

ERM & The Corporate Actuary

Do All Roads Lead To Rome?

(One Man's Journey to Sleep At Night)

2006 CAS Ratemaking Seminar

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Grange Mutual Insurance

Companies

Disclaimer:

- These are my comments, not those of others.
- Any construal supporting the conclusion I've violated local, state, or federal laws or regulations is both illogical and a misrepresentation of my comments.

My apologies in advance:

- Formulas will be few
- Approaches do not require excessive computations or mind numbing reasoning
- You may find some assumptions less than “precise” – please feel free to quietly debate among yourselves
- I will focus on what we’ve done, not underlying theory

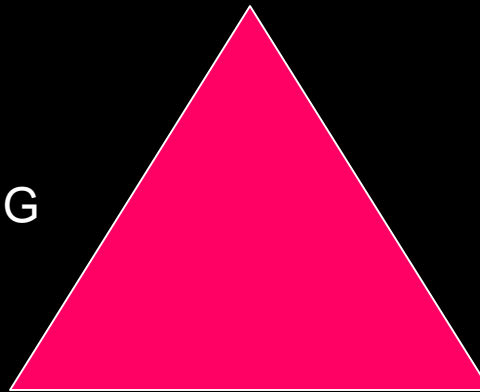
My Job:

- Planning
- Pricing Oversight
- Reserving
- Strategic Planning/Evaluations
- Reinsurance
- Incentive Compensation (Management/Agents)

The ERM Connection:

RESERVING

PRICING



PLANNING

Corporate Actuarial Objectives:

- Develop sound economic risk-based analytics supporting operational and strategic planning
- Actionable Analysis is our mantra with KISS sprinkled in for good measure
- We want all management to understand the value added from insights provided

A Little Background:

- Joined a \$750 million company growing DWP at 15%, with an Operating Ratio over 100% the prior year, a P/S ratio over 2.25 heading toward 2.5
- Did not need to go looking for Enterprise Risk, it was pretty much on the horizon
- The Good News: Changes in organization, pricing, underwriting and other risk reduction measures were already in the works (or I would not have joined the party)

An Observation:

- Pricing Oversight ...in an organization of Product Managers who are pretty sure the company in Mayfield, Ohio still does not have actuaries and if they do, they are locked up in a basement somewhere to prevent harm to otherwise great plans and programs...IS DIFFICULT!

My Boss the CFO:

- More practical knowledge in his pinky than many have above their shoulders
- When I walked in the door, he knew we could operate as high as 104 to 105 and not lose money
- His concern: How do we support desired growth?

My Boss the CFO:

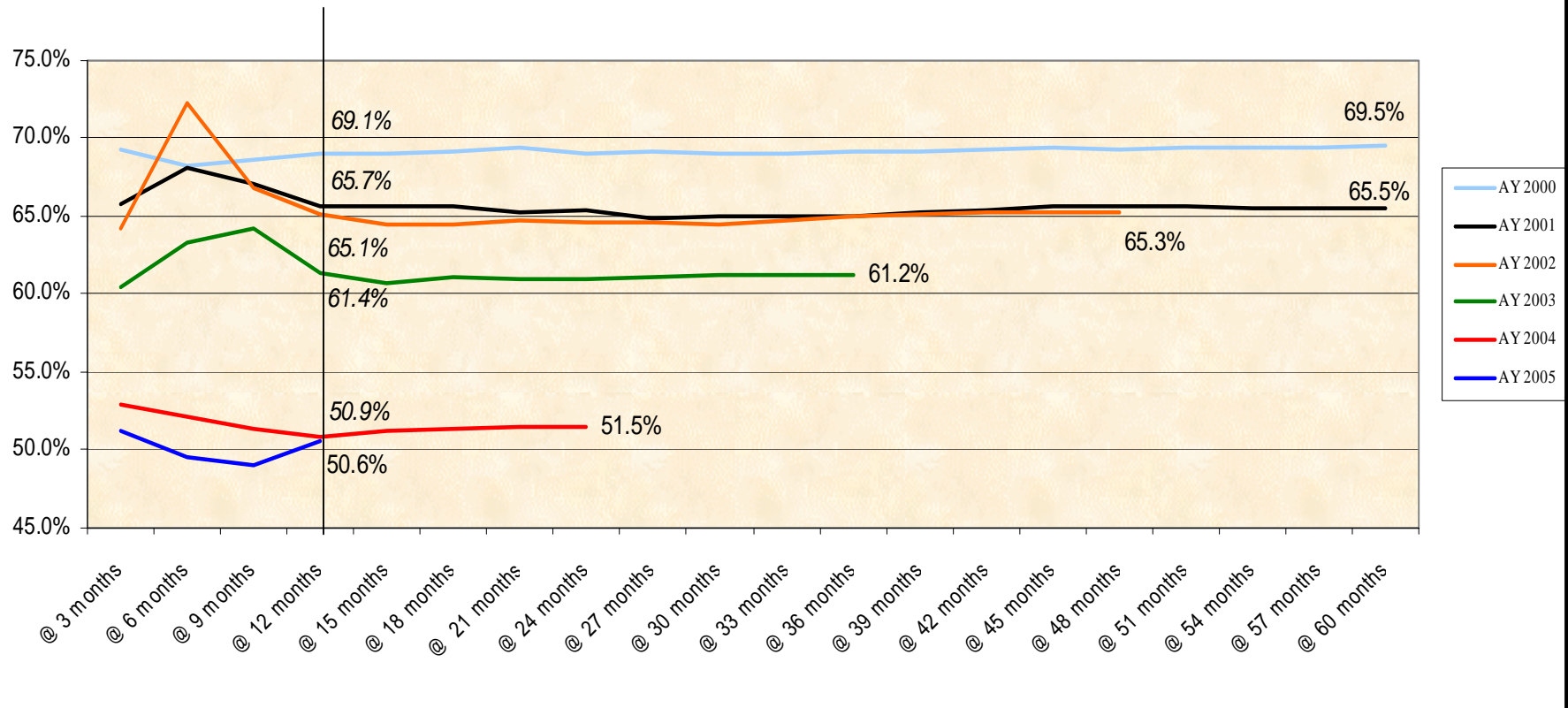
- He does not really like to talk about surplus allocation in mixed company...it precludes him from being able to tell you what he really thinks about it
- He likes us to book more than the actuarial point estimate for reserves...and so do I based on statistical analysis completed...as opposed to an inherent distrust of actuaries in general

A Reserving Aside:

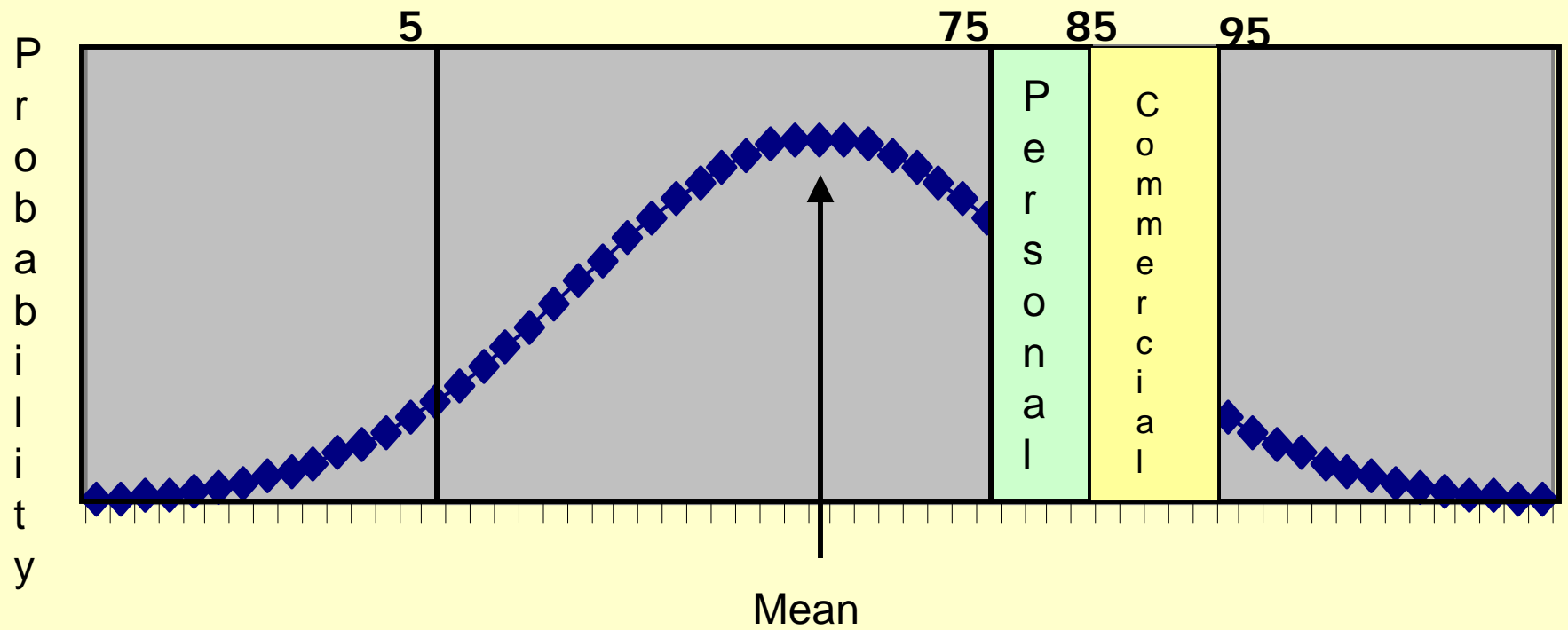
- Just how good are point estimates?
- When do we have a pretty good estimate of ultimate loss and loss expense?
- Can we help others “sleep at night”?

All Lines Graph

All Lines



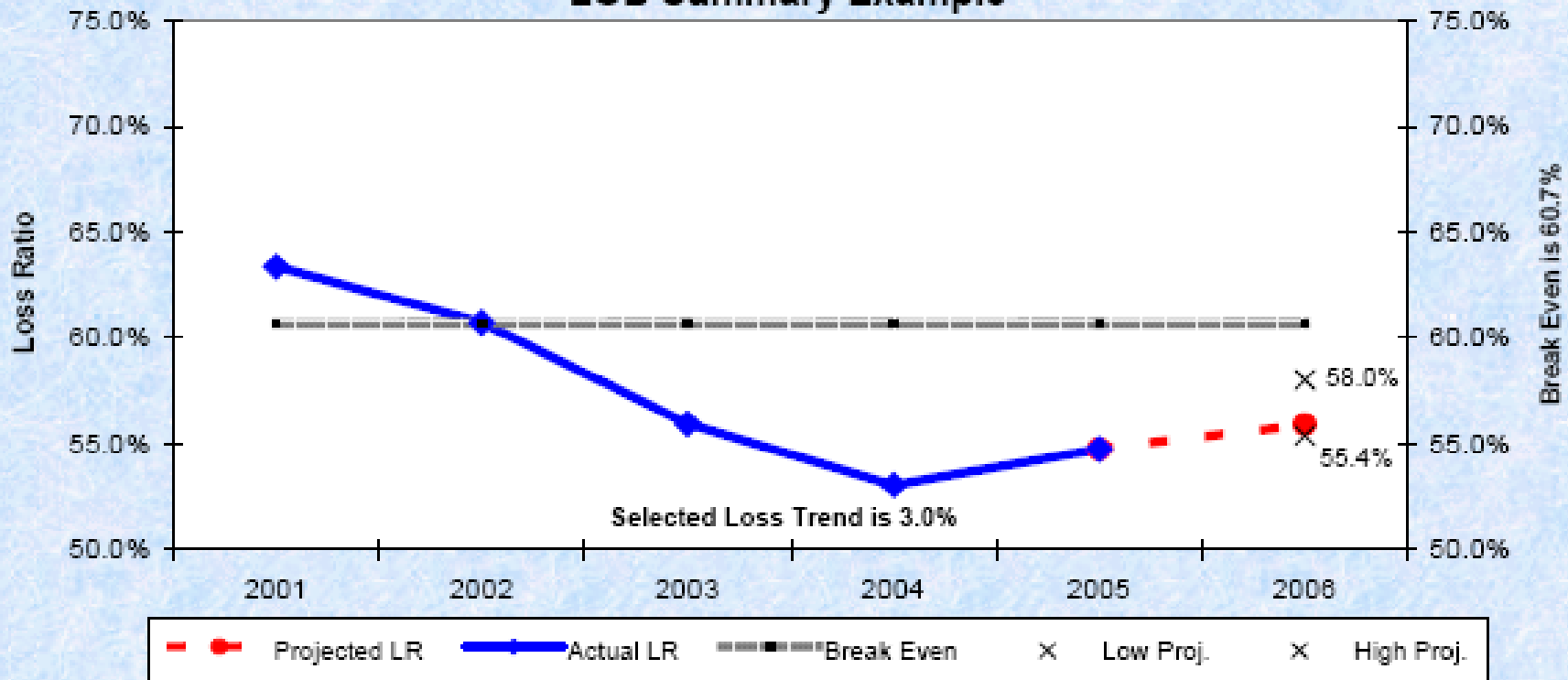
Recommended Range



Reserving/Planning/Pricing:

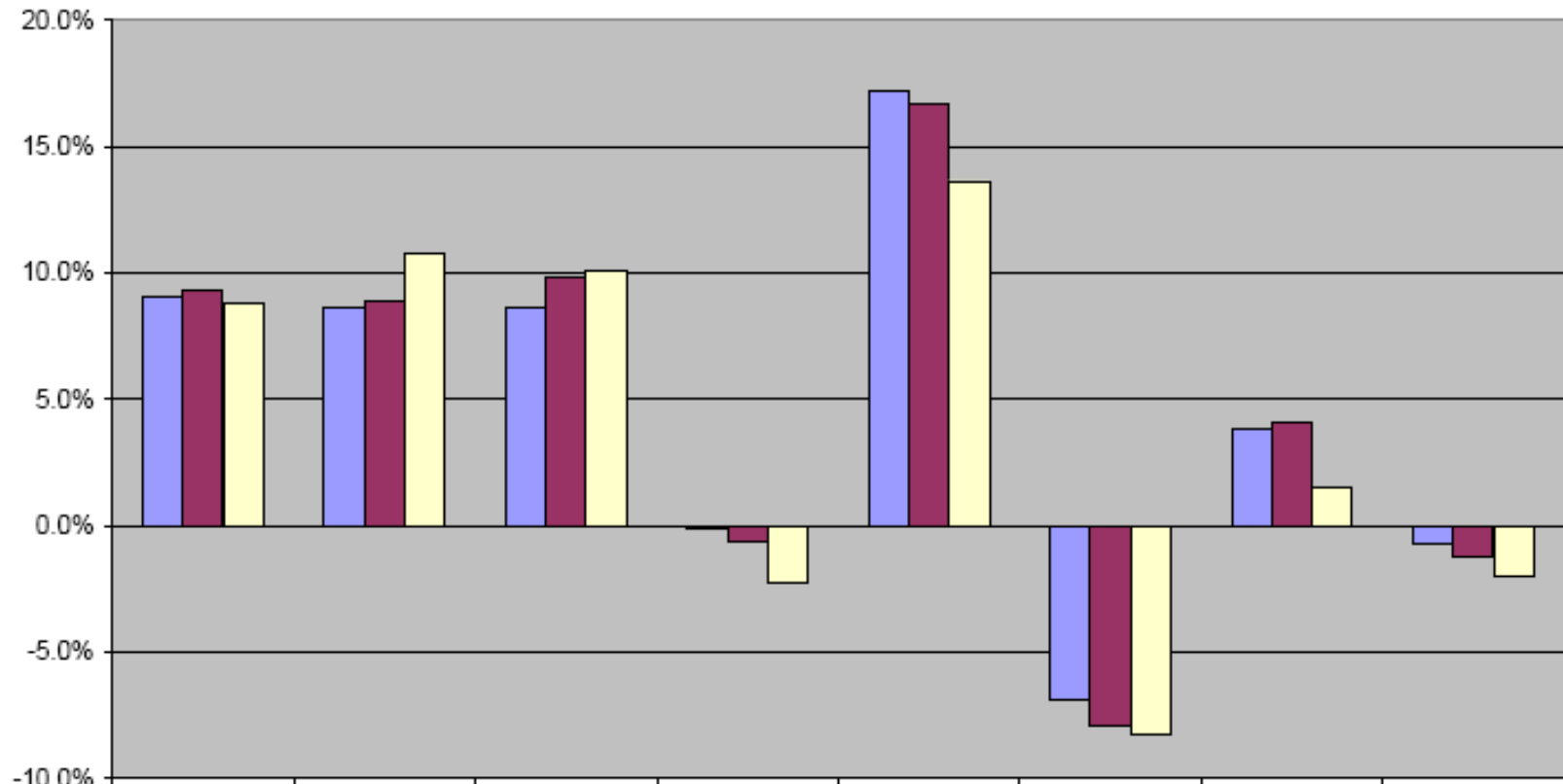
- Reserves Evaluated Quarterly – results shared with CEO, CAO, CFO, Presidents and Product Managers of Personal and Commercial Lines and Claims
- Face-to-face meetings to discuss reserve adequacy, trends and implications to calendar year results and pricing margins
- Indications done for major lines (PPA, HO)

LOB Summary Example



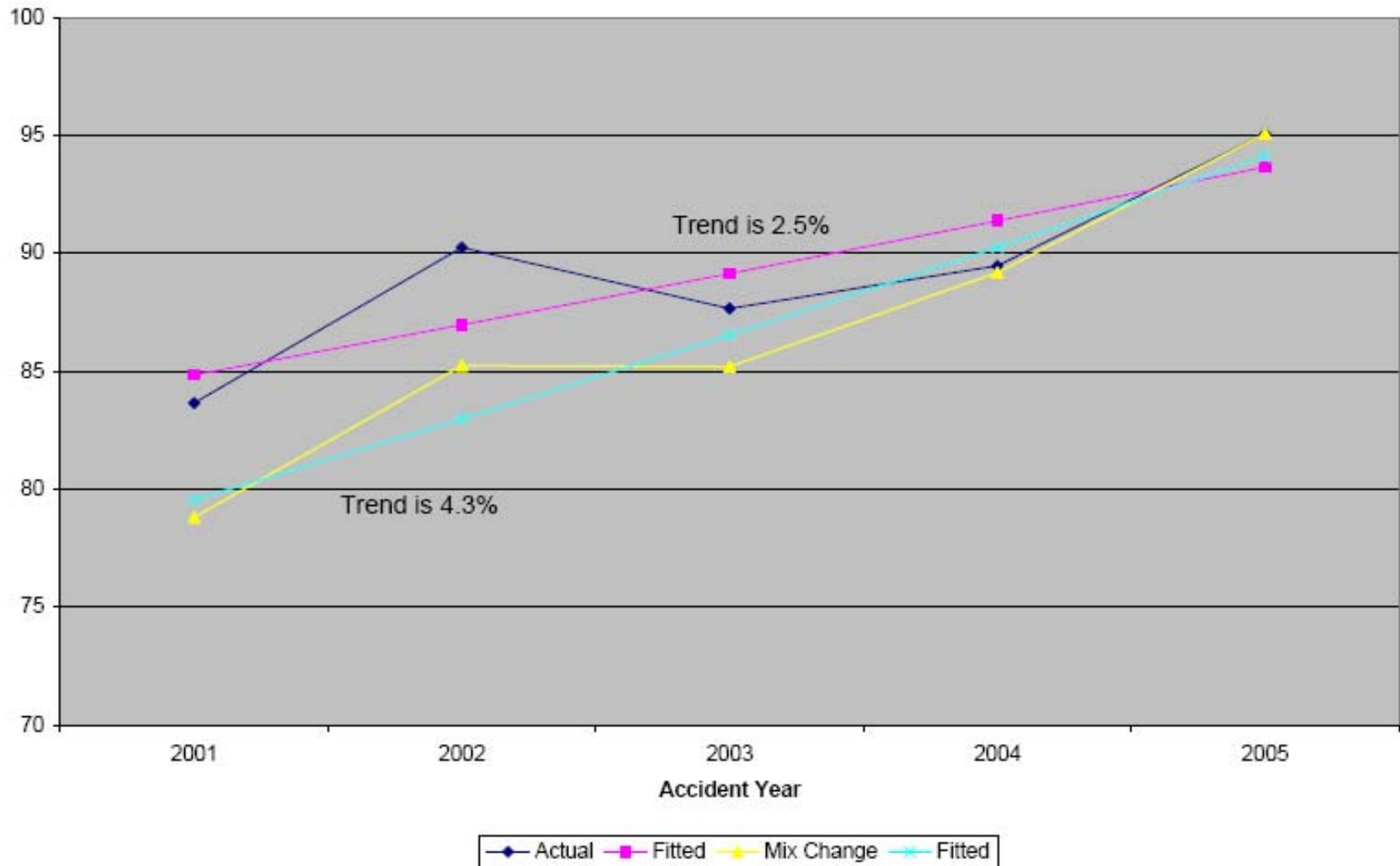
	2001	2002	2003	2004	YTD 2005	2006 Proj
Avg. EP	545	594	638	649	647	665
Chg. In Avg. EP	4.5%	9.0%	7.4%	1.7%	-0.2%	2.7%
Pure Prem.	345	361	357	344	354	372
Chg. In PP	-2.4%	4.4%	-1.0%	-3.6%	3.0%	4.9%
Chg. In Avg. ERL	1.6%	7.7%	4.1%	1.0%	0.6%	0.6%
Loss Ratio	63.4%	60.7%	56.0%	53.1%	54.8%	55.9%
Comb. Ratio	102.7%	100.0%	95.3%	92.4%	94.1%	95.2%

LOB Indication Example

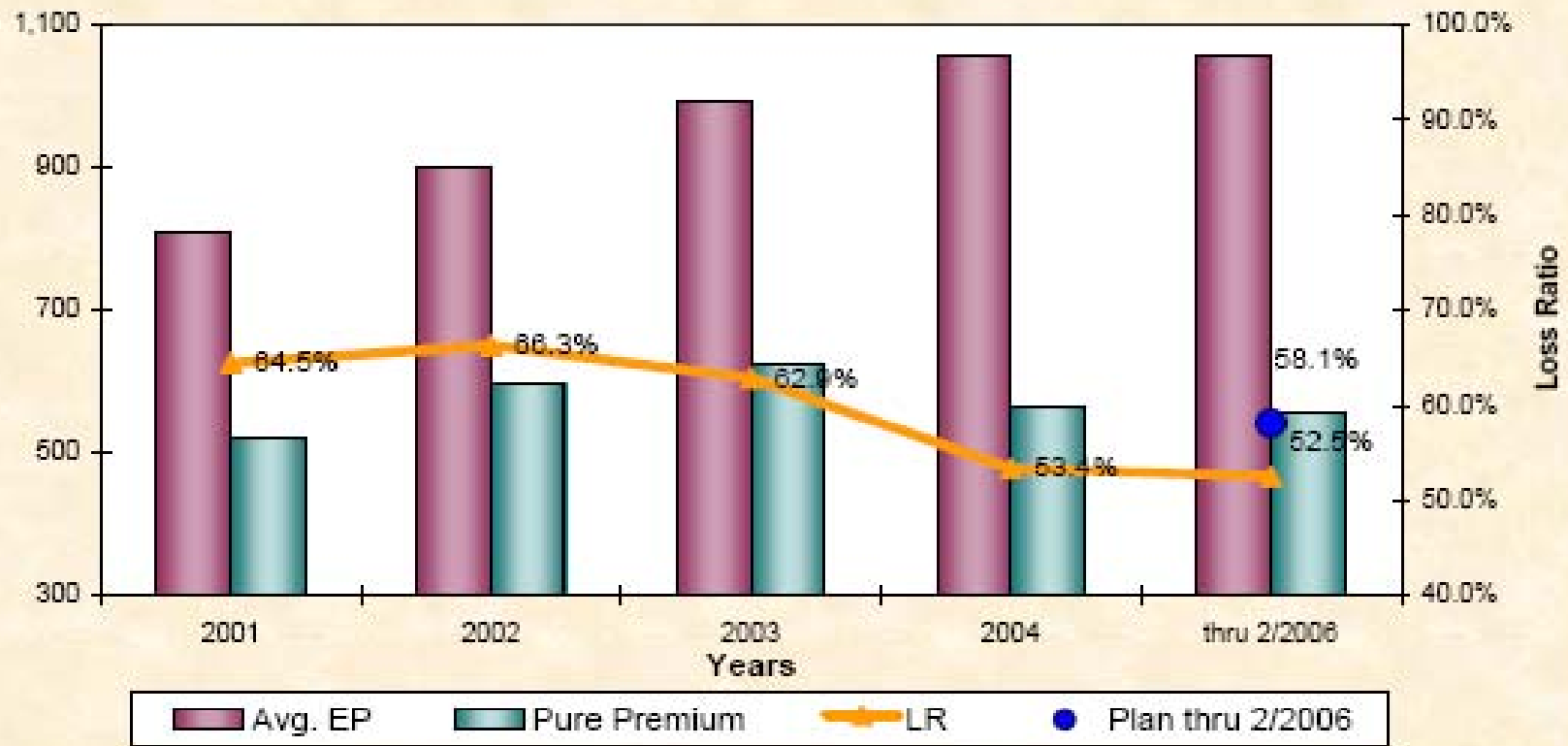


	S1	S2	S3	S4	S5	S6	S7	Total
3-Year Indication	9.1%	8.6%	8.6%	-0.1%	17.2%	-6.9%	3.8%	-0.7%
3-Year 20-30-50	9.3%	8.9%	9.8%	-0.6%	16.7%	-7.9%	4.1%	-1.2%
2-Year Indication	8.8%	10.7%	10.1%	-2.3%	13.7%	-8.2%	1.5%	-2.0%

Mix Adjustment Example



LOB Example



	2001	2002	2003	2004	thru 2/2006	Plan thru 2/2006
Avg. EP	810	902	993	1,056	1,057	1,072
Chg. In Avg. EP		11.3%	10.1%	6.3%	0.1%	1.6%
Pure Prem.	522	598	624	563	555	623
Chg. In PP		14.5%	4.4%	-9.8%	-1.5%	10.6%
Loss Ratio	64.5%	66.3%	62.9%	53.4%	52.5%	58.1%

Targeted Combined Ratios:

- A mutual company is limited in ways we can “acquire” capital...pretty much grow it internally
- At the end of the day, we use a RAROC approach...we just do not use the words every day
- We have validated our approach by using the ISO URM model...RORAC...

Targeted Combined Ratios:

- Simple DCF model
- A formula of sorts:

Targeted ROE = Long Term Growth Rate

- Must be true to maintain the P/S ratio

DCF MODEL ILLUSTRATION ONLY

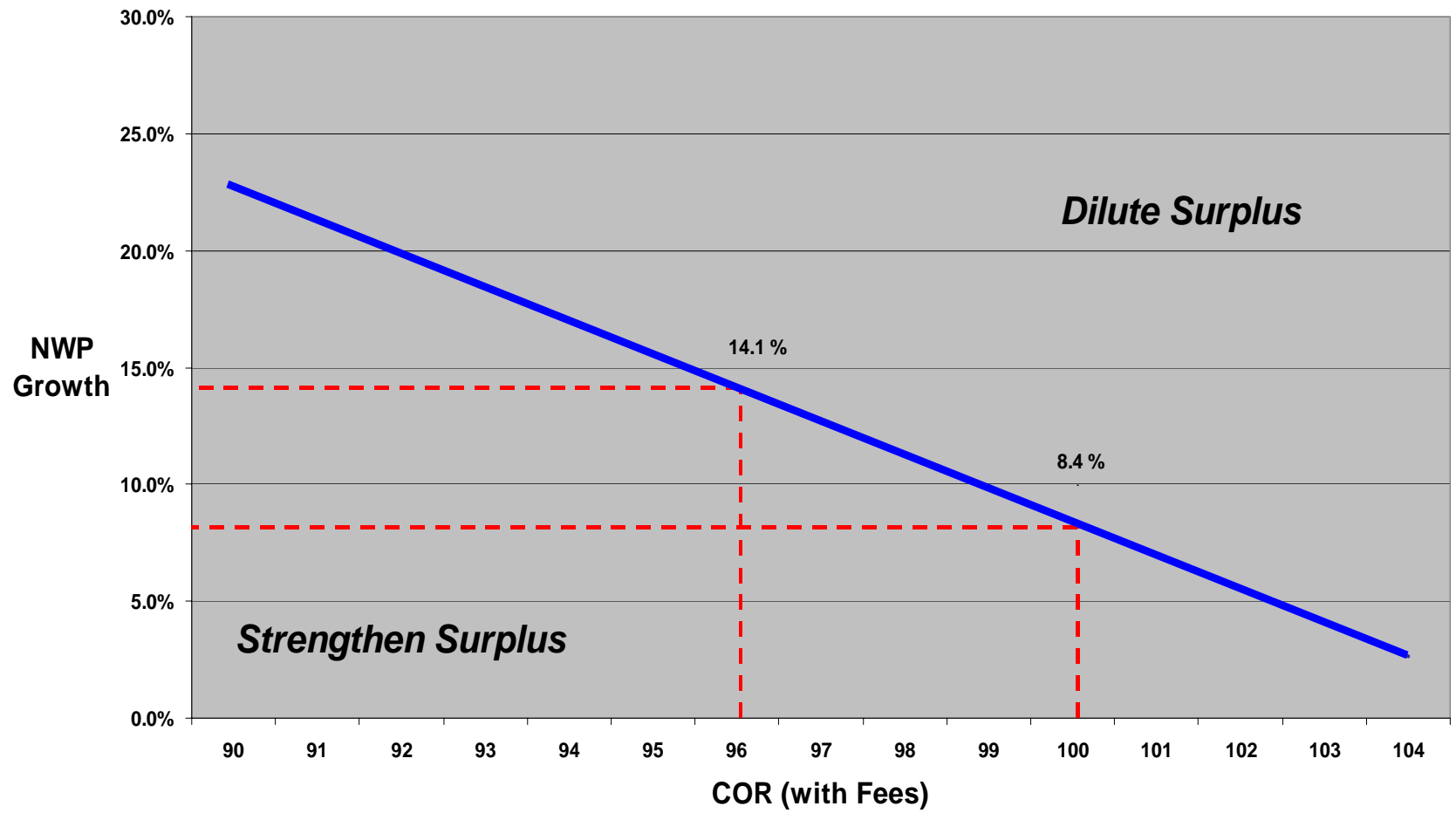
Accident Period Ending		Age in Months:	0	3	6	9	12	24	36	48	60	108
	TOTAL			14.1%	33.9%	57.6%	76.7%	95.7%	97.5%	98.1%	99.3%	100.0%
	Incremental			14.1%	19.8%	23.7%	19.1%	19.0%	1.8%	0.6%	1.2%	0.4%
	Discount Rate		4.0%									
	Sum of Present Values		96.7%	14.0%	19.5%	23.1%	18.5%	17.9%	1.6%	0.5%	1.0%	0.3%
	Und Break Even L&LAE Ratio		67.8%									
	Investment Inc % of EP		2.1%									
LOSSES												
	Fees (Net write-offs)		1.8%									
	Premium Collection Pattern		20%	20.0%	20.0%	20.0%	20.0%					
	Premium Plus Fees		20%	20.5%	20.5%	20.5%	20.5%					
	Present Value		20%	20.3%	20.2%	20.0%	19.8%					
	Sum of Present Values		100.2%									
	Net Inv Inc % of EP		0.2%									
PREMIUM												
	Commission	20.9%	20.9%									
	General & Other	8.9%	2.23%	2.23%	2.23%	2.23%						
	Taxes	2.4%	1.20%		1.20%							
	Total Expense	32.2%	24.3%	2.2%	3.4%	2.2%	0.00%					
	Present Value		24.3%	2.2%	3.4%	2.2%	0.00%					
	Sum of Present Values		32.1%									
	Net Inv Inc % of EP		0.1%									
EXPENSES												
			3.0%									
	Collection Pattern		0.6%	0.6%	0.6%	0.6%	0.6%					
	Present Value		0.6%	0.60%	0.59%	0.59%	0.58%					
	Sum of Present Values		2.95%									
ACHIEVED UNDERWRITING PROFIT			5.4%									



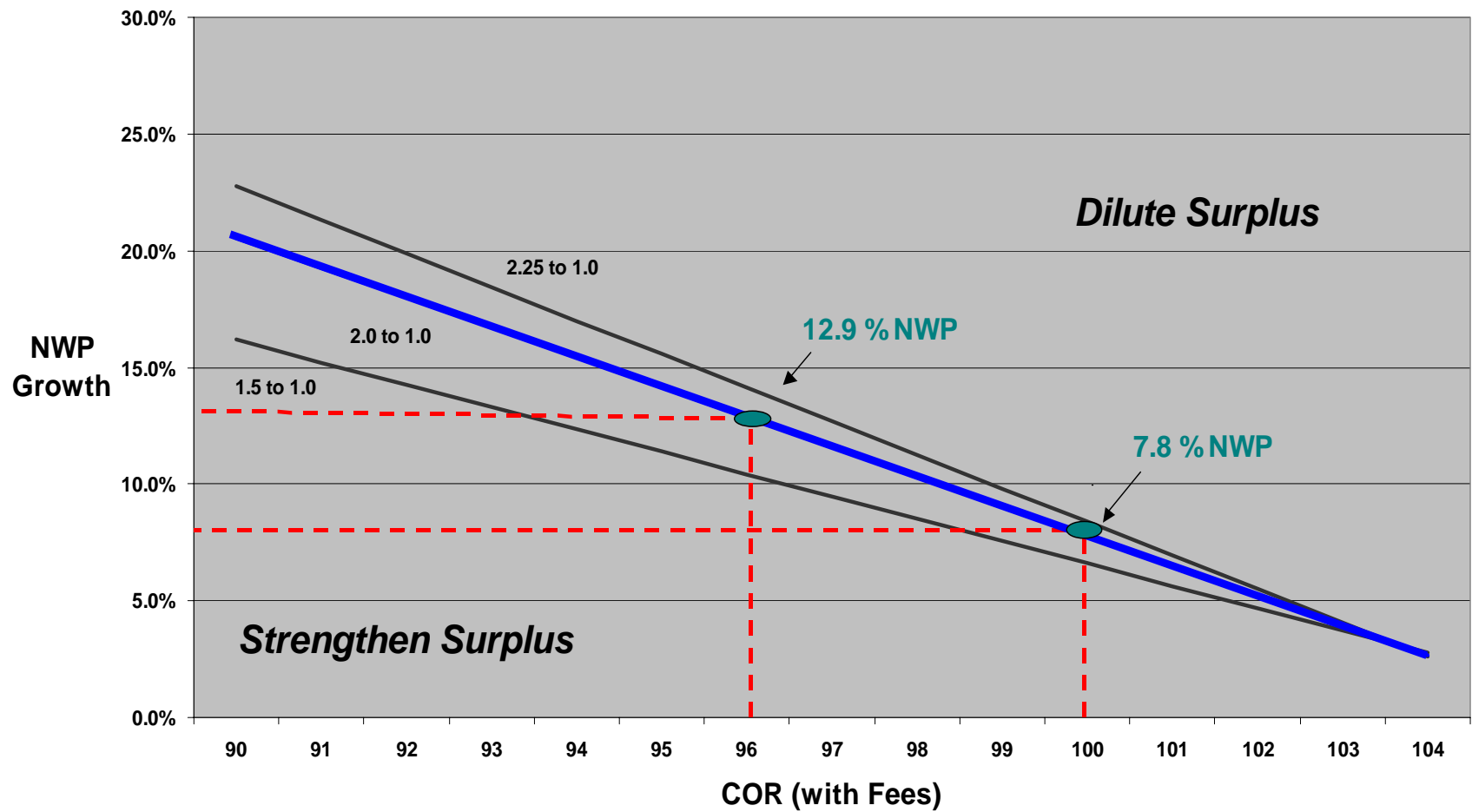
	Target Combined	Und Results	ROE at Assumed P/S Ratio (EAIT)				Surplus Support After Tax	Prem Growth Rate Supported at Assumed P/S Ratio			
			1.75	2.00	2.25	2.50		1.75	2.00	2.25	2.50
PPA	98.0%	3.8%	6.7%	7.7%	8.7%	9.6%	3.1%	9.8%	10.8%	11.8%	12.7%
NSA	98.0%	4.1%	7.1%	8.1%	9.1%	10.1%	3.1%	10.2%	11.2%	12.2%	13.3%
HOME	97.0%	3.7%	6.4%	7.4%	8.3%	9.2%	3.1%	9.6%	10.5%	11.4%	12.3%
Personal Lines	97.8%	3.8%	6.7%	7.6%	8.6%	9.6%		9.8%	10.8%	11.7%	12.7%
COM AUTO	97.0%	4.1%	7.1%	8.1%	9.2%	10.2%	3.1%	10.2%	11.3%	12.3%	13.3%
BOP	96.0%	4.2%	7.4%	8.4%	9.5%	10.5%	3.1%	10.5%	11.5%	12.6%	13.6%
COM PROP	94.0%	4.3%	7.5%	8.6%	9.7%	10.8%	3.1%	10.7%	11.7%	12.8%	13.9%
GEN LIAB	98.0%	4.9%	8.6%	9.9%	11.1%	12.4%	3.1%	11.8%	13.0%	14.2%	15.5%
WC	104.0%	7.6%	13.2%	15.1%	17.0%	18.9%	3.1%	16.4%	18.3%	20.1%	22.0%
FARM	94.5%	4.2%	7.3%	8.4%	9.4%	10.4%	3.1%	10.4%	11.5%	12.5%	13.6%
Commercial Lines	96.6%		7.8%	9.0%	10.1%	11.2%		11.0%	12.1%	13.2%	14.3%
All Lines	97.5%		6.9%	7.9%	8.9%	9.9%		10.0%	11.0%	12.0%	13.0%



THE BLUE LINE



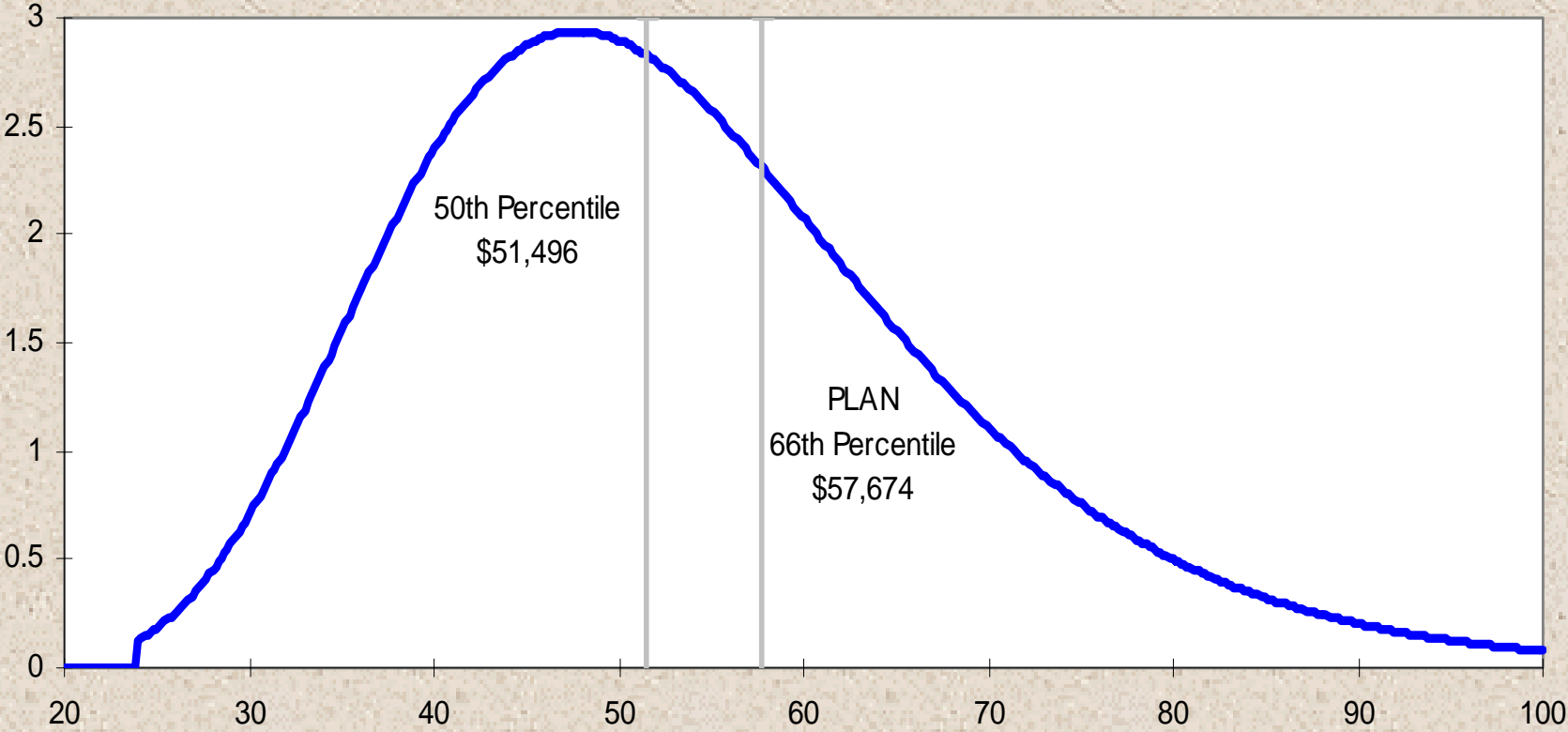
THE BLUE LINE



Pricing Risk Adjustments:

- We focus on the “sweet spot”
- We make adjustments based on selected risk components to increase our probability of hitting it

Distribution of Weather Losses



Values in Millions



Targeted Combined Ratio Before Adjustment

Combined Ratio	Weather Ratio	Percentile Distribution	Underwriting Return
94.0%	27.8%	49%	8.5%
95.0%	28.9%	54%	7.5%
96.0%	29.9%	59%	6.5%
97.0%	30.9%	64%	5.5%
100.0%	33.9%	76%	2.5%
103.0%	36.9%	85%	-0.5%
106.0%	39.9%	91%	-3.5%
110.5%	44.4%	96%	-8.0%
113.5%	47.4%	98%	-11.0%
116.5%	50.4%	99%	-14.0%
		-T	0.81%
		O	7.4%
		RCR	9



Risk Adjusted Targeted Combined Ratio

Combined Ratio	Weather Ratio	Percentile Distribution	Underwriting Return
89.0%	27.8%	49%	13.5%
92.0%	30.9%	64%	10.5%
95.0%	33.9%	76%	7.5%
98.0%	36.9%	85%	4.5%
101.0%	39.9%	91%	1.5%
102.5%	41.4%	93%	0.0%
105.5%	44.4%	96%	-3.0%
108.5%	47.4%	98%	-6.0%
111.5%	50.4%	99%	-9.0%
114.4%	53.3%	100%	-11.9%
		-T	0.29%
		O	12.4%
		RCR	43



Model Income Statements:

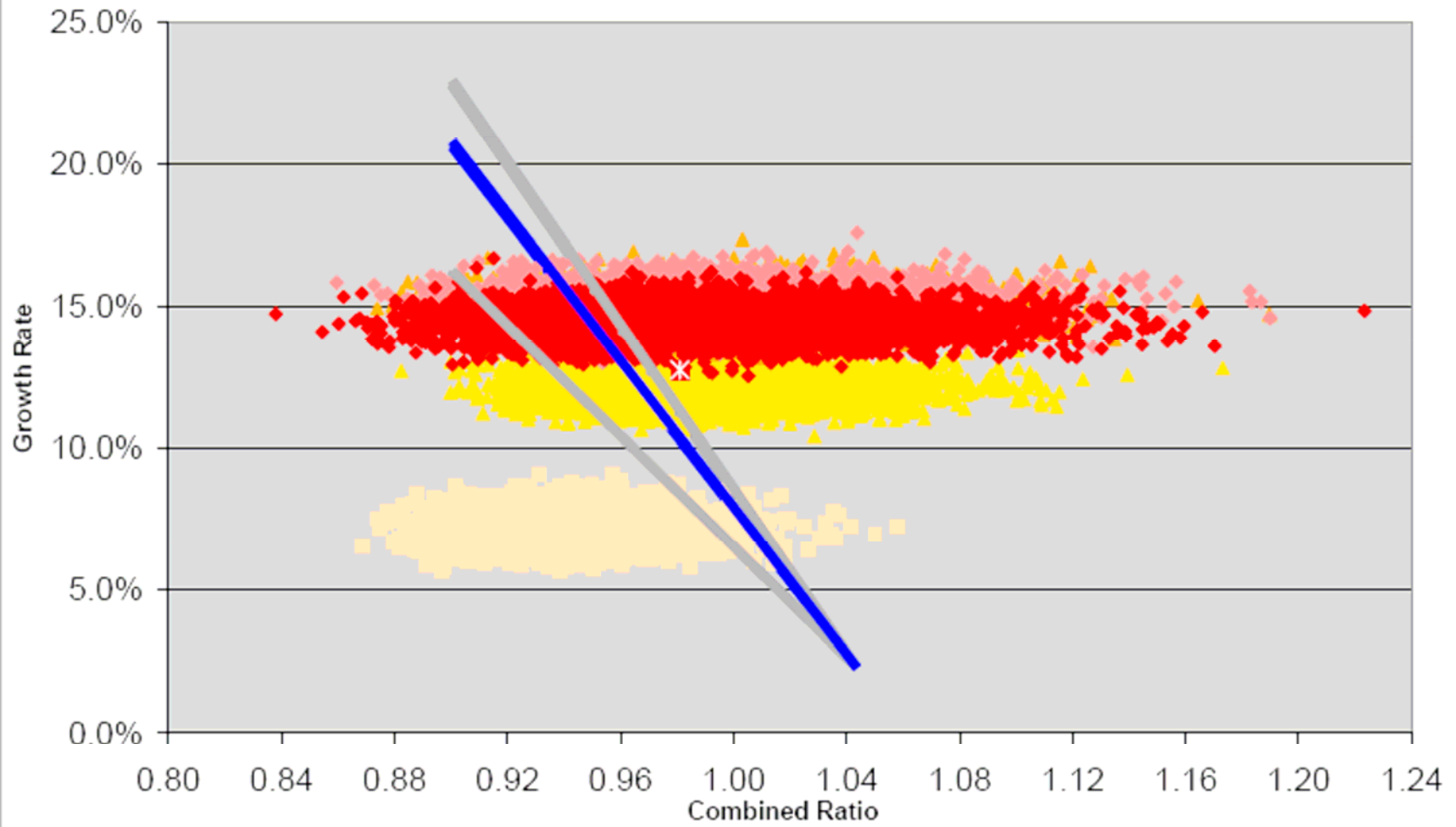
- Perform sensitivity analysis based on possible scenarios
- Model investments separately from P&C
- Use results to gauge where we want to place our “bets”

ILLUSTRATION ONLY

	2004	2005	2006	2007	2008	2009	5 Yr Ave
Premiums Written Direct	1,054,209	1,117,068	1,220,312	1,355,235	1,507,695	1,682,398	
DWP Growth Rate	3.7%	6.0%	9.2%	11.1%	11.2%	11.6%	9.8%
Premiums Earned	1,005,472	1,058,870	1,145,286	1,263,909	1,410,170	1,573,571	
Losses Incurred	521,065	585,503	683,806	759,830	849,789	950,335	
Loss Adjustment Expense	99,362	102,769	110,295	121,684	135,724	151,418	
Total Expenses	403,907	425,359	457,578	501,748	551,781	608,541	
Gain from Underwriting	80,500	48,007	3,902	2,331	8,600	14,695	
Net Investment Income	48,308	52,988	59,152	65,189	71,252	78,035	
Gain Transferred to Surplus	92,075	75,626	49,912	52,564	61,526	71,139	
Beginning Surplus	443,553	544,854	629,539	689,497	753,064	826,529	
Ending Surplus	544,854	629,539	689,497	753,064	826,529	910,646	
NPW/SURPLUS RATIO	1.87	1.72	1.71	1.74	1.77	1.79	1.75
ROS	22.8%	15.5%	9.5%	9.2%	9.8%	10.2%	10.8%
COR With Fee Income	90.4%	93.4%	97.2%	97.4%	97.0%	96.7%	96.3%



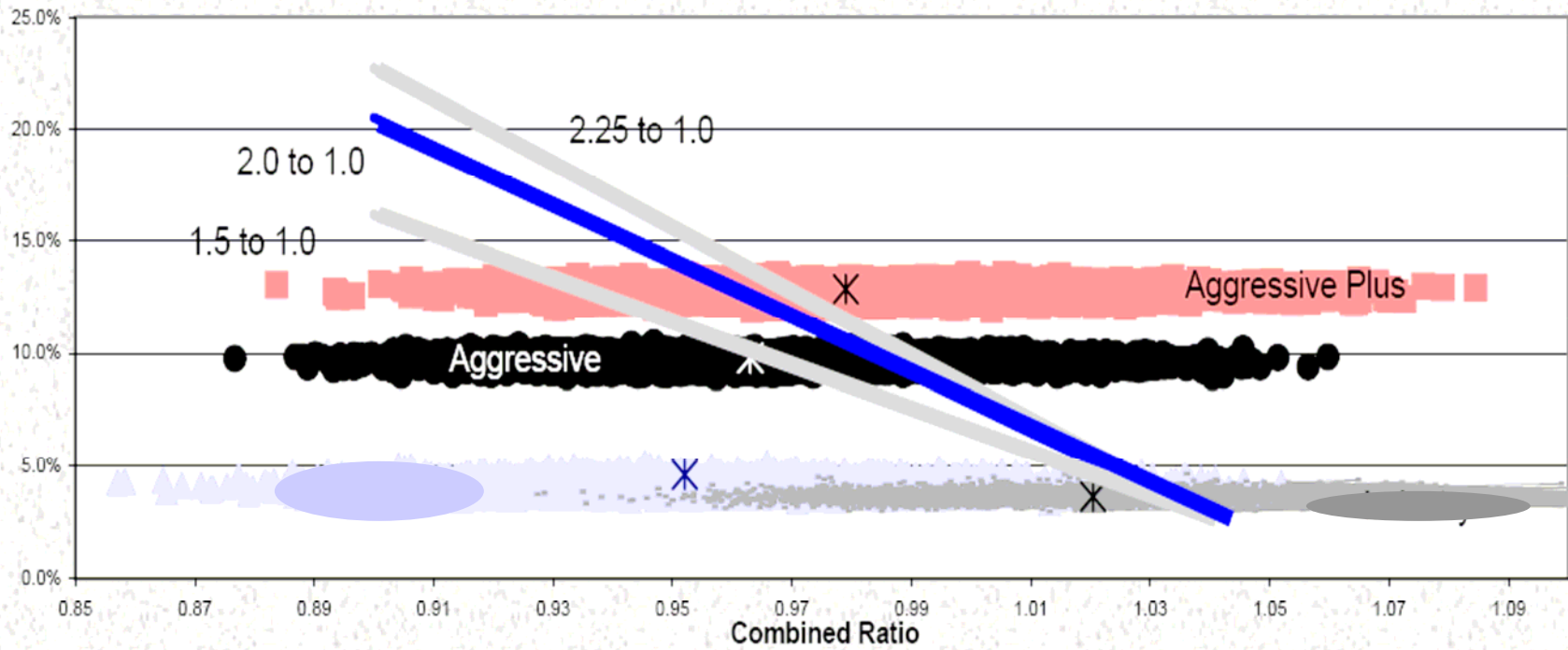
Aggressive Risk Simulations



- Blue Line (P/S=2.0)
- Aggressive Risk Sims 2005
- Aggressive Risk Sims 2006
- Aggressive Risk Sims 2007
- Aggressive Risk Sims 2008
- Aggressive Risk Sims 2008
- Aggressive Risk Sims 2009
- Aggressive Risk Mean
- Blue Line (P/S=1.5)
- Blue Line (P/S=2.3)



5 Year Average



At The End Of The Day:

- Modeling is great fun and a significant part of what we do...
- Presentation of results/concepts impact how the message is received
- “The proof is in the pudding...”

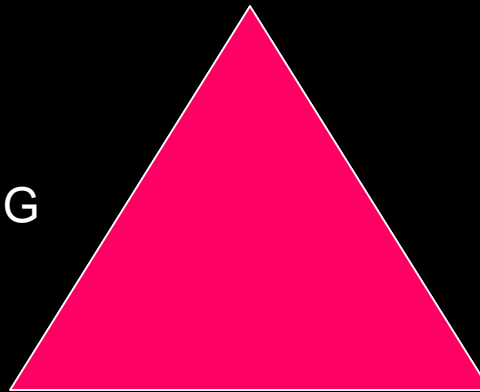
Performance Summary

	DWP		Combined Ratios		Surplus	P/S Ratio
		Chg		Chg		
1998	\$ 621		103.1%		\$ 314	1.98
1999	\$ 624	0.5%	101.0%	-2.1	\$ 367	1.70
2000	\$ 660	5.8%	109.6%	8.6	\$ 334	1.98
2001	\$ 757	14.7%	104.1%	-5.5	\$ 361	2.10
2002	\$ 900	18.9%	102.1%	-2.0	\$ 367	2.45
2003	\$ 1,016	12.9%	98.1%	-4.0	\$ 443	2.29
2004	\$ 1,040	2.4%	92.1%	-6.0	\$ 529	1.97
2005	\$ 1,056	1.5%	92.6%	0.5	\$ 615	1.72
Five Year Average:		10.1%	97.8%			

The ERM Connection:

RESERVING

PRICING



PLANNING