2012 CAS Ratemaking and Product Management Seminar, PMGMT-4

Large Scale Analysis of Renewal Discounts for P&C Insurance

Cheng-Sheng Peter Wu, FCAS, ASA, MAAA

Hua Lin, PhD, FCAS, MAAA

Greg Hansen, FCAS, MAAA

Philadelphia

March, 2012

Anti-Trust Notice

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.

- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.

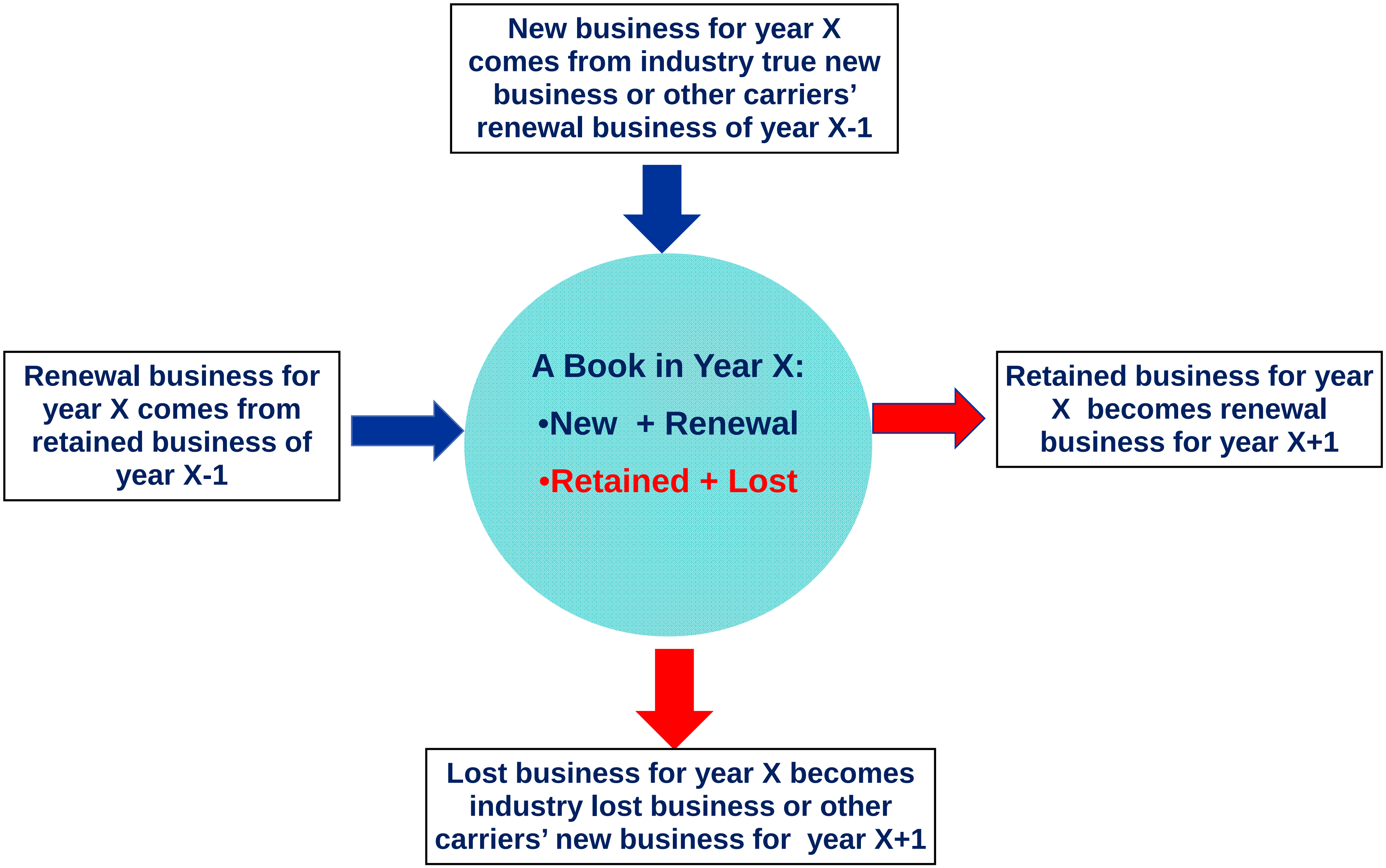
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.

Agenda

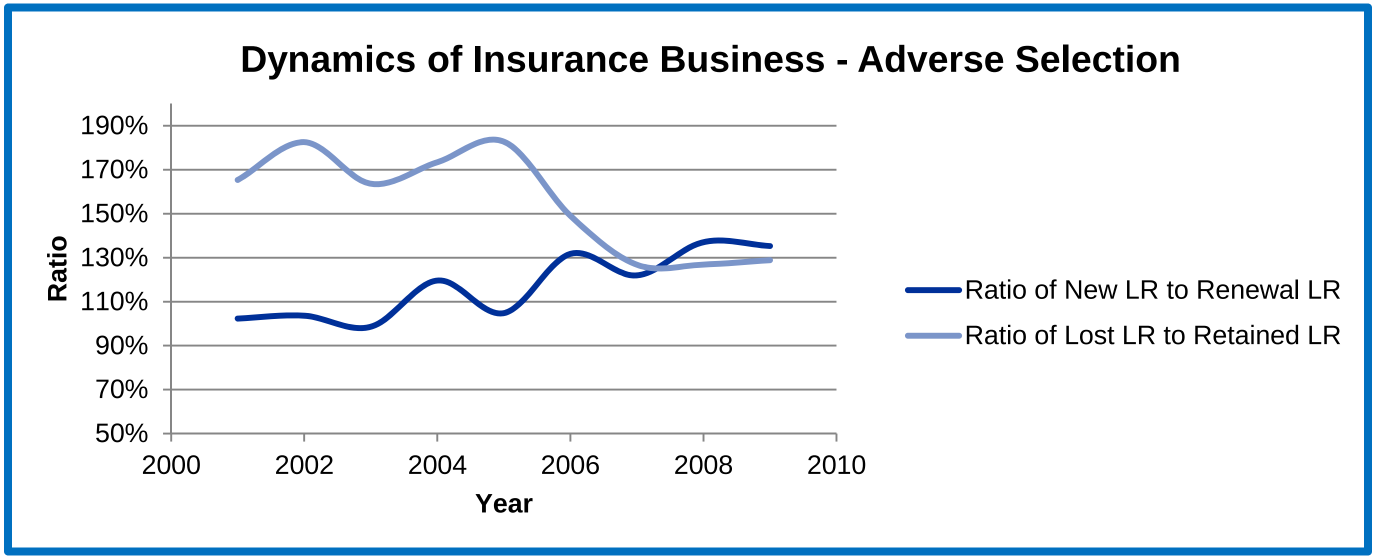
- Introduction
- Data
- Results and Discussions
- Conclusions
- Peer Review – Company Perspective
- Q&A

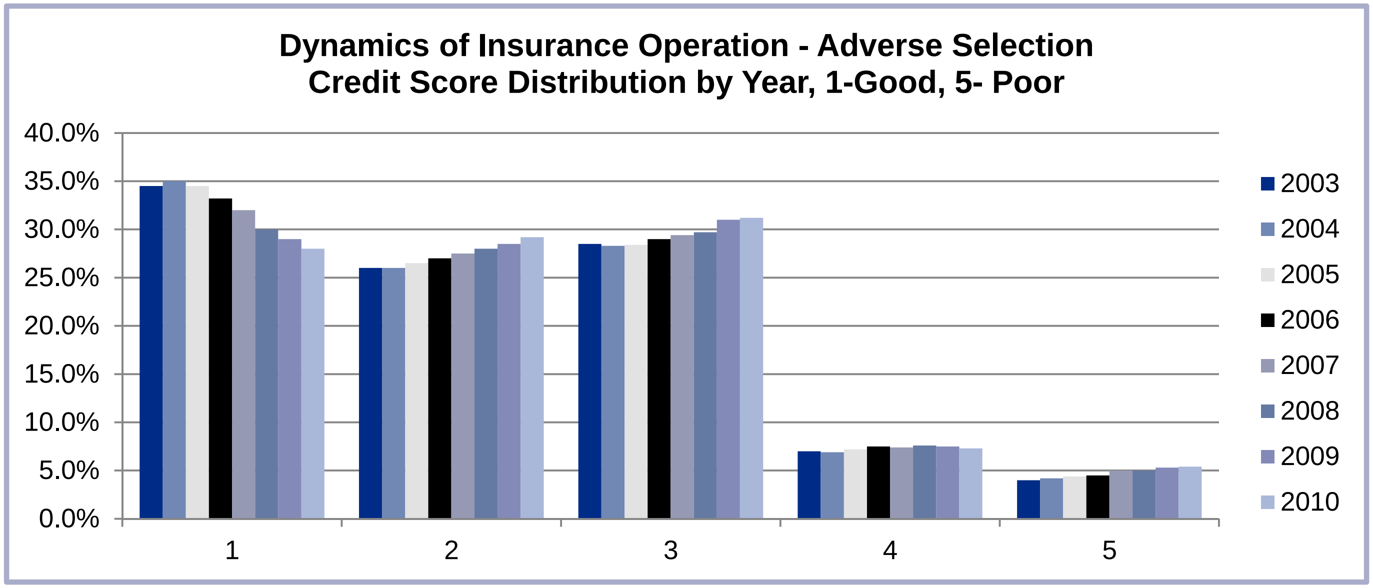
*"Large Scale Analysis of Persistent and Renewal Discounts for Property and Casualty Insurance," **CAS E-Forum**, CAS, Pages 396-408, Winter, 2009*

Introduction - Dynamics of Insurance Business



Introduction - Dynamics of Insurance Business





Introduction

- An underwriting and pricing topic with a long history:
  - Is it true that new business possesses a higher risk level than renewal business? If true, why?
  - Can or should the industry charge different prices between new and renewal business?
  - Insurance market has a wide variety of "explicit" or "implicit" underwriting and pricing measures to address the difference between new vs. renewal business:
    - Claim free discount
    - Loyalty credit
    - New business persistent discount
    - Accident and violation forgiveness for long time policyholders
    - …etc.

Introduction

- Price differentiation between new and renewal business has caused debates in the past:
  - In California, persistency discount for personal auto has been a hot topic over the last decade. There was a cycle of banning the discount, lifting the ban, filing law suits and counter law suits
  - Different states have different regulations on new business surcharge or renewal business discount

State	Sample Responses from the Department of Insurance on New Business Surcharge or Renewal Business Discounts
AZ	There should be no difference in the premium that is charged between new business and renewal business if all the risk characteristics are the same
FL	It would be very unusual for companies to file a different price for new versus renewal.
NC	Does not prohibit difference for new and renewal business.
NY	We do allow renewal discounts and they are heavily used. These are often tied to "claim free" discounts.
OH	If a company provides support that there is a cost difference between new and renewal business then they can reflect the difference in their rates.
TX	There isn't anything that speaks directly to new business vs. renewal business for property and casualty insurance but any price difference between the two would be subject to the rate standards in the statutes.
WA	Renewal discounts are permitted in , as there is no statute or regulation prohibiting them

Introduction

- Prior research:
  - Feldblum, 1990: Stable and persisting insureds are generally bringing in more profits to insurers
  - Conning & Company, 1988: New business loss ratio can be 10% to 30% higher than renewal business loss ratio
  - D'Arcy, 1989: As an insured stays longer with the same insurer, the insurer is able to obtain more information about the insured
  - D'Arcy, 1990: Renewal business in general exhibits continuing improvement in loss ratio
- Motivations of our research:
  - Try to answer the "*Is It True*" question
  - Also try to answer the "*Why*" question
  - Research supported by large amount of industry data as well external economic data

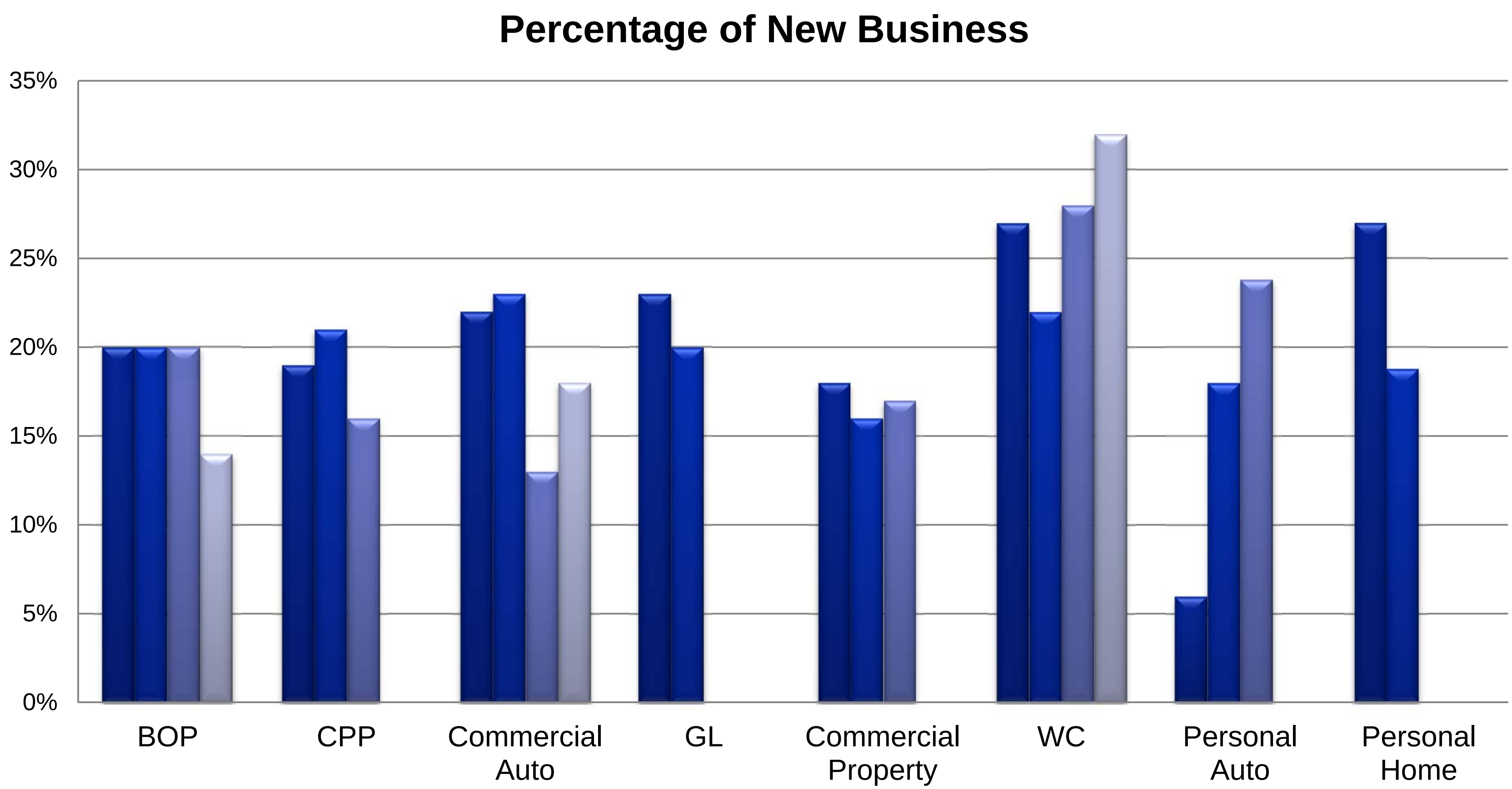
Data for Our Research

- 25 books of business with a total premium amount of $29 billions were analyzed:

Line of Business	Number of Books	Total Premium (in billions)	Data Period
BOP	4	$4.9	1995 to 2004
Commercial Package	3	$4.7	1996 to 2004
Commercial Auto	4	$3.6	1998 to 2005
General Liability	2	$1.1	1995 to 2004
Commercial Property	3	$1.7	1995 to 2002
WC	4	$3.9	1996 to 2004
Personal Auto	3	$2.0	1997 to 2005
Personal Home	2	$6.8	1997 to 2003
Total	**25**	**$28.7**	**1995 to 2005**

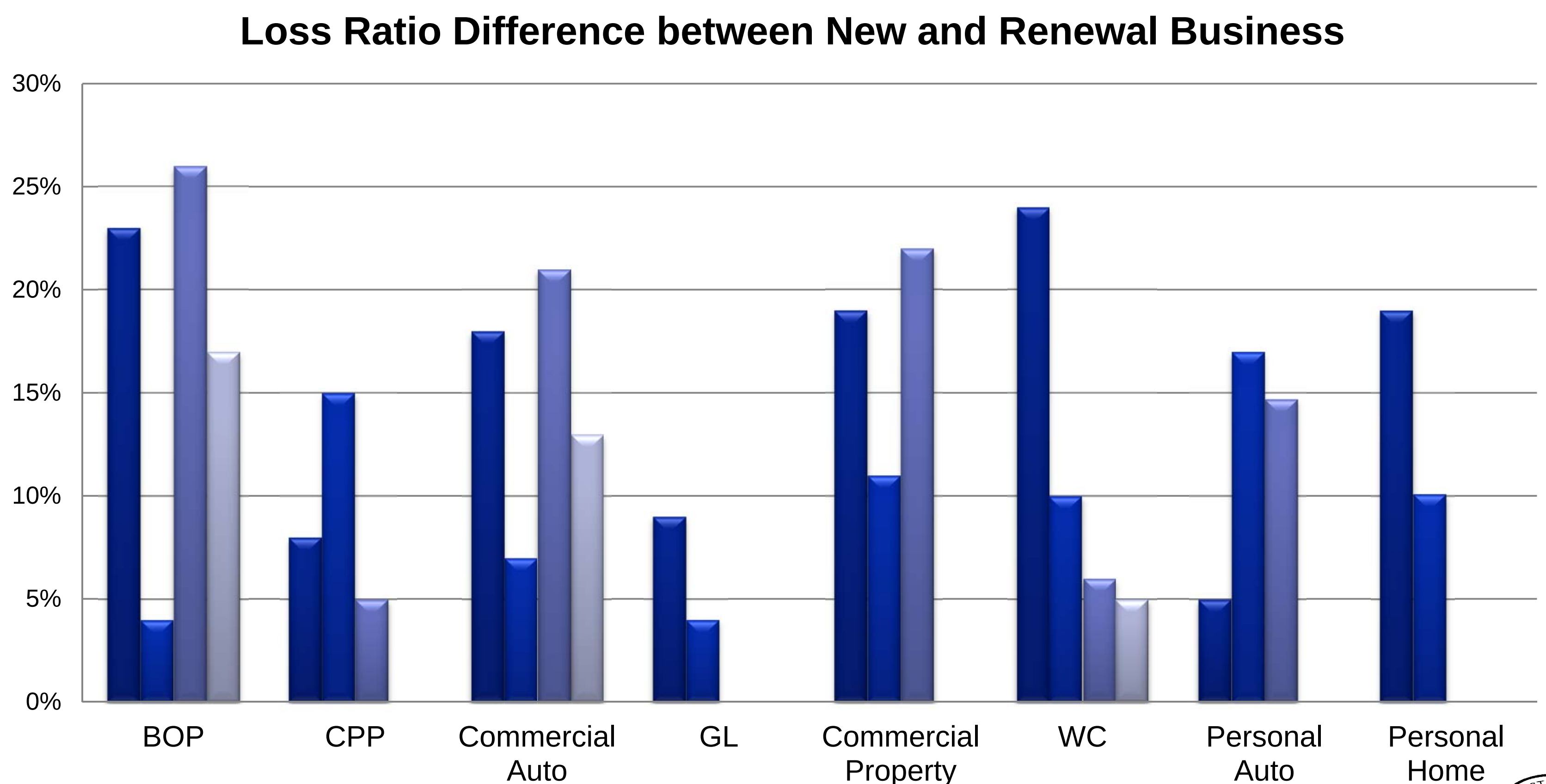
New Business Percentage for Insurance Carriers

- In general, for insurance carriers, new business accounts for about 20% of total business:



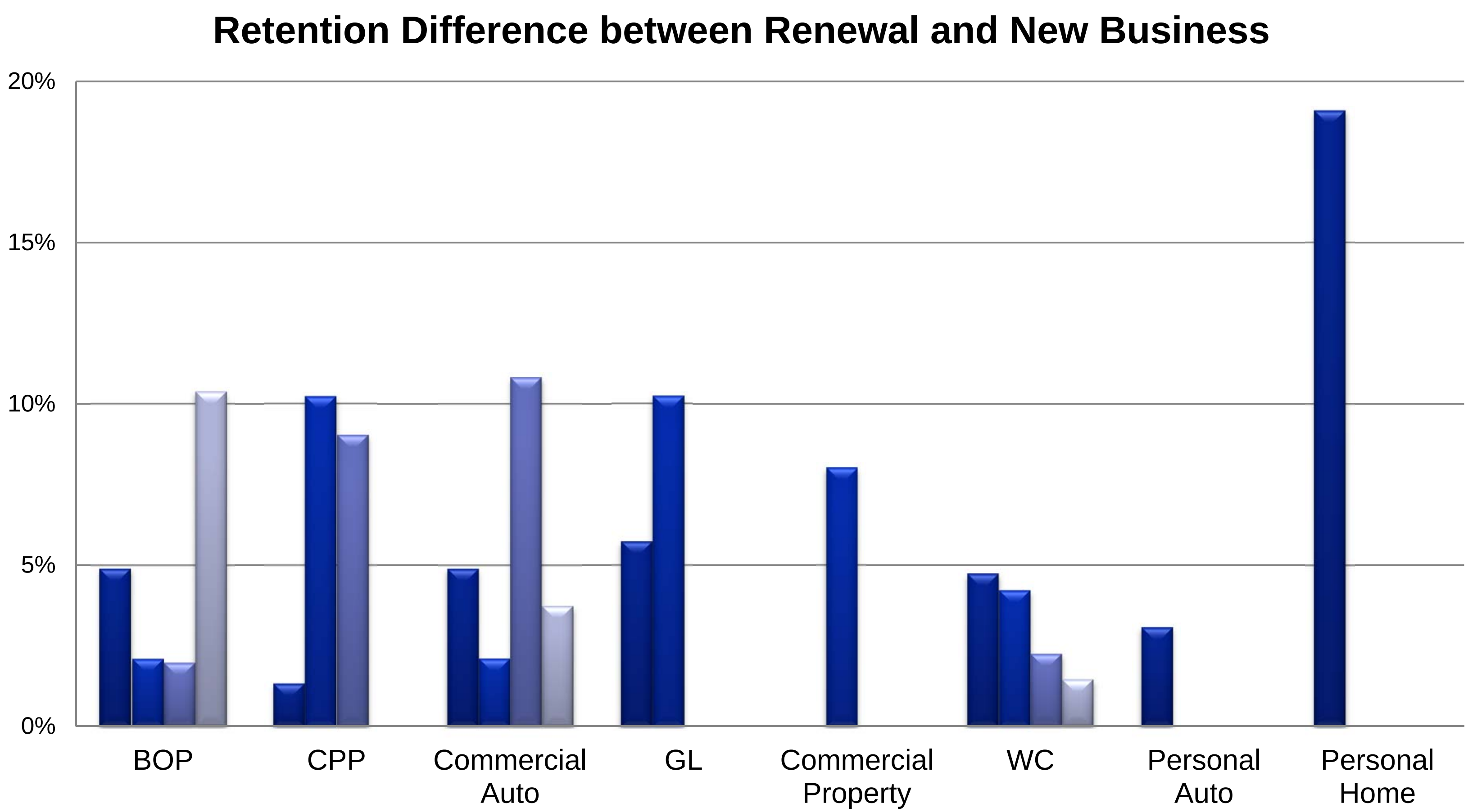
Loss Ratio Difference between New and Renewal

- Universally, new business loss ratio is higher than renewal business loss ratio
- The average difference is 13 points for the 25 books



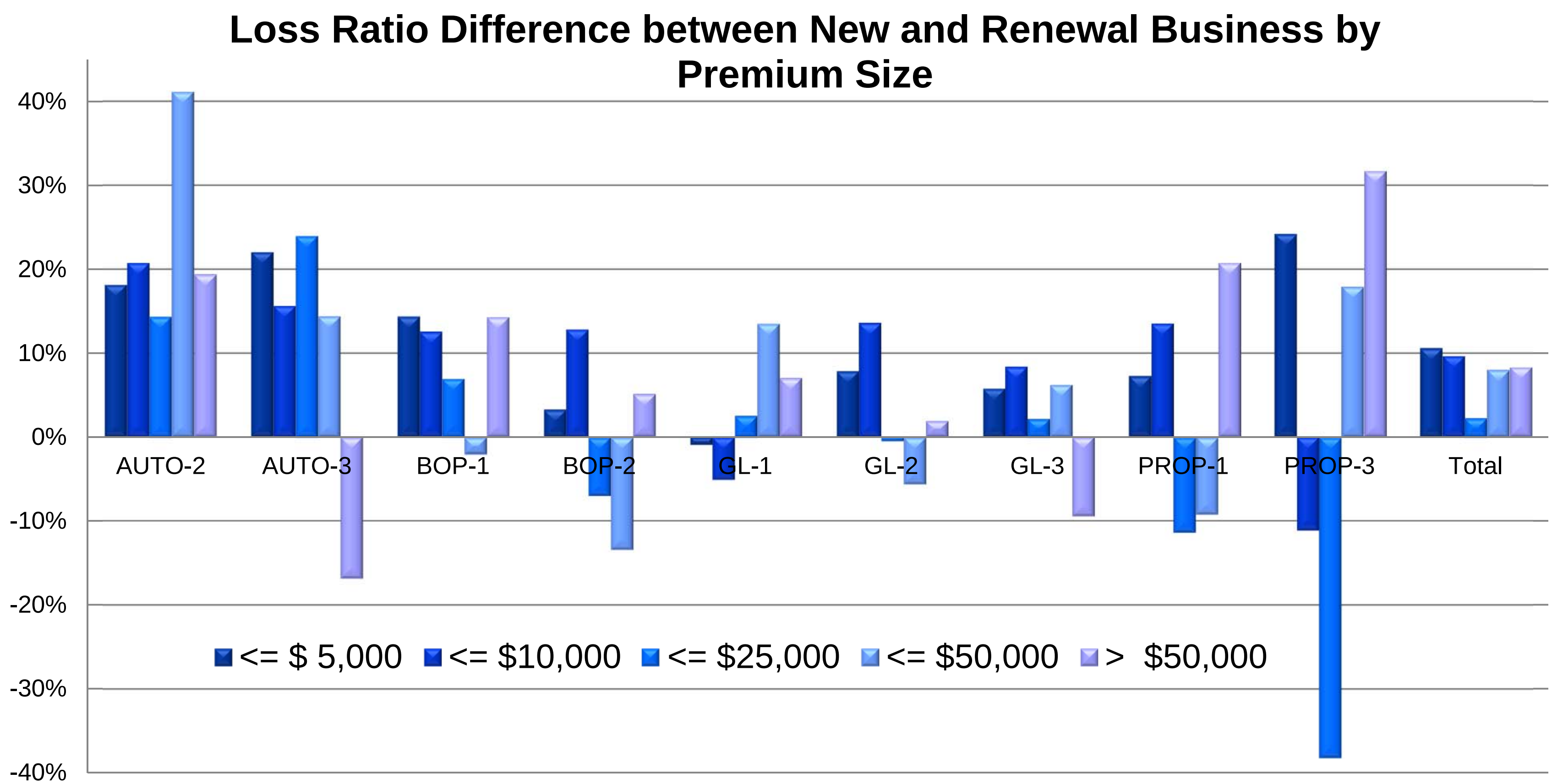
Retention Comparison between New and Renewal

- New business universally has worst retention than renewal business



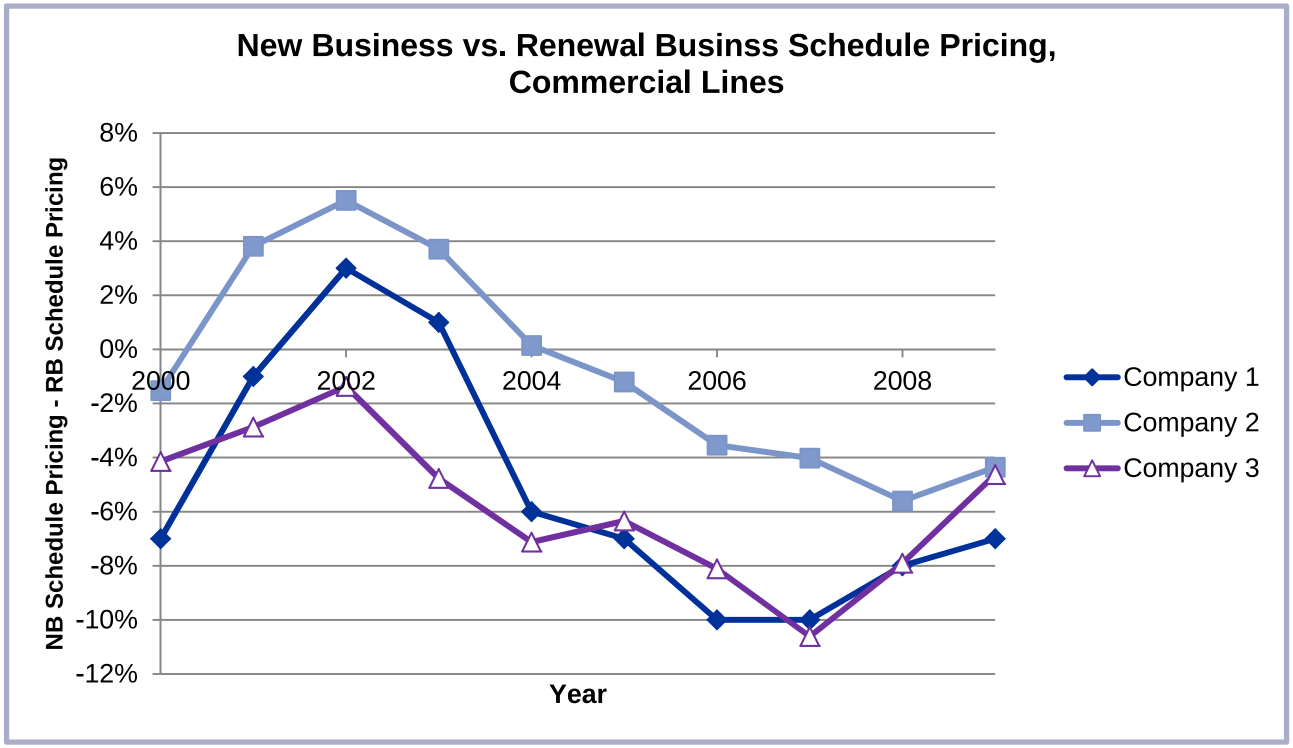
Additional Analysis - LR Difference Pattern by Premium Size

- 9 commercial books were used for comparison
- More volatility in results, and overall, no clear pattern for loss ratio difference by premium size



Additional Analysis – Subjective Credits for New & Renewal Business

- 3 commercial books were used for comparison
- In general, more schedule credits are given to new business than renewal business, especially during the soft market cycle. So, a portion of the loss ratio difference between new business and renewal business is driven by schedule pricing



Comparison between Retained and Lost Business

- Analysis of 3 commercial books for their retained business vs. lost business
- Compare the loss ratio difference
- Compare difference in business financial credit score by a credit bureau. The score scale is from 1 (worst) to 100 (best).
- Retained business performs better than lost business in both loss ratio and financial credit score

Line of Business	Total Premium	Loss Ratio Diff (Non Retained – Retained)	Diff in Business Financial Score (Non Retained – Retained)
BOP	$690 Millions	+4 points	-5
General Liability	$533 Millions	+4 points	-2
Commercial Property	$345 Millions	+7 points	-3

U.S. Insurance Industry Data - Exposure

- The data for licensed drivers, motor vehicles, and total housing inventory in U.S.

Year	Total Licensed Drivers	Annual Growth	Total Vehicles	Annual Growth	Estimated Total Housing (000s)	Annual Growth
1986	159,487,000	1.7%	175,700,339	2.3%	99,318	2.0%
1987	161,818,461	1.5%	178,909,773	1.8%	101,811	2.5%
1988	162,853,255	0.6%	184,392,674	3.1%	103,653	1.8%
1989	165,555,295	1.7%	187,356,106	1.6%	105,729	2.0%
1990	167,015,250	0.9%	188,797,914	0.8%	106,283	0.5%
1991	168,995,076	1.2%	188,136,469	-0.4%	107,276	0.9%
1992	173,125,396	2.4%	190,362,228	1.2%	108,316	1.0%
1993	169,968,825	-1.9%	194,063,482	1.9%	109,611	1.2%
1994	175,409,447	3.2%	198,045,365	2.1%	110,952	1.2%
1995	176,634,467	0.7%	201,530,021	1.8%	112,655	1.5%
1996	179,539,340	1.6%	206,365,156	2.4%	114,139	1.3%
1997	182,709,204	1.8%	207,753,660	0.7%	115,621	1.3%
1998	184,980,177	1.2%	211,616,553	1.9%	117,282	1.4%
1999	187,170,420	1.2%	216,308,623	2.2%	119,044	1.5%
2000	190,625,023	1.9%	221,475,173	2.4%	119,628	0.5%
2001	191,275,719	0.3%	230,428,326	4.0%	121,480	1.6%
2002	194,295,633	1.6%	229,619,979	-0.4%	119,297	-1.8%
2003	196,165,667	1.0%	231,389,998	0.8%	120,834	1.3%
2004	198,888,912	1.4%	237,242,616	2.5%	122,187	1.1%
2005	200,548,972	0.8%	241,193,974	1.7%	123,925	1.4%
2006	202,810,438	1.1%	244,165,686	1.2%	126,012	1.7%

U.S. Insurance Industry Data - Exposure

- U.S. business statistics from the Census Bureau

Time Period	Initial Year Establishments	Percent of Net Growth
1995-1996	5,878,957	1.6%
1996-1997	5,970,420	2.5%
1997-1998	6,120,714	1.1%
1998-1999	6,187,599	1.0%
1999-2000	6,248,411	0.8%
2000-2001	6,297,423	0.8%
2001-2002	6,345,890	0.6%
2002-2003	6,386,609	1.1%
2003-2004	6,455,018	1.4%

U.S. Insurance Industry Data - Premium

- AM Best premium statistics for the US P&C insurance industry

	Total Personal Lines		Total Commercial Property		Total Commercial Casualty Lines	
Year	**Premiums earned (in $1,000)**	**Growth Rate**	**Premiums earned (in $1,000)**	**Growth Rate**	**Premiums earned (in $1,000)**	**Growth Rate**
1996	123,722,772		5,639,304		104,742,557	
1997	129,529,545	4.7%	5,893,398	4.5%	105,914,101	1.1%
1998	134,910,240	4.2%	5,937,140	0.7%	105,305,898	-0.6%
1999	139,053,922	3.1%	6,205,553	4.5%	103,930,114	-1.3%
2000	146,442,174	5.3%	6,459,054	4.1%	110,111,876	6.0%
2001	155,377,660	6.1%	7,617,844	17.9%	120,055,783	9.0%
2002	171,055,476	10.1%	7,528,501	-1.2%	141,695,628	18.0%
2003	189,414,491	10.7%	10,110,915	34.3%	159,335,190	12.5%
2004	204,074,773	7.7%	10,430,080	3.2%	174,887,038	9.8%
2005	212,766,944	4.3%	11,138,340	6.8%	176,755,172	1.1%
2006	217,629,797	2.3%	11,976,705	7.5%	181,148,749	2.5%

Industry as a Whole vs. Individual Carriers

- For the insurance industry as a whole, new business comes from newly established exposures, and lost business is mainly due to cease in exposure
- On the other hand, for individual carriers, their new business can also come from lost business from other carriers, and their lost business can become another carrier's new business
- Individual carriers' new business percentage, 20% in general, is much higher than the true new business percentage for the industry as whole. This suggests that insurance companies are swapping business between them, so most of an insurance company's new business comes from other insurance companies' lost business

Performance Difference between New and Renewal Business

- For the true industry new business, such as first time drivers, first time home owners, or newly established business, it is expected that the risk quality is worse than average due to lack of experience
- For the new business that comes from other insurance carriers' lost business, their risk quality is poor as well:
    - Our result indicates that for insurance carriers, their lost business has higher loss ratios and worst financial scores than their retained business.
    - The reasons for the worse risk quality associated with the lost business may include poor risk quality associated with price shoppers, underwriting or pricing actions on poor risks, risks seeking lower prices before their price hikes take into effect, etc

Performance Difference between New and Renewal Business

- As a result, new business is worse than renewal business
  - New business has higher loss ratios
  - New business has worse retention
  - The worse performance for new business is across the board for all lines of business and for all companies
  - Loyal and stable insureds are subsidizing transient and price shopping insureds
  - Renewal business discounts are justified by our research

Performance Difference between New and Renewal Business

- Other reasons for the performance difference may include “information gap” and lacking disciplines for new business pricing and underwriting:
  - Examples of information gap for new business include: not collecting prior loss information; not capturing underwriting data for new business electronically, not verification of new business’ application data, etc.
  - Gathering more information for new business will be viewed as “unfriendly to do business”
  - Market driven pricing instead of exposure driven pricing for new business due to competition
- Insurance market seems to allows such subsidization and inefficiency.

Conclusions

- For P&C insurance carriers, new business performance is worse than renewal business
- The reasons why new business performance is worse:
  - First time insurance buyers are less experienced in dealing with managing their insurance risks
  - New business from other carriers' lost business typically have worse risk characteristics
- New business surcharge or renewal business discounts are justified. Our research further indicates that the longer an insured stays with their insurers, the better their loss ratios (break even age is around 3 to 4 years)
- The performance difference between new vs. renewal can be minimized if the industry is enhancing its practice in collecting information for new business and pricing new business with discipline

Peer Review / Company Perspective

- Is it True?
  - Does new business really underperform renewals?
  - Is it for the reasons that Wu and Lin suggest?
- Is it “Rational”?
  - Are there good business reasons for knowingly adding “underpriced” business to a book of business?
- Is it “Right”?
  - Is knowingly “underpricing” business inconsistent with actuarial doctrine (statements of principle, standards of practice)?

Peer Review / Company Perspective - Is it True?

- Most companies can validate this with their own experience across multiple lines.
- The “unexplained” portion of the effect (i.e. the portion only explained by the persistency itself) is shrinking, particularly on the personal lines side
  - As more information is known about the insured (e.g. credit information, loss history, coverage lapse, etc.), the persistency effect becomes less pronounced

Peer Review / Company Perspective - Is it True? (cont.)

- The “true” effect is almost certainly less pronounced than shown in this study
  - New business is often priced lower by design (more credited, new rating plans, discounts designed to attract new business)
  - Even if not by design, companies are more likely to convert new business that is “underpriced” – (“The Winner’s Curse”, discussed by Thaler, Wenitsky, and others)
  - Looking at the industry as a whole, customers are more likely to switch carriers for a lower rate. Assuming that they don’t change their nature when they switch, the loss ratio for new business as a whole is going to be higher
  - Therefore, it’s not just a high numerator (losses) – it’s also a lower denominator (premium)

Peer Review / Company Perspective - Is it Rational?

- So why do companies continue to knowingly “underprice” new business?
  - *Top line pressures* - if enough companies are aggressively pricing new business, then “right pricing” new business will lead to declining market share
  - *Price optimization / lifetime value* – if long term insureds are profitable and “sticky”, then making significant rate reductions to that group is irrational
  - *Basic economics* - certain fixed costs are incurred whether or not each new policy is issued. If ***marginal*** revenue exceeds ***marginal*** costs, then the company is better off having issued the policy

Peer Review / Company Perspective - Is it Right?

- Is knowingly pricing business to different loss ratios in violation of basic ratemaking principles / standards of practice?
  - This question can be applied more broadly to all known “inefficiencies” in rating plans, including discussions of price optimization and lifetime value
  - The Statement of Principles is silent on:
    - Variable profit targets by customer or over time
    - Variable expense provisions by customer or over time
    - Variable capital requirements by customer or over time (presumably, the $N+1^{st}$ customer requires less capital than the Nth customer)
    - The company’s (and, by extension, the actuary’s) responsibility to create shareholder value

Peer Review/Company Perspective - Is it “Right”? (cont.)

- Is knowingly pricing business to different loss ratios in violation of basic ratemaking principles / standards of practice (continued)?
  - The Ratemaking Statement of Principles: “… *is limited to principles applicable to the estimation of these costs”.* It appears to be silent on the translation of these estimates to the actual rating decisions.
  - It briefly mentions marketing goals and competition, but gives no guidance on how to incorporate that information in a way that would be consistent with the Principles.

Peer Review / Company Perspective - Conclusions

- Is it True?
  - Almost certainly
- Is it Rational?
  - When executed well, yes
  - As executed by many (most) companies… ???
- Is it Right?
  - Let's discuss

Q&A