risk analysis |

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<th>Risk Underwriting</th>
<th>Purpose</th>
<th>Examples</th>
</tr>
</thead>
</table>
|                   | Our products and portfolios are structured, underwritten, priced, approved and managed appropriately | • Clear standards for approval of ins./inv. products  
• Standards of Practice/Guidelines  
• Value metrics for new business- IRR and market consistent |
Key Points for ING Risk / Value Based Mgmt

**Public Disclosure**
- 2007: Finalised ECAPS: robust, auditable risk reporting system
  - Public disclosure of EC and Risk Dashboard in line with IFRS 7
  - Model Governance framework

**Management**
- 2006: Risk Dashboard introduced for Executive Board
  - Full migration of EC, MVaR, MC_NB review and hotspots into planning process
  - Manage solvency primarily on MV surplus and EC basis
  - Risk governance framework

- 2005: Executive Board approval to further implement EC
  - EV Profit introduced as key performance metric
  - Introduction of MVaR limits
  - MC Pricing targets introduced in product approval

**Control**
- 2004: EC results used to calibrate internal solvency model for EV/pricing

**Measurement**

Continual improvement process
### Important ING ERM initiatives in last 3-4 years

| Risk Culture | In 2004, ING began an initiative to “turn actuaries into risk managers”  
|--------------|-------------------------------------------------------------------  
|              | • Value metrics added as key performance metric next to earnings – EV Profit  
|              | • “Chief Actuaries” are now “Chief Insurance Risk Officers”  
|              | • Strengthening of functional risk management column  
| Risk Governance | Insurance risk management functional governance structure defined  
|               | • Risk appetite set by Executive Board based on Capital/Earnings at Risk  
|               | • Clear roles and competencies established for risk managers  
|               | • Clear accountability for risk approval/disapproval – CIROs have veto rights  
|               | • Risk model governance approved with clear approval/review procedures  
| MVaR Limits | Market Value at Risk limits were set in 2005  
|             | • Strict limits on market + credit risk EC by business line- cascaded to units  
|             | • Provides clear method of mapping economic capital usage to returns  
|             | • Assigned annually after strategic planning process  
|             | • Improved structure to discuss changes to risk profile in volatile markets  
| Risk Modelling | New EC model based on replicating portfolio methodology  
|               | • Increased efficiency and auditability leads to SOXable 2007 EC disclosures  
|               | • Significantly improved ability to aggregate and analyse risk positions  
|               | • Basis for Solvency II and potential IFRS Phase II reporting |
Overview of RenaissanceRe Holdings Ltd.

• Bermuda-based insurance and reinsurance company founded in 1993
• Financial profile YE 2007
  - $3.5 billion of shareholders equity
  - $1.8 billion of gross premiums written
  - $570 million of net income
• 240 employees in six locations (Bermuda, Dallas, Dublin, Houston, Narragansett, Raleigh)
• One of the leading writers of property catastrophe reinsurance, $1 billion of gross written cat premium in 2007
• Given focus on property cat, risk management has been key to the management of the company from inception
  - Early adopter of catastrophic risk models, over $30 million invested in proprietary risk model, REMS©
Risk management framework has four key activities

- Evaluating and quantifying risk
- Aggregating the risk portfolio
- Managing operational risk
- Improving the way we manage risk
  - Modeling
  - Risk identification
  - Governance
RenRe Risk Management Principles

• Seek to understand all the risks being assumed
  – Avoid gratuitous exposure
• Combine tools and expert users to evaluate risk-reward decisions
• Foster the right culture
• Use multiple vectors to evaluate risk
  – Crude proxies for risk instead of ignoring risk
• Structure appropriately; how you take risk can be as important as the risk you take
• Measure and monitor the aggregate portfolio using robust systems and frameworks
• Define tolerances for acceptable levels of risk
  – Processes to avoid or eliminate certain types of risks
• Emphasize performance vs. expectations rather than outcomes
• Undertake a constant process to enhance and improve
• Communicate regularly with key stakeholders
Organizational culture and structure matter

- Culture of risk management needs to permeate the organization to be effective; silos of expertise do not work

- Linkage between modeling and underwriting is critical
  - Underwriters should understand the models and seek to assess risk with the consistent framework
  - Integration needs to occur in a real time environment to be effective
  - Recognize the limits of modeling and value underwriting judgment

- Keep risk-management and risk-taking processes as close as possible in terms of responsibility

- Underwriting mindset to assess impact of the incremental deal on the overall portfolio using consistent risk metrics—avoid surprises when portfolio is rolled-up
Robust process to calibrate, use and maintain the various quantitative models

- Scrub exposure data and maintain industry databases
- Incorporate the best of what is available from the vendors
- Build proprietary models for unmodeled risks
- Regular process to upgrade and enhance models
- Actual vs. modeled analyses whenever possible
- Impose correlation when not captured ‘organically’
- Pursue scientific research to better calibrate models

~20% of our employees support this work
Risk Aggregation Schematic

RenaissanceRe Holdings Ltd.

- Business units
- Segments
- Portfolios
- Legal Entities

- Catastrophe Reinsurance
  - Workers Comp Cat
  - Cat-exposed Individual Risk
  - JV Fees and Equity Pick-up
  - Ceded Retro
  - Credit Haircut
  - Event Driven Correlation

- Specialty Reinsurance
  - Program Business
  - Imposed Correlation

- Strategic Investments
  - Fixed income Investments
  - Alternative Investments
  - Operational Risk
  - RIM
  - Random Correlation
Enterprise Risk Management at Manulife Financial

Bev Margolian
Executive Vice President and Chief Risk Officer

April 15, 2008
Overview of Manulife Financial

Manulife Financial

Business Segment

- U.S. Insurance
  - 2007 Earnings Contribution: 18%
  - 3 Year Earnings (C$m): 614, 622, 755
  - Premier Market Positions: #1 Individual Life, #1 Variable Life, #1 Group LTC, #2 Universal Life, #2 Retail LTC

- U.S. Wealth Management
  - 2007 Earnings Contribution: 26%
  - 3 Year Earnings (C$m): 868, 1136, 1100
  - Premier Market Positions: #1 Small Case 401(k), #3 Variable Annuities, #20 Mutual Funds

- Canada
  - 2007 Earnings Contribution: 26%
  - 3 Year Earnings (C$m): 809, 981, 1103
  - Premier Market Positions: #1 Group Health, #1 Ind Seg Funds, #2 Group Pensions, #2 Ind Fixed Annuities, #2 Ind Life, #3 Group Life

- Asia & Japan
  - 2007 Earnings Contribution: 20%
  - 3 Year Earnings (C$m): 732, 734, 858
  - Premier Market Positions: #3 Vietnam, #4 Shanghai, #5 Singapore, #6 Japan VA, #6 Philippines, #7 Hong Kong, #10 Malaysia

- Reinsurance, Inv Mgmt & Other
  - 2007 Earnings Contribution: 10%
  - 3 Year Earnings (C$m): 271, 512, 486
  - Premier Market Positions: #1 North American Individual Life Retrocession

Over C$90 billion in 3rd Party Assets Under Management

22,000 employees across 15 different countries
Overview of ERM Framework

**Governance**
- Risk philosophy and appetite
- Policies and standards of practice
- Accountabilities and authorities
- Cascading limits

**Execution**
- Risk taking
- Identification, assessment, measurement, reporting
- Control and mitigation

**Assurance**
- Independent audit
Our Risk Philosophy

Strategically optimize risk
to support long term revenue and earnings growth
to ultimately increase shareholder value

- Safeguard commitments to customers
- Protect reputation
- Take appropriate level of risk
- Capitalize on aligned opportunities
- Make informed decisions about risk
Key elements to ERM effectiveness

- Well entrenched risk culture; risk management highly valued
- Strongly endorsed by executive management and Board
  - Support demonstrated proactively and broadly
  - Constant investment in enhancements and improvements
  - Focus on transparency with key internal and external stakeholders
- Business leaders own risks
  - Risk management integral component of business management
  - ERM framework and philosophy guides all risk-taking activities
- Corporate Risk partners with businesses to optimize risk/returns
  - Risk policies and standards of practice applied consistently across all business and markets globally
  - Risk exposures considered from an enterprise perspective
  - Appropriate balance between robust risk assessment tools and fundamental business judgment
Governance Structure

Board of Directors

Board Committees

Audit & Risk Management
Conduct Review and Ethics
Corporate Governance
Management Resources & Comp

Chief Executive Officer

Executive Committee
Chair: CEO

Executive Risk Committee
Chair: CRO

Corporate Functions
Business Units
Investment Management
Credit Committee
Global ALCO
Product Oversight
Corporate Risk Management’s Role

- **Chief Risk Officer**
  - **ERM Program Development and Management**
    - Risk Measurement Models (Economic Capital)
    - Stochastic Asset Return Generators
    - Risk Aggregation and Reporting
    - Risk Education
  - **Risk-Specific Policy and Oversight**
    - Credit Risk
    - Market Risk
    - Insurance Risk
    - Operational Risk
  - **Risk Management Services**
    - Asset Liability Management
    - Variable Annuity Hedging
    - Corporate Insurance Programs

- Product Approvals
- Investment Strategy and Transaction Approvals

Manulife Financial
Important ERM Developments

• Appointment of CRO, integration of all risk functions
  • ~90 people covering market, credit, insurance, operational risks and aggregate risk measurement and reporting
  • Integrated approach to risk/return/growth optimization reflecting product portfolios and investment strategies

• Maturation of risk committees and education of executive/Board
  • Created Executive Risk Committee
  • Strategic discussion of enterprise risk profile/positions and business strategies

• Developed consistent risk models and metrics for all risks and business
  • Established risk appetite and consistent risk limits
  • Applied tools for risk/return optimization

• Enhanced risk disclosure internally and externally
  • Board, regulators, rating agencies, investors

⇒ Excellent S&P ERM Rating, contributor to AAA rating
⇒ Contributed to strong market positions, growth and profitability