

Enterprise Risk Management for P&C Insurance Companies

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Agenda

- ERM Research Project
- Summary of Research Findings
- Underwriting Psychology
- Our Proposed Actions

ERM Research Project

- Co-sponsored by
 - Casualty Actuarial Society
 - Risk Management Section (SOA & CAS)
 - ERM Institute International, Ltd
- Researcher Team
 - Shaun Wang (actuary, scholar)
 - Bob Faber (executive, senior underwriter)
 - Assisted by Project Oversight Team chaired by John Kollar (ISO)

Objectives & Time line

■ Objectives:

- Propose a fresh ERM Theory that is applicable to all sectors
- Make ERM operational for P&C insurers

■ Time Line

- Feb 16, started
- June 15, exposure draft
- August 1, completed

The Concept of Risk Dynamics

- *The big Universe* consists of
 - many *projects* (risks and opportunities),
 - external *players* (customers, competitors),
 - external *forces* (financial, regulatory)
- An enterprise sits within the big universe
 - selected projects, internal players & internal forces
- “*risk dynamics*” refers to the interactions of forces and players within and without the enterprise.

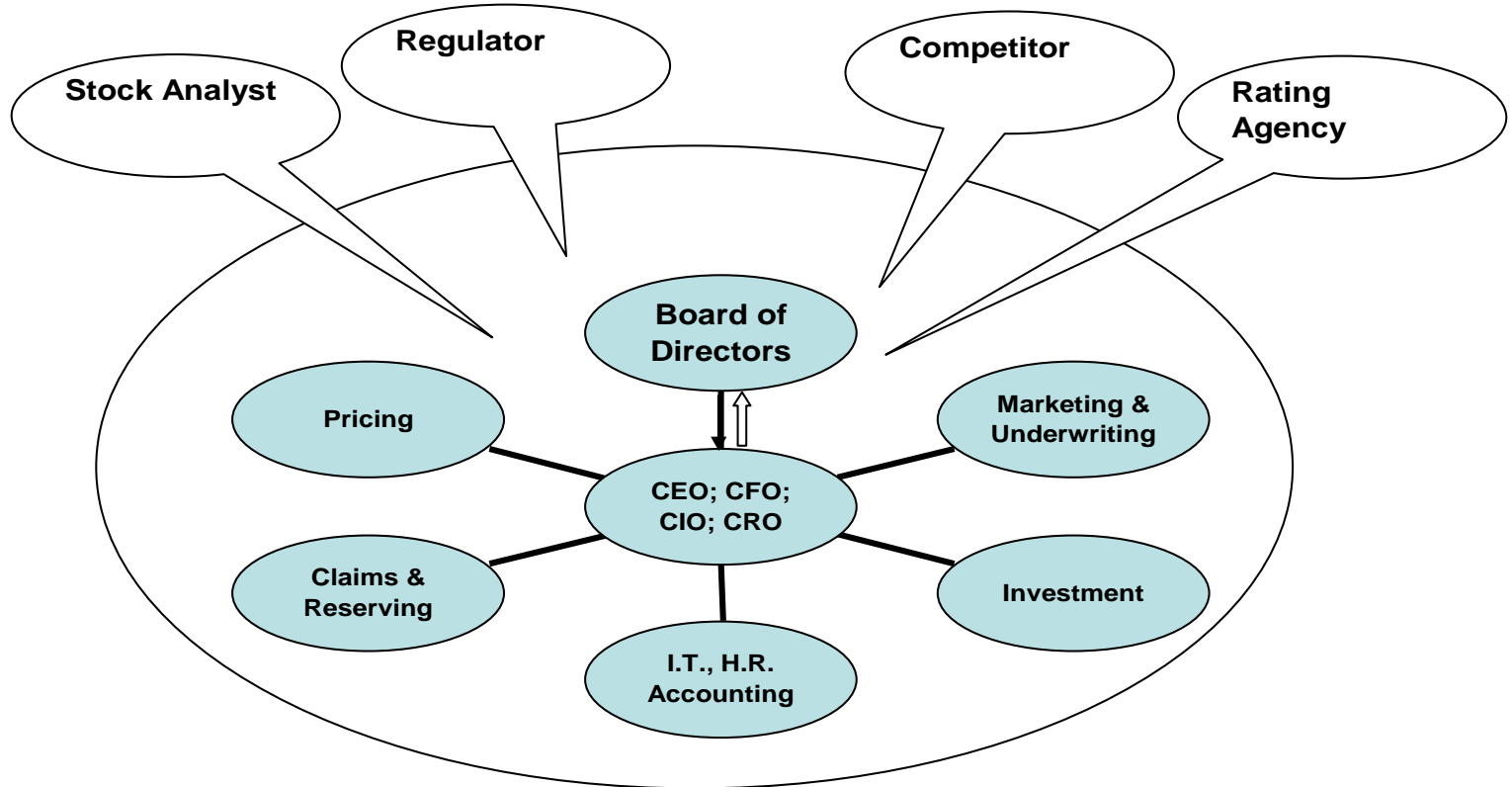
We define ERM as

- *studies of the system of risk dynamics of the enterprise, including interactions among internal and external risk dynamics, and how players' actions (including the risk management practices) can influence the behaviors of the risk dynamics, with the ultimate goal of improving the performance and resiliency of the system.*

Element of ERM Framework

- 1) Analyze the business model
- 2) Define the scope of business operations,
- 3) Identify operating constraints by regulators and rating agencies,
- 4) Measure sensitivity to external and internal forces,
- 5) Develop business or risk strategies to interact with the various forces
- 6) Monitor the dynamics

P&C Insurer Risk Dynamics -- Players



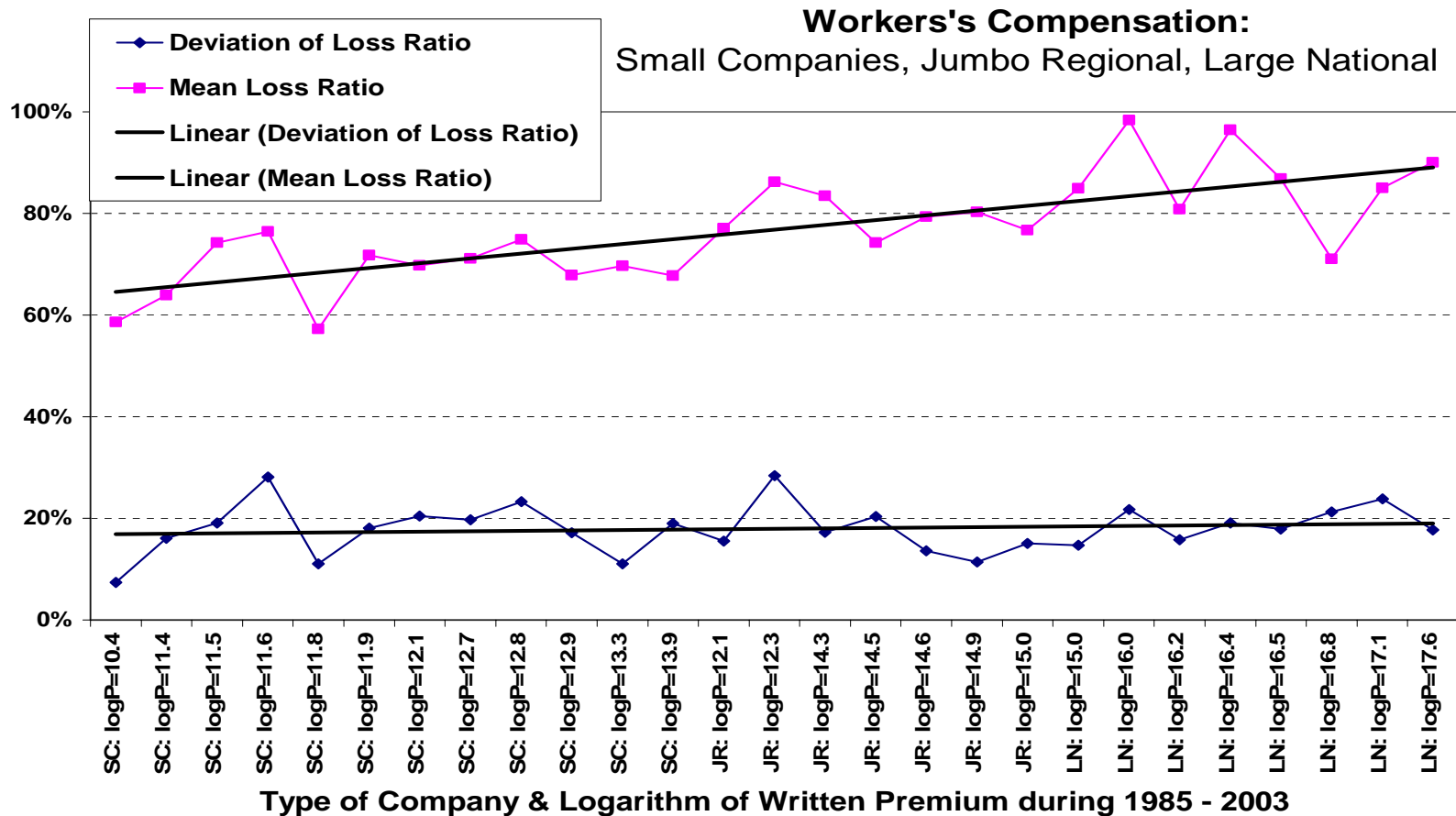
Net Effect of Diversification Benefit/Penalty

- It depends on the nature of business model, & how you conduct the business
 - Personal Lines: diversification essential for managing catastrophe exposure
 - Commercial Lines: we observed dramatic differences in financial performance among companies with different underwriting/pricing practices

Empirical Studies

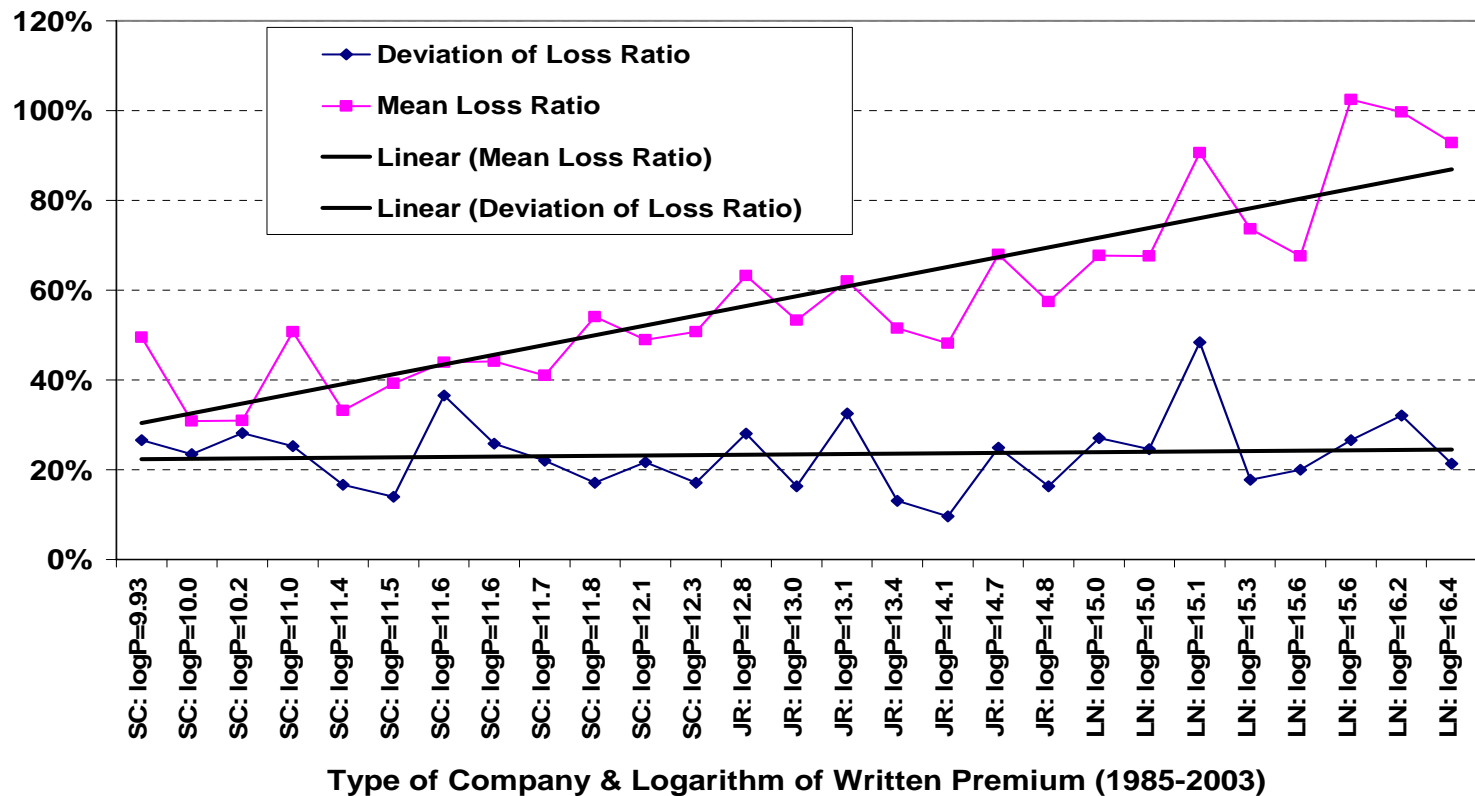
- A sample of 29 insurance companies:
 - 1) Small Companies (14 companies)
 - 2) Jumbo Regional (7 companies)
 - 3) Large National (8 companies)
- Focused on WC and GL
 - use gross loss ratios
 - use gross loss triangles

Mean and Deviation of Loss Ratio in relation to Size of Written Premium - WC



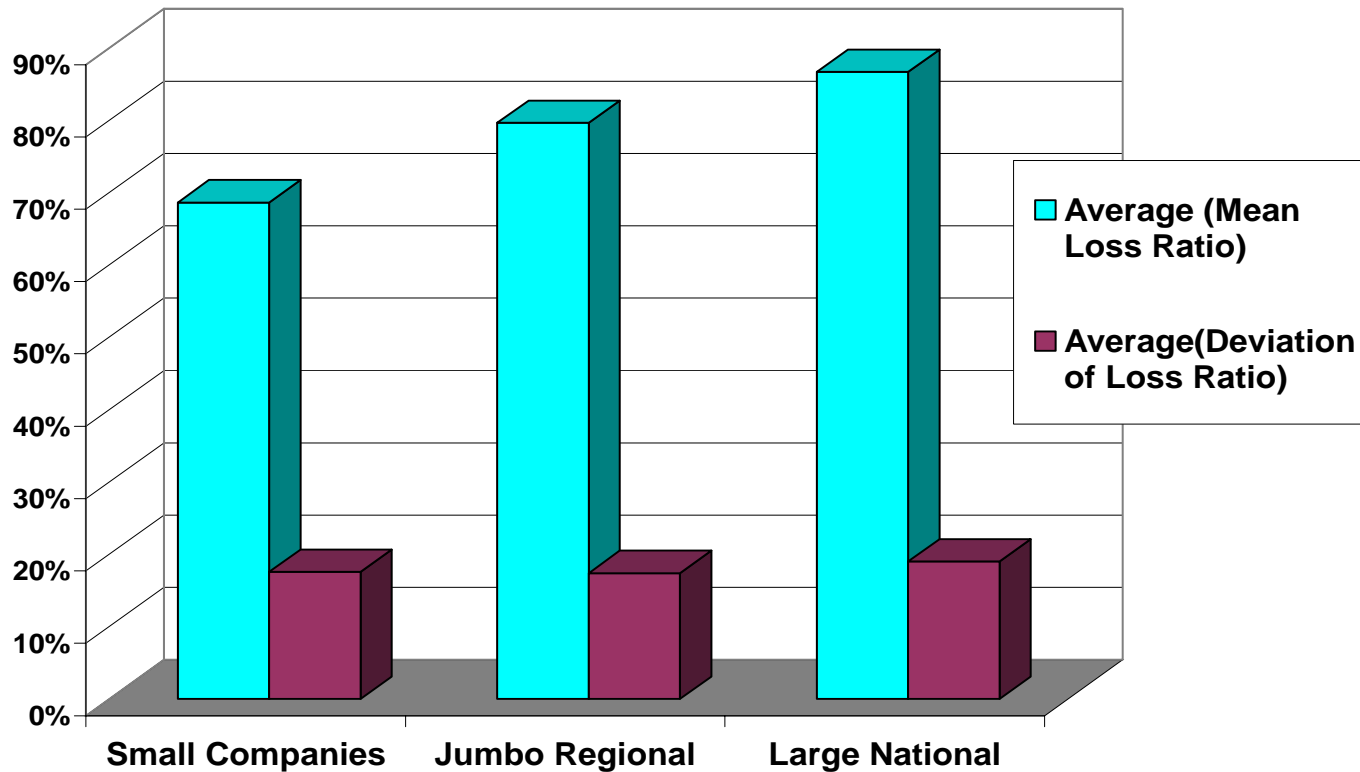
Mean and Deviation of Loss Ratio in relation to Size of Written Premium - GL

General Liability: Average and Stdev of Loss Ratio By Company
 Small Companies, Jumbo Regional, and Large National



Summary Result by Company Type

Workers Compensation: Loss Ratios By Company Type

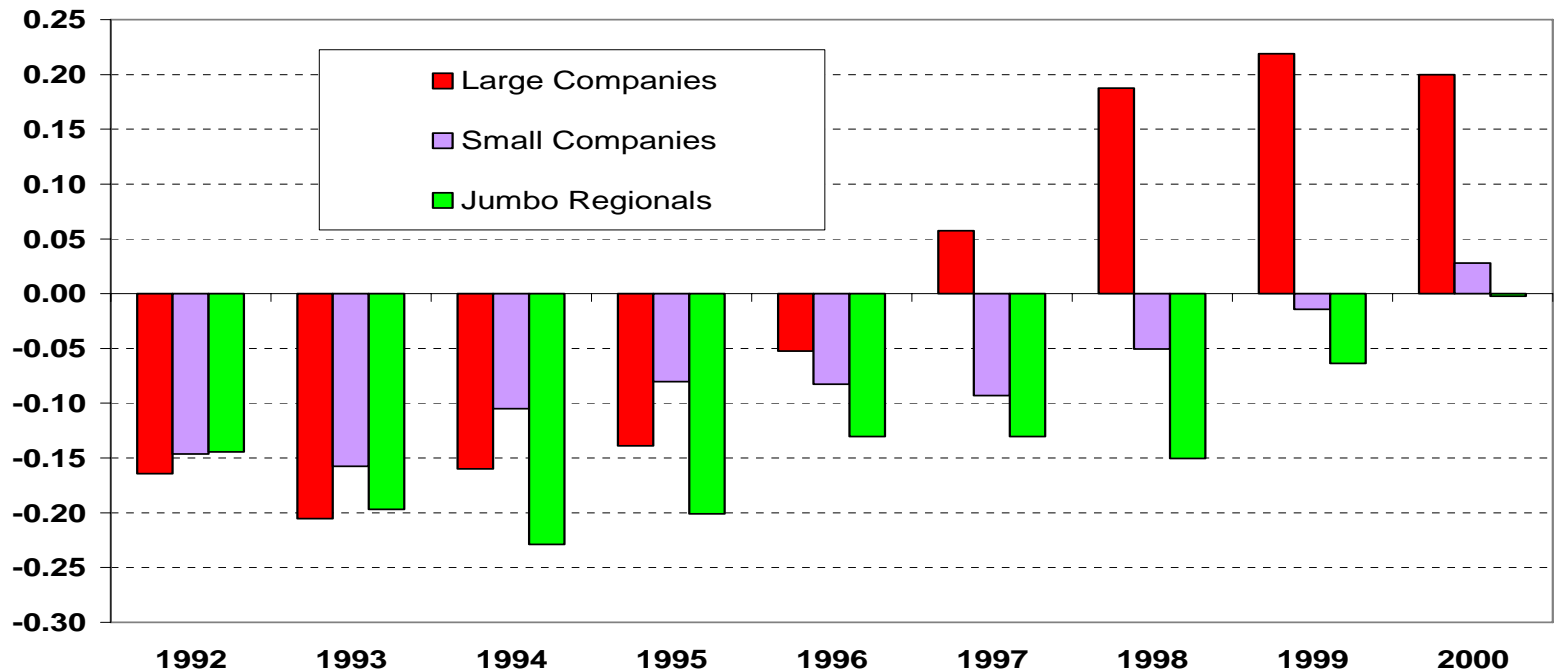


Loss Reserve Practices

- For a selected company and 1997 accident year, we observe booked loss ratios at 12/31/1997, 12/31/1998, up to 12/31/2004.
- Loss Development for Accident Year 1997 =
{Estimated Incurred Loss as of 12/31/2004} –
{Initial Incurred Loss Ratio of 12/31/1997 }

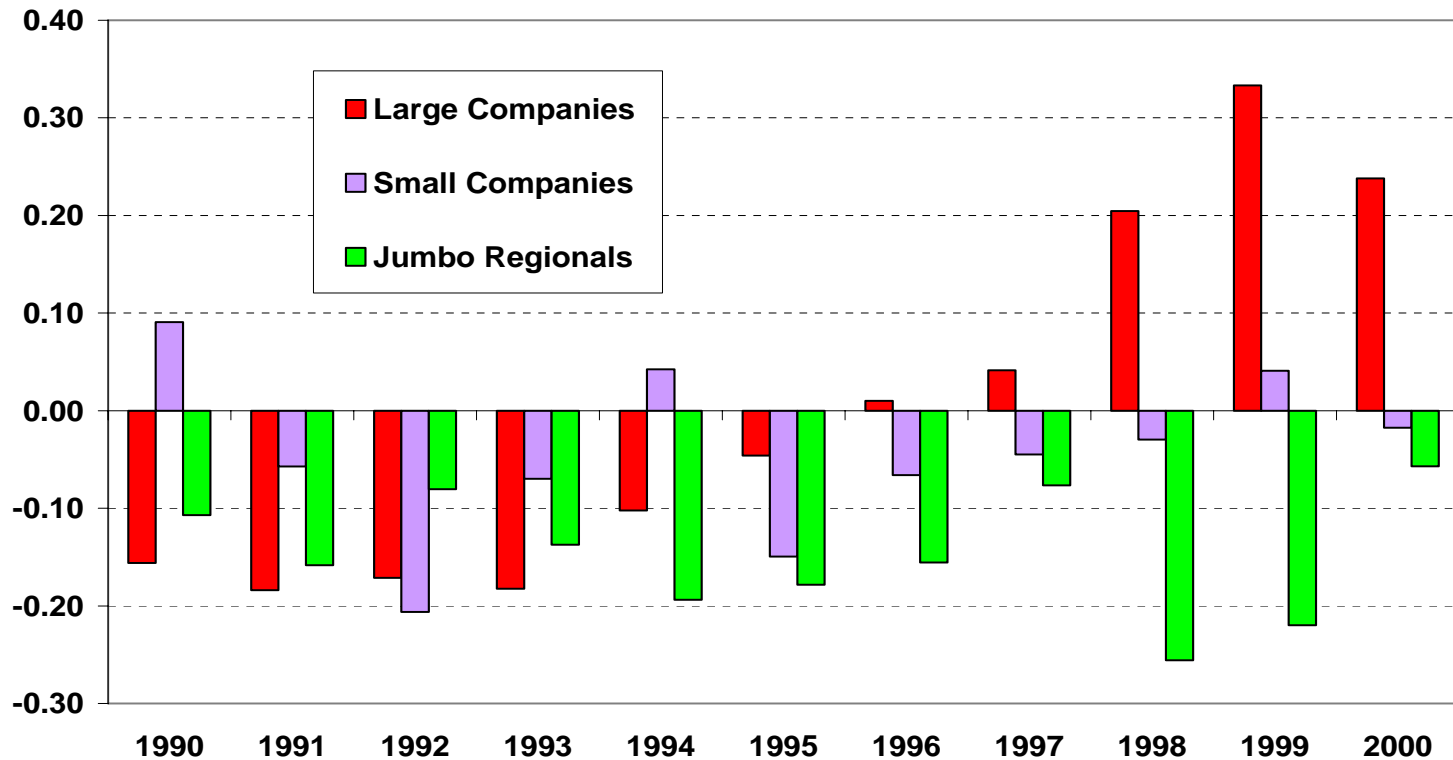
Workers Compensation Loss Development

**Worker's Compensation Reserve Development:
Difference in Updated Loss Ratio and Initial Loss Ratio**



General Liability Loss Development

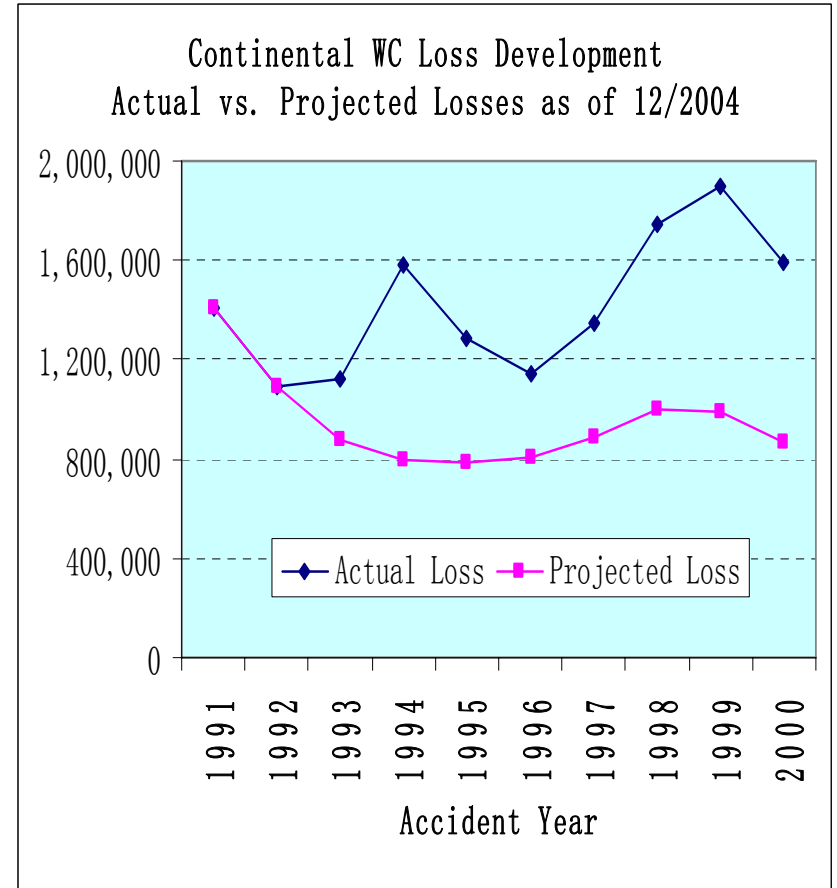
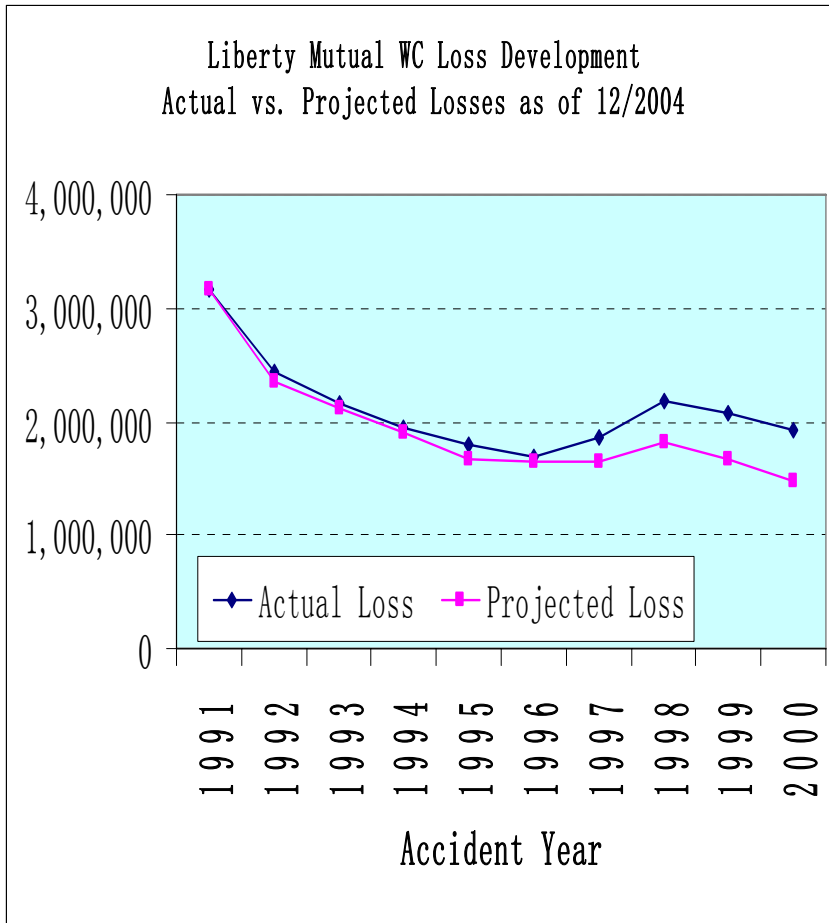
Other Liability (Occurrence) Reserve Development:
Difference in Updated Loss Ratio and Initial Loss Ratio



Back Testing of the Chain-Ladder Development Method

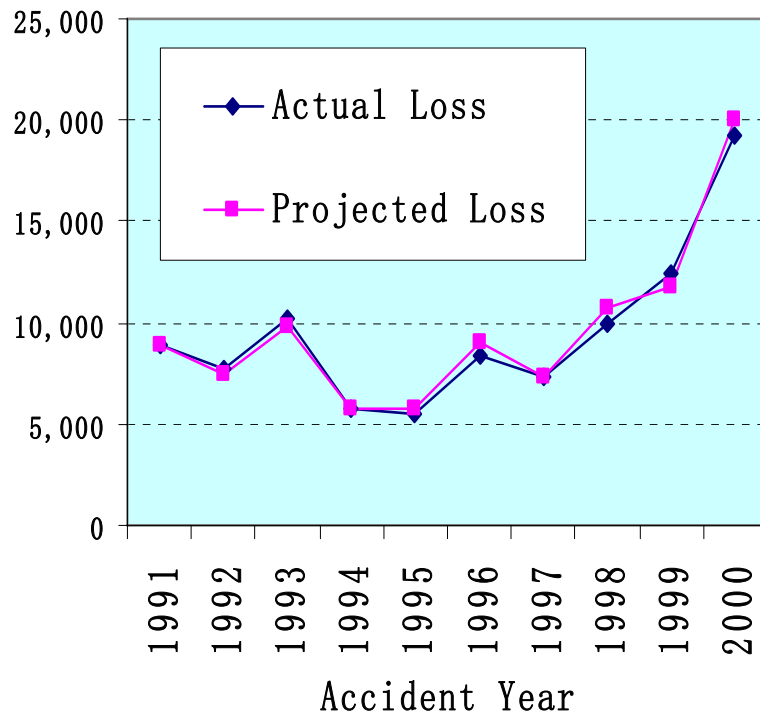
- For each company and a given line of business (WC or GL), we use the loss triangle data up to the end of year 2000 as input.
- Applied the Chain-Ladder method to project future development to end of 2004.
- Compared the projected losses with the actual observed losses by the end of 2004.

Large National Companies

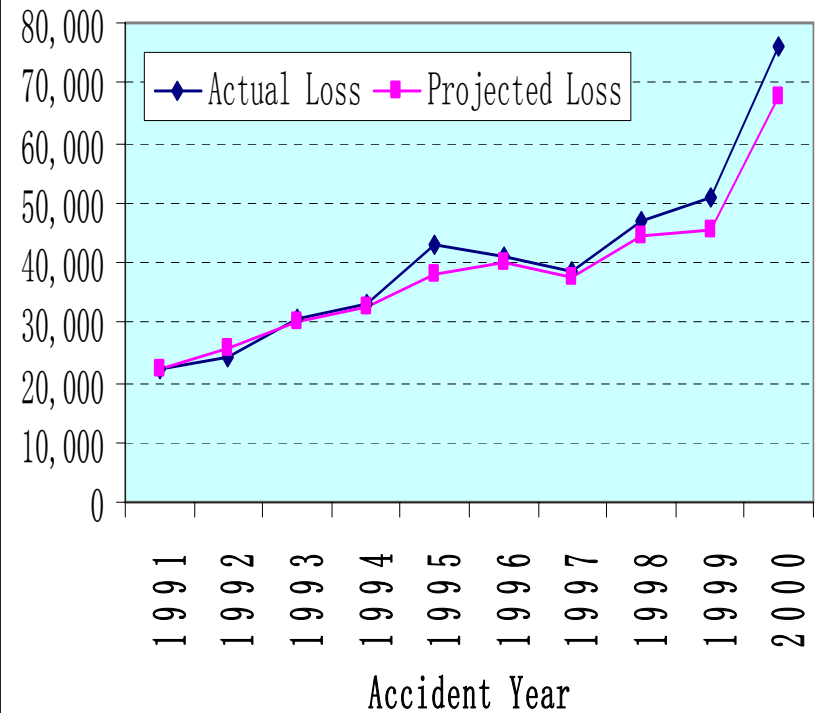


Small & Regional

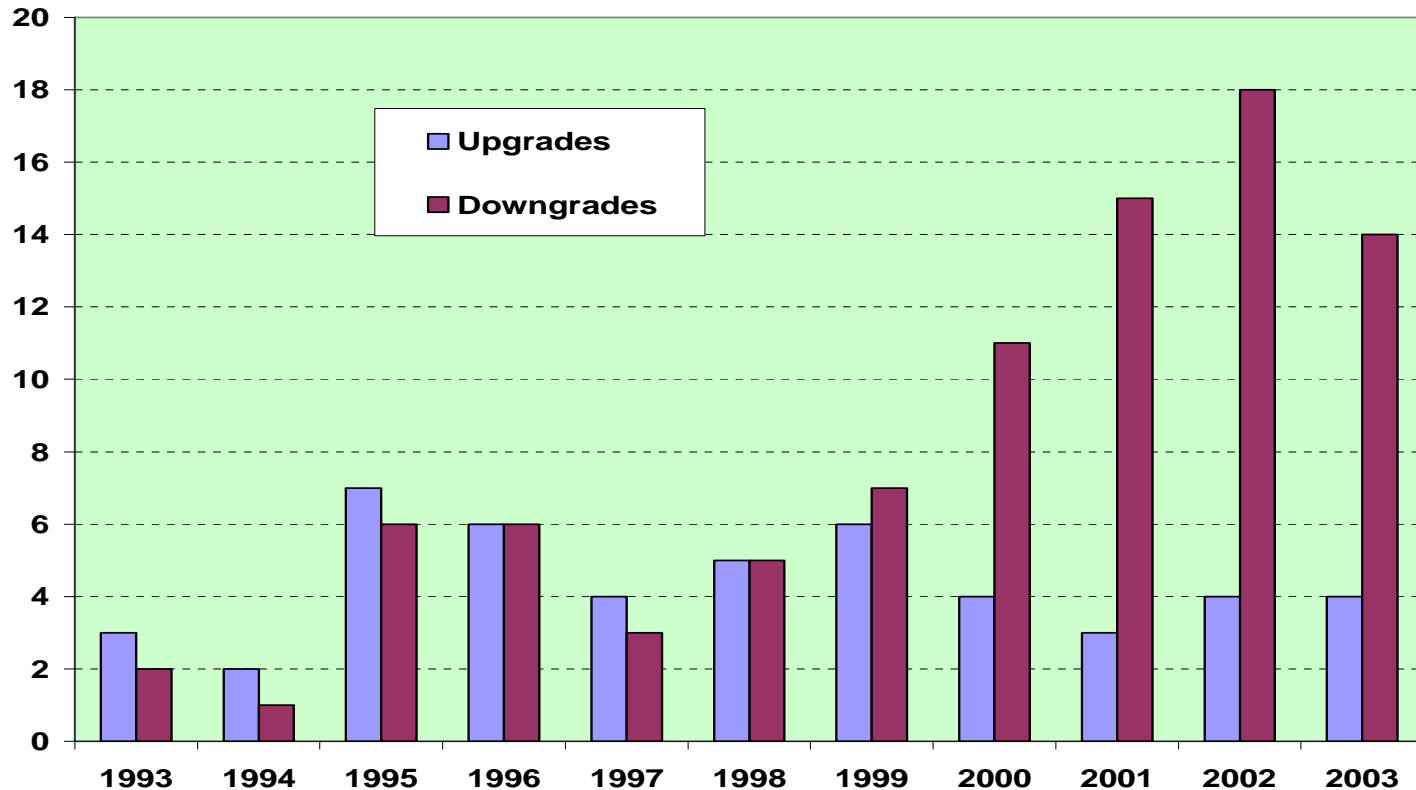
Central WC Loss Development
Actual vs. Projected as of
12/31/2004



West Bend WC Loss Development
Actual vs. Projected as of 12/31/2004



Number of Insurer Upgrades vs. Downgrades, 1993 to 2003 (Source: Standard & Poor's)



Leading Indicators vs Lagging Indicators

- Reserves can only be a lagging indicator.
 - at 12 months, are almost never in an adverse position to precipitate big change
 - 24-36 months **at best for true indications**
- Rate change indications on renewal are adequate only if:
 - constant policy form (SIRs, deductibles, limits, etc) dominates the book of business **and**
 - policies are rated on a true exposure basis, **and**
 - new business constitutes a small percentage of premium.
- By 1997, most companies were rate monitoring and were still surprised by the depth of unmeasured rate decreases for 1998-1999.

Underwriting Psychology

- Underwriting psychology is more important to understand than underwriting philosophy.
- Most underwriters think frequency more than severity. It is more tangible.
- Most underwriters have not been in the position long enough to live with their tail. The adverse development always belongs to others.
- Especially in larger companies, underwriting is not a career path, management is.
- It is much easier to cut the rate on new business than on renewals. (You didn't screw up the rating last year)
- Underwriters learn the unwritten rule early: **No matter what management says, those with the bigger books of business get rewarded. Premium is measured by underwriter, loss ratio and development is not.**

Price Monitoring

- True price monitoring can only take place when anchored firmly on a rate for the exposure base, attaching at first dollar.
- The goal of price monitoring is to project the loss ratio range. This can only occur if the proper rate level per exposure unit is known.
- Failing that goal, projecting the direction and magnitude of the change still has value.
- What has a higher priority with company management: expense ratio or price monitors

Terms and Conditions

- Experience rating by its very nature, using valued claims, can have a market or insured driven bias.
- Deductible and Self Insured Retention valuations have to take place exactly in accordance with price monitoring techniques.
- Changes in coverage have to be quantified, if only by estimate.

Quantification of Risk

- Risk level increases significantly as the attachment point rises. Deductibles and SIRs remove the more predictable part of the risk.
- Risk knowledge decreases as risk size increases. It is harder to establish exposure bases and there are more variables to balance.
- Balance of knowledge shifts to the buyer as size increases, increasing risk.
- Risk level increases with the inexperience of the underwriter on the book. (Note we did not say inexperience of the underwriter)

Monitoring Process

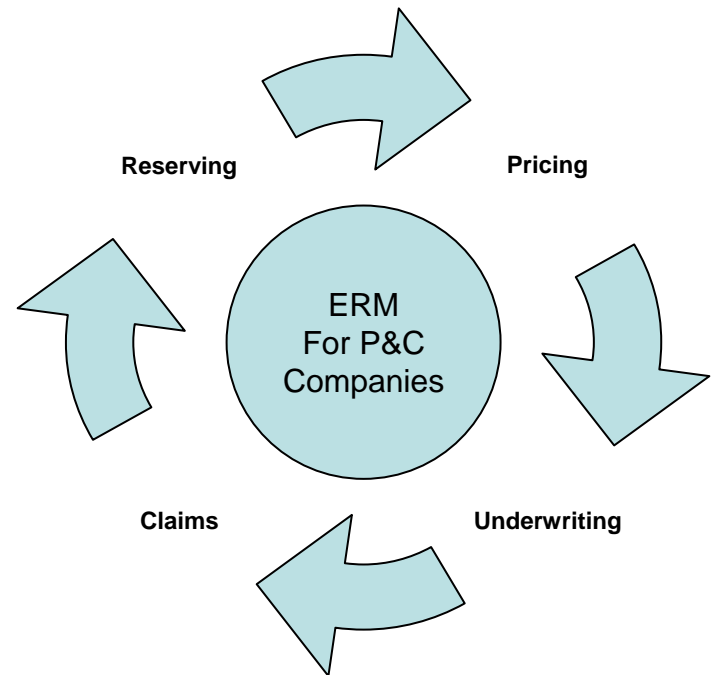
- Establish base rates per exposure units to be measured against. This does not fully recognize risk quality, but creates a hard base line.
- Measure renewals creating a history.
- Force identical quantification of all terms variation (composite rates, deductibles, SIRs, etc) against these base rates.
- Measure new business against the same standards
- Even when using experience rating as a methodology, measure the resulting rate against the same basis.
- Take tracking of rate level change to desk level.

Correcting the Decision-Making Process

- Effective price monitoring has to occur at the same location as effective underwriting; the underwriter's desk.
- Price monitoring needs to become a real part of the evaluation process for rating agencies and analysts. (Remember the grading chart)
- Senior management and analyst emphasis on top line premium growth and expense control is often at odds with effective price monitoring.

ERM Implementation

- First line of defense starts at the desk-underwriter
- Track exposure data
- Track pricing data
- Integrate pricing / underwriting / claims / reserving



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