



ANDREA BOLGER
Chief Risk Officer, USA and International

ENTERPRISE RISK MANAGEMENT

RBC's Practical Approach

NC State University

November 19, 2004

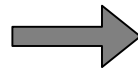
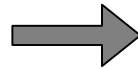
- **Canada's largest bank as measured by market capitalization and assets, and is one of North America's leading banks**
- **Market Cap USD34.28BN, Assets USD326.7BN, 2003 Profit USD2.08BN**
- **Diversified financial services - provides personal and commercial banking, wealth management, insurance, corporate and investment banking, and transaction processing services**
- **Serves more than 12 million personal and business clients through offices in North America and some 30 countries around the world, employs 60,000 people**
- **RBC Centura, wholly owned subsidiary of RBCFG, 270 full service offices**

- **RBC's overall perspective on risk**
- **Operational Risk**
- **Reputational Risk**

Business is about taking and managing risk. What is bad is risk that is mismanaged, misunderstood, mispriced or unintended.

Traditional Risk Management

- Isolated from returns/opportunities
- Fragmented across the business
- Accept or reject risk



Enterprise-Wide Risk Management

- Links risks to opportunities
- Integrated into overall management process
- Work with the business during the structuring of deals, developing strategies, policies and procedures

Three Imperatives

- Build an organization-wide risk culture
- Develop a common unit of measurement
- Apply risk framework to strategic planning



RBC
Financial
Group™

RBC Financial Group Risk Pyramid





RBC
Financial
Group™

RBC Financial Group Risk Pyramid



Credit

Less Control



More Control

Key Control Processes

- *Consumer and small business* – credit scoring models
- *Commercial and corporate* – internal risk ratings

Risk Measurements

- *Consumer and small business* – each portfolio assessed on overall performance and portfolio quality
- *Commercial and corporate* – classification reporting and expected loss monitoring

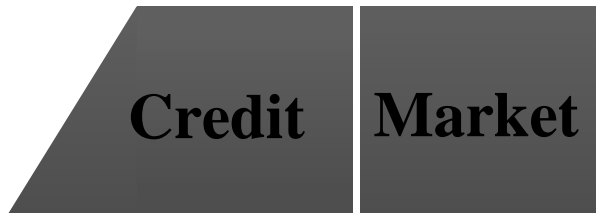
Risk Mitigation

- Portfolio diversification
- Country and Sector limits
- Single name limits
- Credit derivatives contracts
- Loan sales
- Problem loan workout group
- Insurance



RBC
Financial
Group™

RBC Financial Group Risk Pyramid



Less Control



More Control

- **Oversight of trading activities performed by Market Risk Management function – independent of Trading operation**
- **Implementation of a Comprehensive risk policy framework**
- **Daily monitoring of Enterprise wide market risk through:**
 - **Value at Risk (VaR)**
VaR is a model based estimate of maximum one day trading loss at a 99% confidence level
 - **Sensitivity analysis – detailed portfolio analysis**
 - **Stress Testing – impact of extreme market movements**
- **Result:**
 - **Diversification of risks on a Global basis**
 - **Less volatility observed in daily Profit & Loss**
 - **Relatively few days with trading losses**



RBC
Financial
Group™

RBC Financial Group Risk Pyramid

Less Control



More Control

Credit

Market

Liquidity

- Monitoring the stability of funding sources
- Maintaining diversification of liabilities by counterparty, currency and instrument
- Building relationships with funds providers and establishing an ongoing presence in different funding markets



RBC
Financial
Group™

RBC Financial Group Risk Pyramid



- Product Design & Pricing Risk
- Insurance Underwriting Risk



RBC
Financial
Group™

RBC Financial Group Risk Pyramid



Defined as “ The risk of direct or indirect loss resulting from inadequate or failed processes, technology or human performance, or external event”

- People Risk
- Process Risk
- Technology Risk
- External Risk

Some Notable Operational Losses:

2004 RBC – *Computer Failure*

2003-2004 National Australia – *rogue trader*

2003-2004 Parmalat – *accounting fraud*

2003-2004 Mutual Fund Industry Scandal – *fraudulent trading*

2001 Enron – *accounting fraud*

Cantor Fitzgerald – *Terrorist attack*

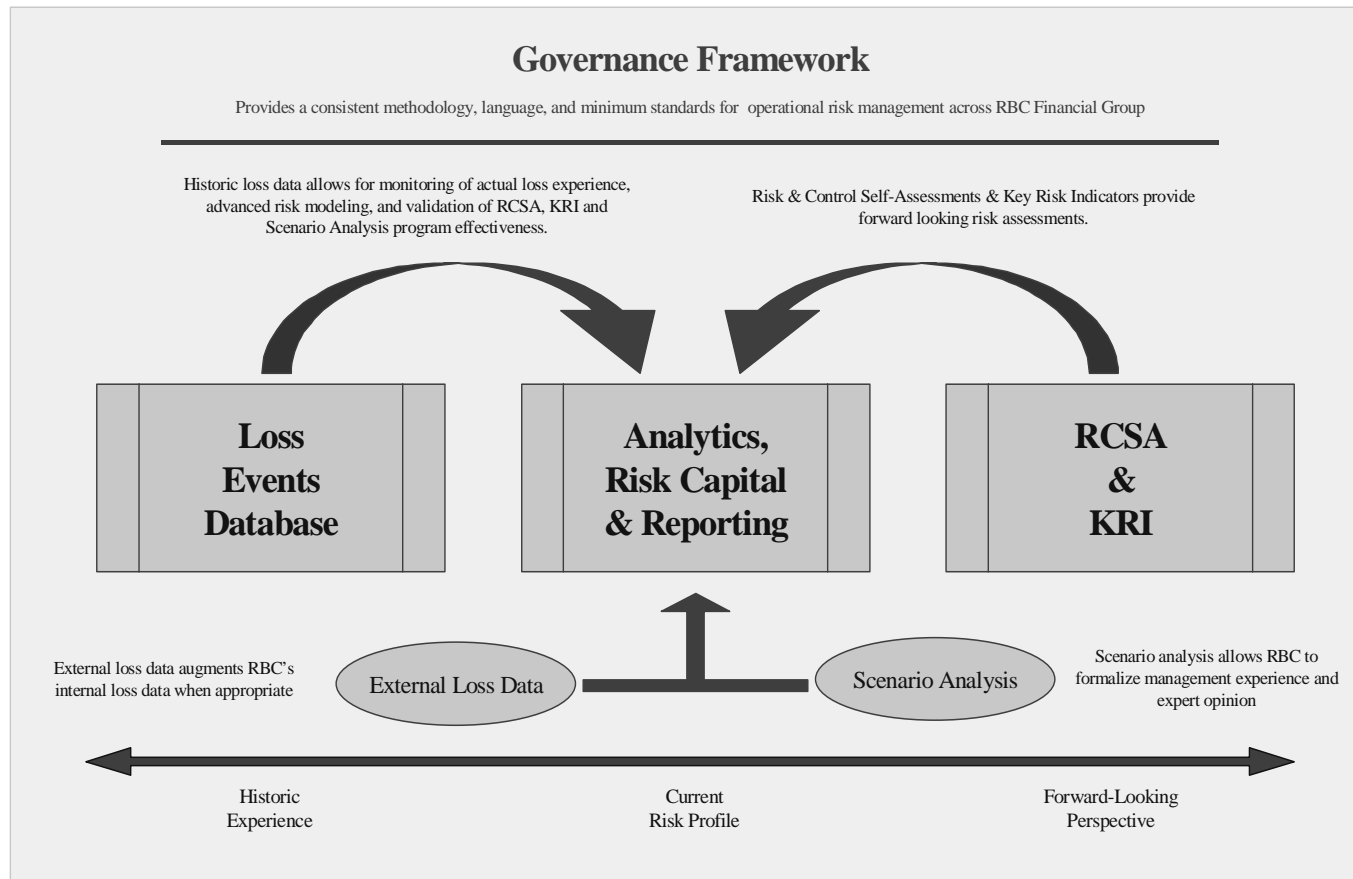
1998 Long Term Capital Mgmt. – *failed hedge fund*

1995 Barings Bank – *rogue trader*

1994 Orange County – *mismanaged investment pool*

Morgan Stanley – *Blackberry on eBay*

RBC's Operational Risk Management Framework



Governance Framework

- **Operational risk identified as a distinct and significant risk within RBC's Risk Management Framework**
- **Chief Risk Officer and Group Risk Management responsible for developing and implementing the Operational Risk Management Framework**
- **The Operational Risk Steering Committee is the key communication forum between Business Units, Functional Units and Group Risk Management and facilitates the sharing of information between members and provides oversight of all enterprise-wide and significant business-specific operational risk policies and processes to measure, manage and mitigate operational risk**

Loss Events Database (Historical Perspective)

- Enterprise-wide policy governing the collection of loss event data across all business and functional units and subsidiaries globally
- Mandatory requirement
- Central, Group-wide database repository
- Responsibility for the completeness and accuracy of the information entered into the LED database rests with the individual business or functional units while stewardship of the data and responsibility for the supporting infrastructure resides with Group Risk Management – Operational Risk

Risk & Control Self-Assessment (RCSA) Key Risk Indicator (KRI) programs

- Forward looking perspective
- Allows for potential risks and control deficiencies to be identified and addressed before they manifest themselves as actual loss events

Analytics, Risk Capital & Reporting

- LED, RCSA and KRI provide the infrastructure to collect information on RBC's operational loss experience, risk & control self-assessment, and risk exposure.
- Analytics, Risk Capital & Reporting Framework is not a separate program but, rather, a collection of programs and processes designed to collect, analyze and communicate the current operational risk profile.
- The Operational Risk Economic Capital Framework is a key component and provides a directionally correct metric of RBC's exposure to operational risk and appropriate incentives to effectively manage that risk.

External Loss Data and Scenario Analysis

- External loss data provides information on the operational loss experience of other financial institutions and allows RBC to study “lessons learned”, monitor emerging industry trends, facilitate scenario analysis, study industry case studies, and augment internal data for modeling purposes
- Scenario analysis allows RBC to formalize management experience and expert opinion and analyse the potential effect of events that have not occurred at RBC

Credit Risk

- Risk sensitive capital calculation
- Three alternatives:
 - Standardized
 - IRB Foundation
 - IRB Advanced

Operational Risk

- Explicit capital charge introduced
- Three alternatives:
 - Basic Indicator
 - Standardized
 - Advanced Measurement

Trading Book Issues

(Incl. Market Risk)

- Regulatory capital treatment unchanged

ALTERNATIVES FOR CALCULATION OF OPERATIONAL RISK CAPITAL

Basic Indicator

- Simple % of consolidated gross income
- 15% of annual gross income over the previous three years

Standardized

- Supervisory defined business lines and betas (capital factors) for each of eight business lines
- 12% to 18% of gross income of business unit over the previous three years

Advanced Measurement

- Range of permitted methodologies, to be approved by home regulator
- Bank's own estimates of Exposure Indicators, Probability of Loss Event, Loss Given Event
- Gammas (capital factors) supplied by supervisor



RBC
Financial
Group™

RBC Financial Group Risk Pyramid



- Defined as “The risk that an activity of RBC Financial Group or its representative will impair RBC Financial Group’s image in the community or public confidence, and that will result in the loss of business and/or legal action or additional regulatory oversight”
- Many policies and procedures support the management of reputational risk across the organization
 - Code of conduct
 - Conflicts of Interest policy
 - Business Continuity Management Policy
 - Know Your Client
 - Privacy and Information Security Policy

- **An Integral part of overall risk management framework**
 - Credit decisions
 - Approval Processes for Policies and Procedures
 - Business Platform Strategies and Operational Planning Process
 - Enterprise-wide Policies
- **Risk Committee reviews initiatives with potential reputational risk implications**



RBC
Financial
Group™

RBC Financial Group Risk Pyramid



- Complex and changing regulatory environment (e.g. Basel II Sarbanes Oxley)
- Increased scrutiny from 3rd parties (e.g. Credit Rating Agencies, Auditors)
- Increasing reliance on technology
- Increased focus on governance
- Greater focus on operational risks
- Potential loss in shareholder value

= Increasing
Board
Accountability

The Risk Pyramid: An Organizational Perspective



- An integrated bank-wide approach
- Developed over time
 - Monitored through Continuous Audits and Reviews
 - Embedded in Project Appropriation Requests
 - Part of strategy assessments
 - Governance

- Understand the risks
- Create appropriate risk culture
- Support with quantitative tools
- Strike the right risk-reward equation
- Establish roles and accountabilities

= Enhance
Shareholder
Value