The Actuarial Profession
making financial sense of the future

GIRO conference and exhibition 2010
Paul Figg

UK Motor Insurance Cycle

Understanding the cause of market price changes

12-15 October 2010

Introduction
Purpose of workshop

- In this workshop we will look at the causes of pricing changes occurring in the UK Comprehensive Private Motor market.
- We will look at how market prices have moved since 1981 and examine whether these movements can be explained by:
  - Changes in the claims loss cost
  - Reserve redundancies / deficiencies
  - Investment return
  - Expenses & reinsurance costs
- The workshop will conclude by asking the question: is it possible to forecast future pricing movements?

Introduction
Workshop structure

- Opening comments
- Source data
- Market price changes occurring since 1981
- What factors affect the insurance cycle?
- Is it possible to predict future movements?
- Comments / Q&A

Opening Comments
Why the insurance cycle matters

The presenter's background is P&C treaty underwriting. The following comments reflect this experience.

Observations:

- The UK motor market has recently reached breaking point and prices have begun to rise.
- Some surprise has been expressed at recent events, with varying, and sometimes contradictory, explanations given as to the cause.
- But viewed in a historical context this is not surprising. It is consistent with a history of sudden insurance cycle movements.
- Other casualty lines are likely to follow motor's recent experience. In common with Motor, casualty lines have seen both large prior year reserve releases and sideways rate movements in recent years.

Opening Comments
Market theory

- Insurance is generally a compulsory purchase with price having very little impact on demand.
- Most insurance products can be viewed as a commodity.
- Insurance industry is very competitive with very few participants having any ability to influence market prices.
- Pricing of individual risks is an inexact science. There is a delay between writing a book of business and knowing the actual underwriting results.
- Reserving errors are significant and appear to be biased (or anchored) towards previous financial years' performance. Leading to over-reserving during market hardening and under-reserving during the soft market.
- The insurance pricing cycle is perhaps an inevitable consequence of the above.

Opening Comments
Market perspective

- An individual insurance company's underwriting results are highly correlated with their peers. Consequently it makes sense to look at results from a market perspective (ie market aggregated result) – because this:
  - Reduces random variation errors in loss experience
  - Avoids distortions caused by changes in underwriting focus or distribution method employed by individual companies.
  - Enables us to talk about "the market" without worry of identifying any individual companies.

To illustrate the value of looking at things from a market perspective the following slides detail results of the US Commercial Auto Liability market.

The idea being: was the reserving crisis of the previous soft market identifiable?

Opening Comments

Market perspective example: US Commercial Auto Liability (1 of 3)

Acc Yr Ultimate Losses (Includes IBNR) as held by the Industry

E. Prem	Acc Yr	1	2	3	4	5
$6.6	1997	$5.0	$5.2	$5.4	$5.4	$5.5
$6.9	1998	$5.3	$5.6	$5.9	$6.0	$6.1
$7.1	1999	$5.6	$6.1	$6.4	$6.6	$6.6
$7.7	2000	$6.1	$6.6	$6.9	$7.0	$7.1
$8.6	2001	$6.4	$6.6	$6.8	$7.0	$7.0
$10.0	2002	$6.7	$6.7	$6.9	$6.9	$6.9
$11.2	2003	$7.2	$7.1	$7.1	$7.0	$7.0
$12.0	2004	$7.4	$7.2	$7.2	$7.2	
$12.0	2005	$7.5	$7.4	$7.4		
$12.0	2006	$7.5	$7.5			
$12.1	2007	$7.5				

Ultimate Loss Ratio (Includes IBNR) as held by the industry

1	2	3	4	5
75%	78%	81%	81%	82%
77%	81%	86%	87%	88%
79%	85%	90%	93%	93%
78%	85%	89%	91%	92%
75%	77%	80%	81%	81%
67%	67%	69%	69%	69%
64%	63%	63%	62%	62%
61%	60%	60%	60%	
63%	62%	62%		
62%	63%			
63%				

Industry reserves were significantly deficient

Note:
All dollar amounts are: $ billion's
Results are: Gross of Reinsurance

Opening Comments

Market perspective example: US Commercial Auto Liability (2 of 3)

	Reported by the industry (iro 2000 FY	Actual Reserve Deterioration (occurring in 2001 and later)
1997 Acc Yr reserve deterioration	$0.0 bn	$0.1 bn
1998 Acc Yr reserve deterioration	$0.3 bn	$0.1 bn
1999 Acc Yr reserve deterioration	$0.5 bn	$0.5 bn
2000 Acc Year	$6.1 bn	$1.0 bn
Claim cost for 2000 Financial Year	**$6.9 bn**	**$1.7 bn**
2000 Financial Year Earned Premium	$7.7bn	
2000 Financial Year Loss Ratio	**89%**	22%

- To put these numbers into context: industry expenses for this class of business are around 30%.
- The next slide shows that industry incurred loss development is stable and even a cursory analysis would have revealed an industry reserving problem.
- By my reckoning $1.0bn of the eventual $1.7bn shortfall was foreseeable at the time.

Opening Comments

Market perspective example: US Commercial Auto Liability (3 of 3)

Incurred Losses (Paid + Case Outstandings)

Acc Yr	1	2	3	4	5	Ult.
1997	$3.3	$4.3	$4.9	$5.1	$5.3	$5.4
1998	$3.5	$4.7	$5.4	$5.7	$5.9	$6.0
1999	$3.7	$5.0	$5.8	$6.3	$6.4	$6.6
2000	$3.9	$5.3	$6.2	$6.7	$6.9	$7.0
2001	$4.0	$5.4	$6.2	$6.6	$6.8	$6.9
2002	$4.0	$5.3	$6.1	$6.5	$6.7	$6.8
2003	$4.1	$5.5	$6.2	$6.5	$6.7	
2004	$4.2	$5.5	$6.3	$6.7		
2005	$4.4	$5.7	$6.4			
2006	$4.3	$5.8				
2007	$4.3					

Incurred Loss Development Factors

1 -> 2	2 -> 3	3 -> 4	4 -> 5
1.31	1.13	1.05	1.04
1.35	1.14	1.06	1.03
1.36	1.16	1.08	1.03
1.37	1.17	1.07	1.03
1.35	1.14	1.06	1.03
1.34	1.14	1.07	1.02
1.33	1.13	1.05	1.03
1.31	1.13	1.07	
1.30	1.12		
1.34			

	1 -> 2	2 -> 3	3 -> 4	4 -> 5	4 -> Ult.
Avg LDF	1.33	1.14	1.07	1.03	1.02

	1	2	3	4
% to Ult.	59%	78%	89%	95%

The industry pattern is very similar to ISO's $1m Primary All State Commercial Auto Development Pattern

Source Data

2008 Premium breakdown of UK Comprehensive Private Motor Market

Whole UK Market ≈ £9bn

UK domiciled = £7.5bn (FSA return)

Accident Year Accounting ≈ £6.8bn

FSA Form 32 = £6.7bn

For what follows we are using the Accident Year FSA Return data as a proxy for the "Market" Result.

Source Data
UK FSA Returns

- The underlying data used in this workshop is from the Best's Statement File – UK product (A.M. Best Europe – Information Services Ltd.)
- This data has been heavily processed in order to derive a "market" result.
- The "market" result is not a simple aggregation of the all the data and is best viewed as a derivative of the original data owing to the need to avoid distortions caused by:
  - Mergers and acquisitions
  - Typos made by insurance companies when submitting their returns.
  - Firms leaving the UK (tax reasons?)
- The A.M. Best product is well suited for such a study because:
  - Insurance company returns date all the way back to 1981.
  - The data is stored exactly how the original returns were submitted. This permits interpretation of how the old Forms 31, 32 and 33 translate to Form 32 of the 1996, and subsequent 2005, return formats.

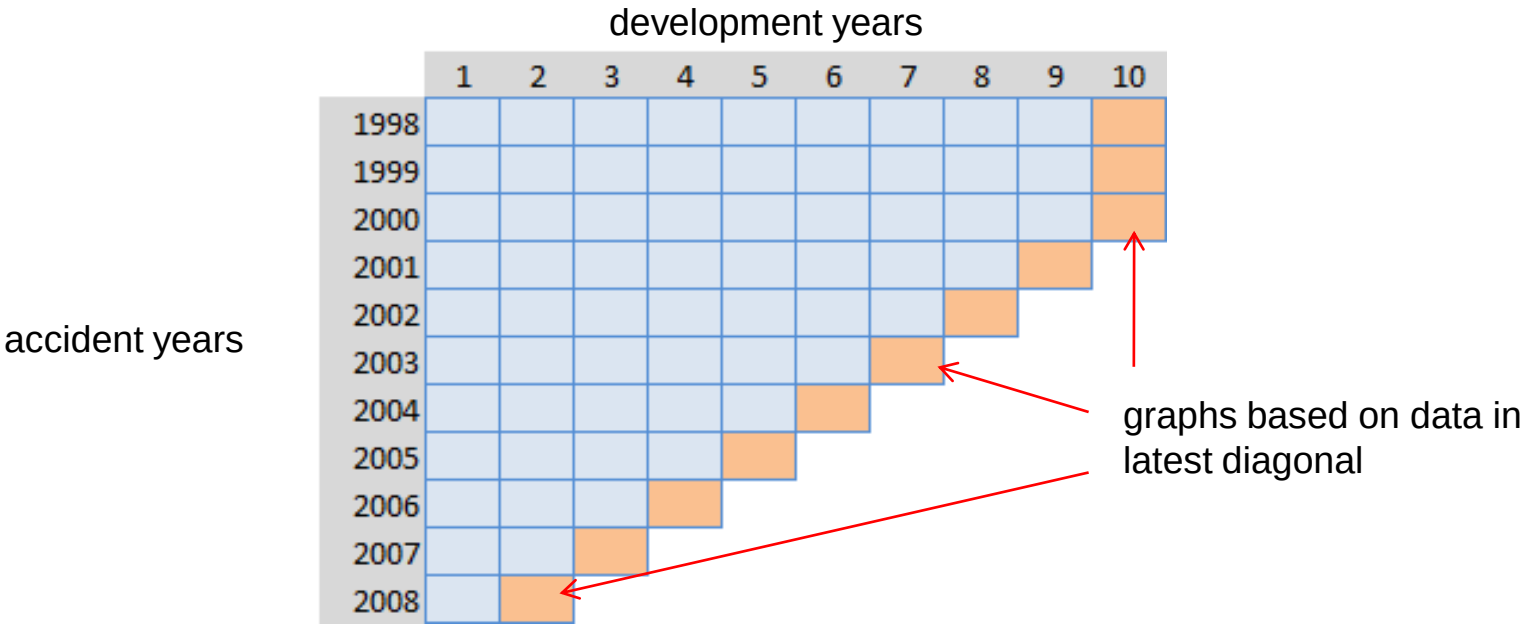
Source Data
Definition / Terms and conditions

- The loss numbers appearing later in these slides are net of deductibles. It is assumed that deductibles gradually drift upwards over time and adequately maintain the relative amount of 1st party indemnification offered.

- Insurers have flexibility to add cover not mandated by the Road Traffic Act - it is the belief of the presenter that changes in original prices are the primary influence on loss ratios. Other terms and conditions are a second order consideration (opinions welcome).

Market price changes occurring since 1981
FSA Form 32

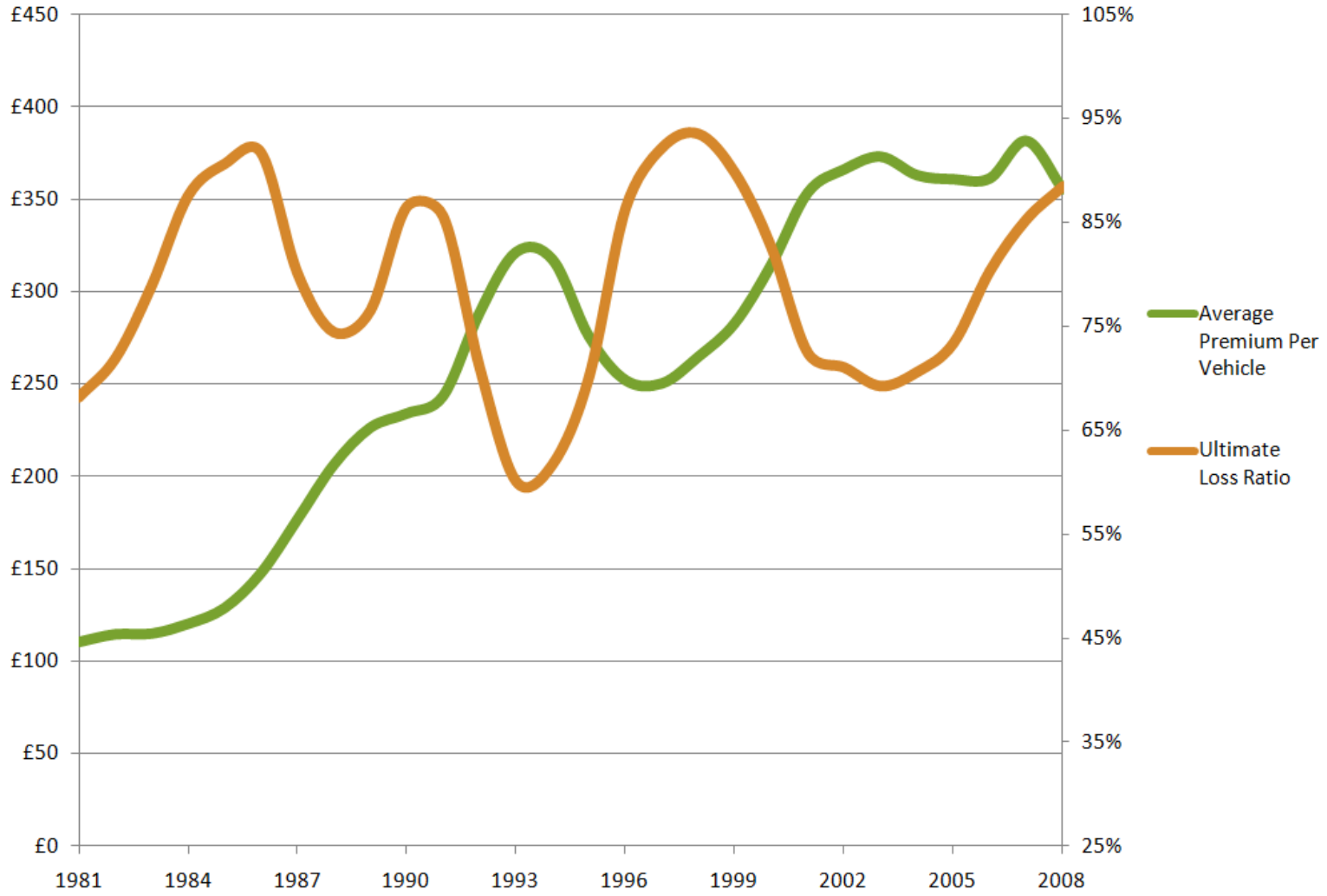
- Form 32 is the source data for the following slides.
- Premium and loss data is gross of reinsurance.
- Graphs are shown by accident year. The Ultimate Incurred Loss is the booked ultimate figure held by the industry as at 2009 year end - eg:



Market price changes occurring since 1981

By origin accident year (data @ 2009), gross of reinsurance

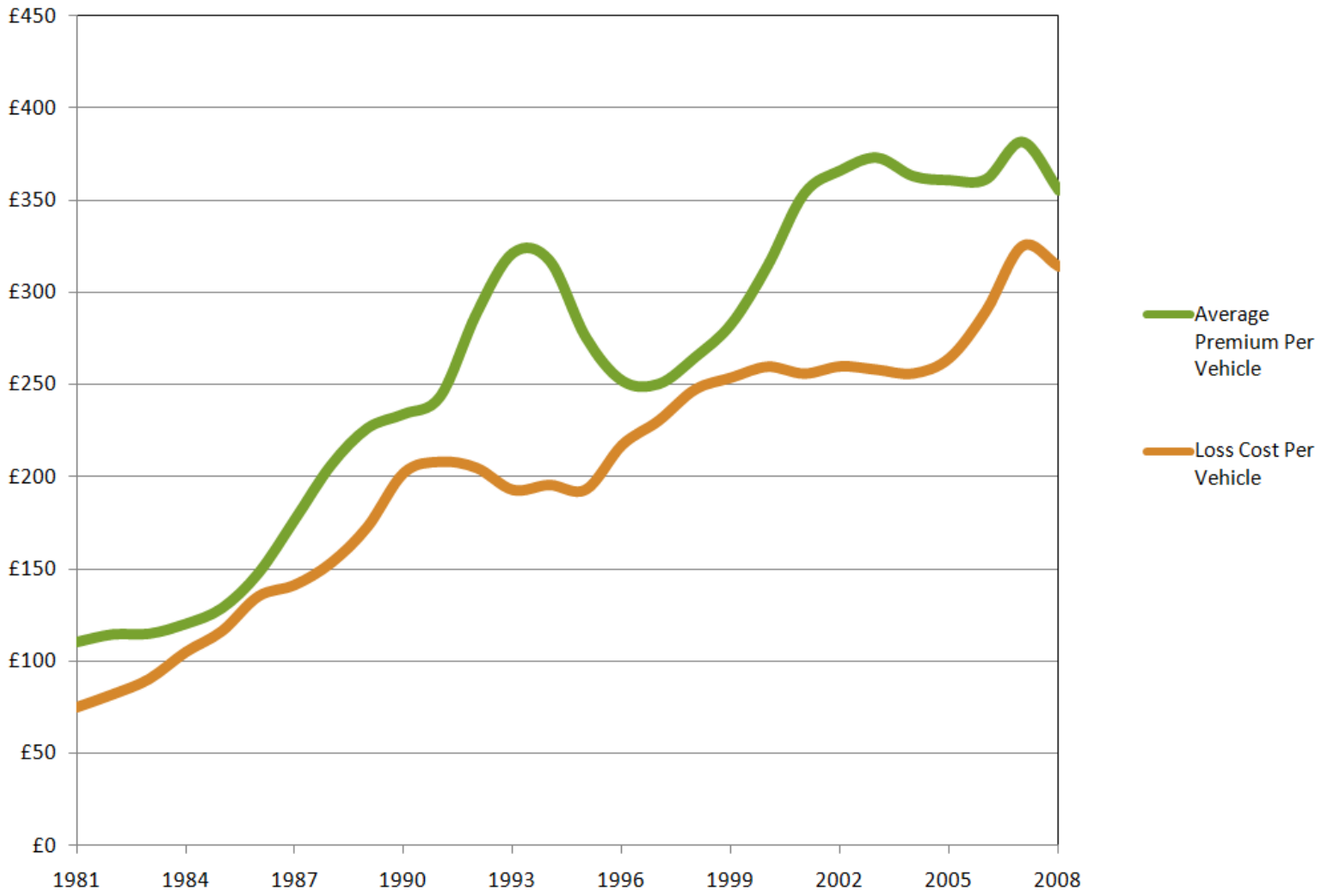
- Accident Year loss ratios demonstrate clear cyclical behaviour



Market price changes occurring since 1981

By origin accident year (data @ 2009), gross of reinsurance

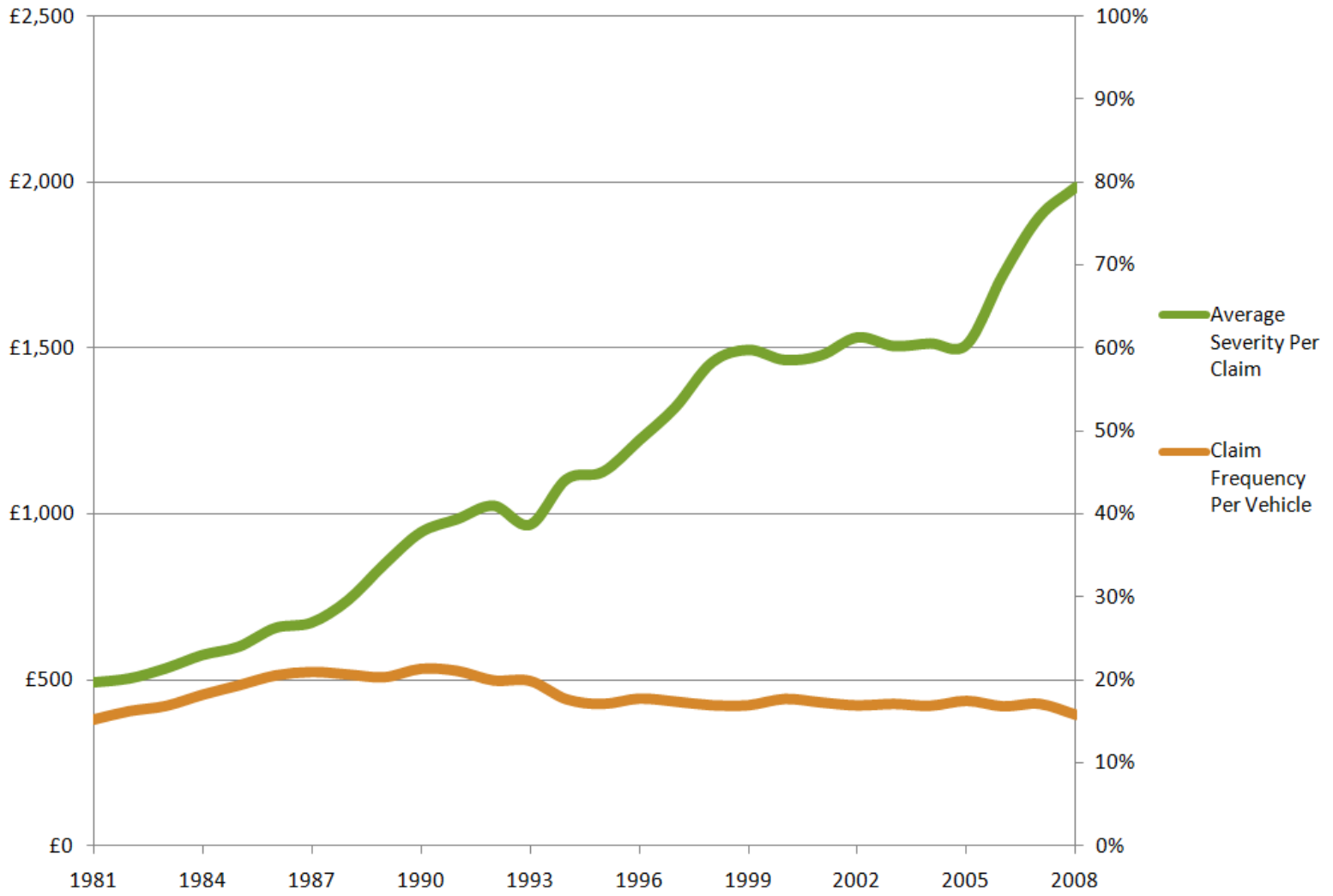
- Historically loss costs have been more stable than premium rates



Market price changes occurring since 1981

By origin accident year (data @ 2009), gross of reinsurance

- Claim frequency per vehicle has maintained a steady downward trend
- But claim severity has increased markedly since 2005



Market price changes occurring since 1981

Taking account for reserve redundancies / deficiencies

- For a complete picture we should also consider the question of reserve adequacy.
- The following slides address these two questions:

1. What does the development of accident year Ultimate Loss Ratios look like?
2. If we look at loss ratios on a Financial Year basis – what impact do prior year reserves changes have?

Market price changes occurring since 1981

Question 1 - development of Booked Ultimate Loss Ratios

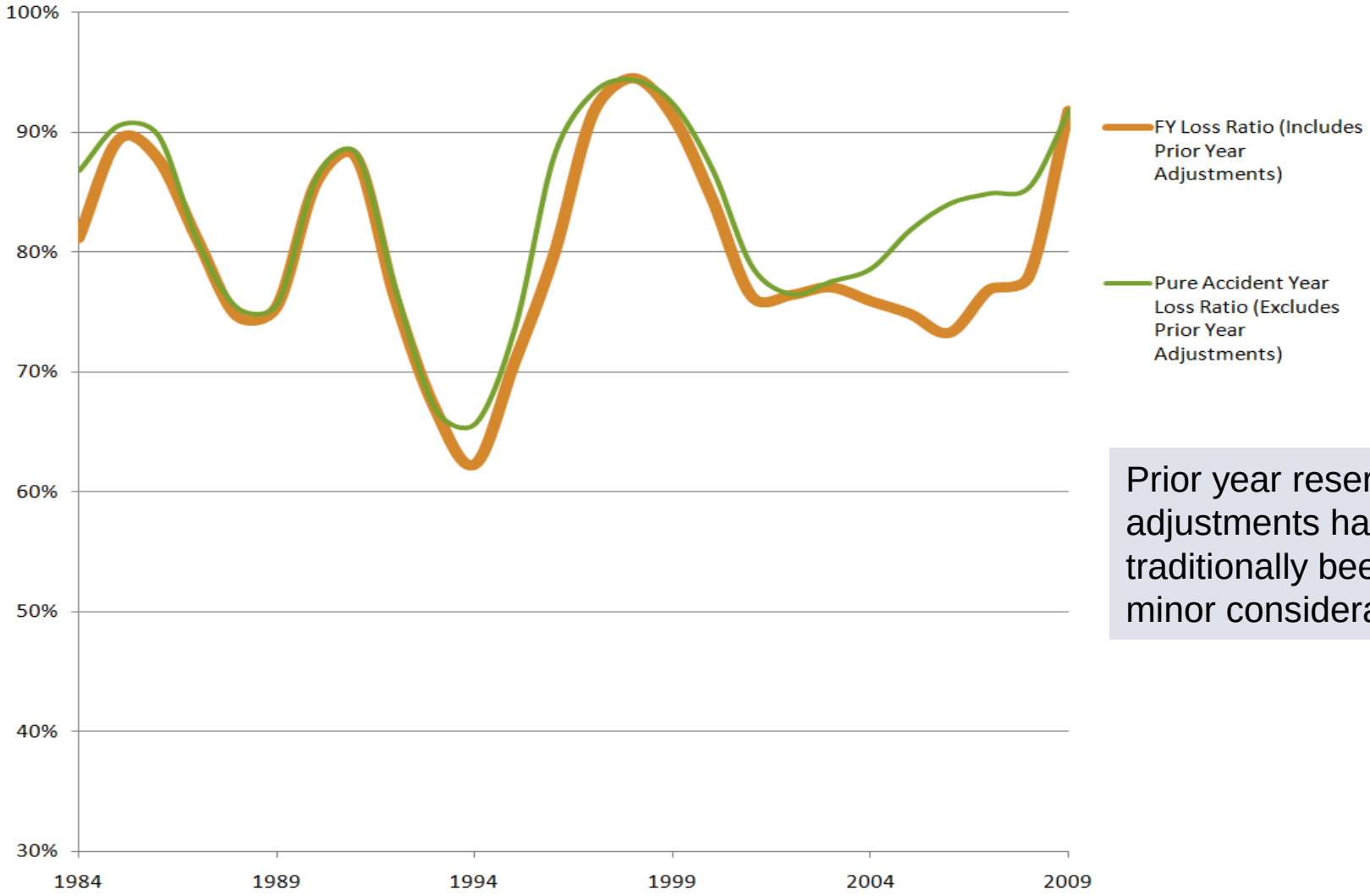
	1 -> 2	2 -> 3	3 -> 4	4 -> 5	5 -> 6	6 -> 7	7 -> 8	8 -> 9	9 -> 10
1993	0.95	0.99	0.99	0.99	1.00	0.99	1.00	1.00	1.00
1994	0.96	1.00	1.00	0.99	0.99	1.00	1.00	1.00	1.00
1995	0.98	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00
1996	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
1997	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99
1998	1.02	1.00	0.99	1.01	1.00	1.00	0.99	1.00	1.00
1999	0.99	0.99	1.02	1.01	0.99	1.00	1.00	1.00	0.99
2000	0.98	1.00	1.02	0.99	0.99	0.99	1.00	0.99	1.00
2001	0.98	0.98	0.99	0.99	0.99	1.00	1.00	1.00	
2002	0.99	0.99	0.98	0.99	0.99	0.99	1.00		
2003	0.99	0.97	0.97	0.98	0.98	1.00			
2004	0.98	0.97	0.97	0.98	0.99				
2005	0.98	0.96	0.97	0.99					
2006	0.99	0.97	0.99						
2007	1.02	0.99							
2008	1.04								

Significant reserve releases in the mid 2000's

Adverse development in most recent accident years

Market price changes occurring since 1981

Question 2 – Financial Year reserve development



Prior year reserve adjustments have traditionally been only a minor consideration

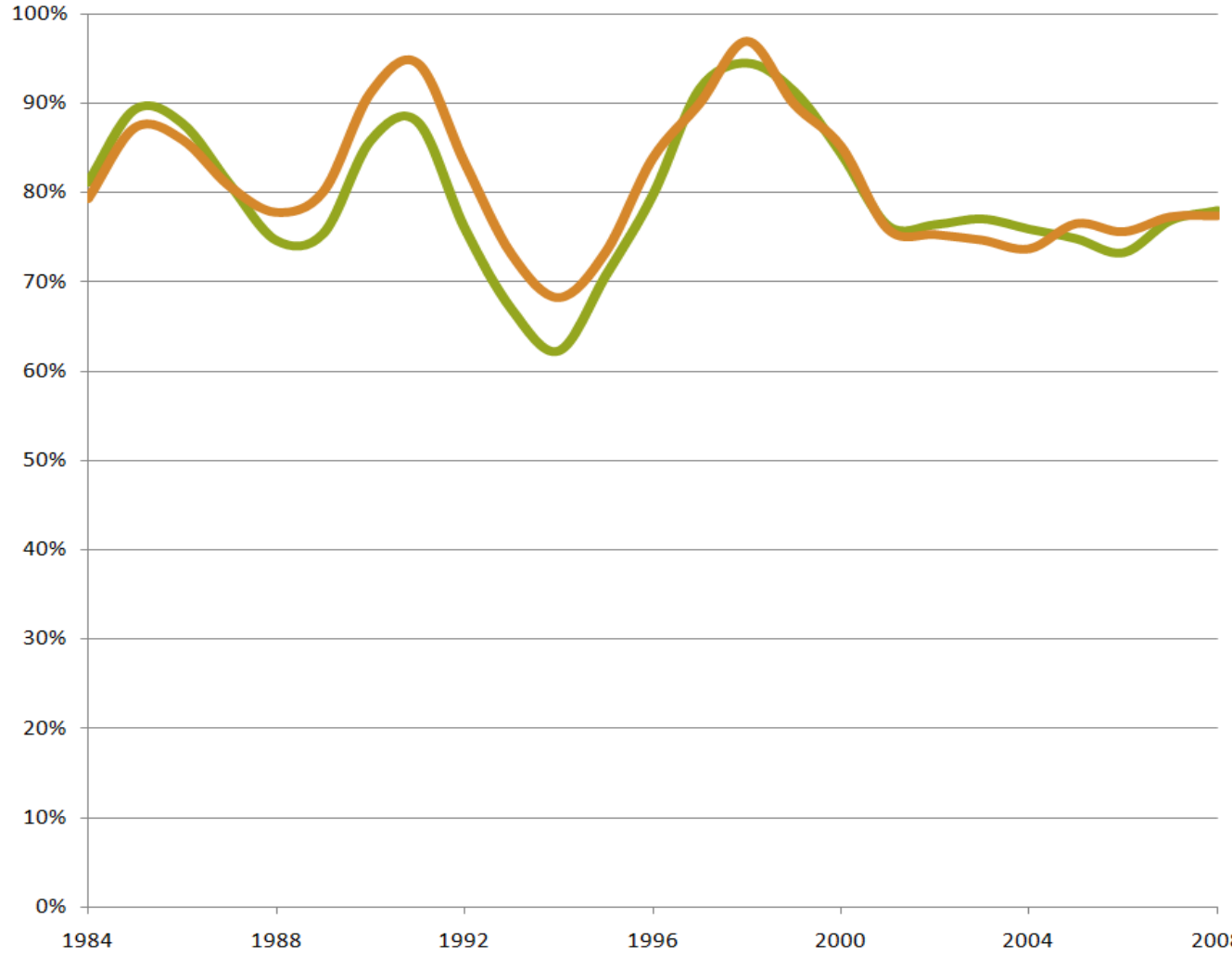
Factors affecting the insurance cycle

Reinsurance and expenses

- So far we have looked at: price changes, loss costs and reserve adjustments. (from Form 32 and all gross of reinsurance)
- To look at the other factors affecting the insurance cycle we need to look at Forms 21 and 22 of the FSA returns.
- Forms 21 and 22 relate to the whole of the UK Motor market (ie they include non-comprehensive and commercial motor). I have split out the comprehensive private motor numbers but there is a gremlin that I haven't had time to resolve.
- Instead the following slides represent the whole of the UK Motor Market (ie private + commercial).
- You'll see from the next slide that there is very little difference between the two.

Factors affecting the insurance cycle

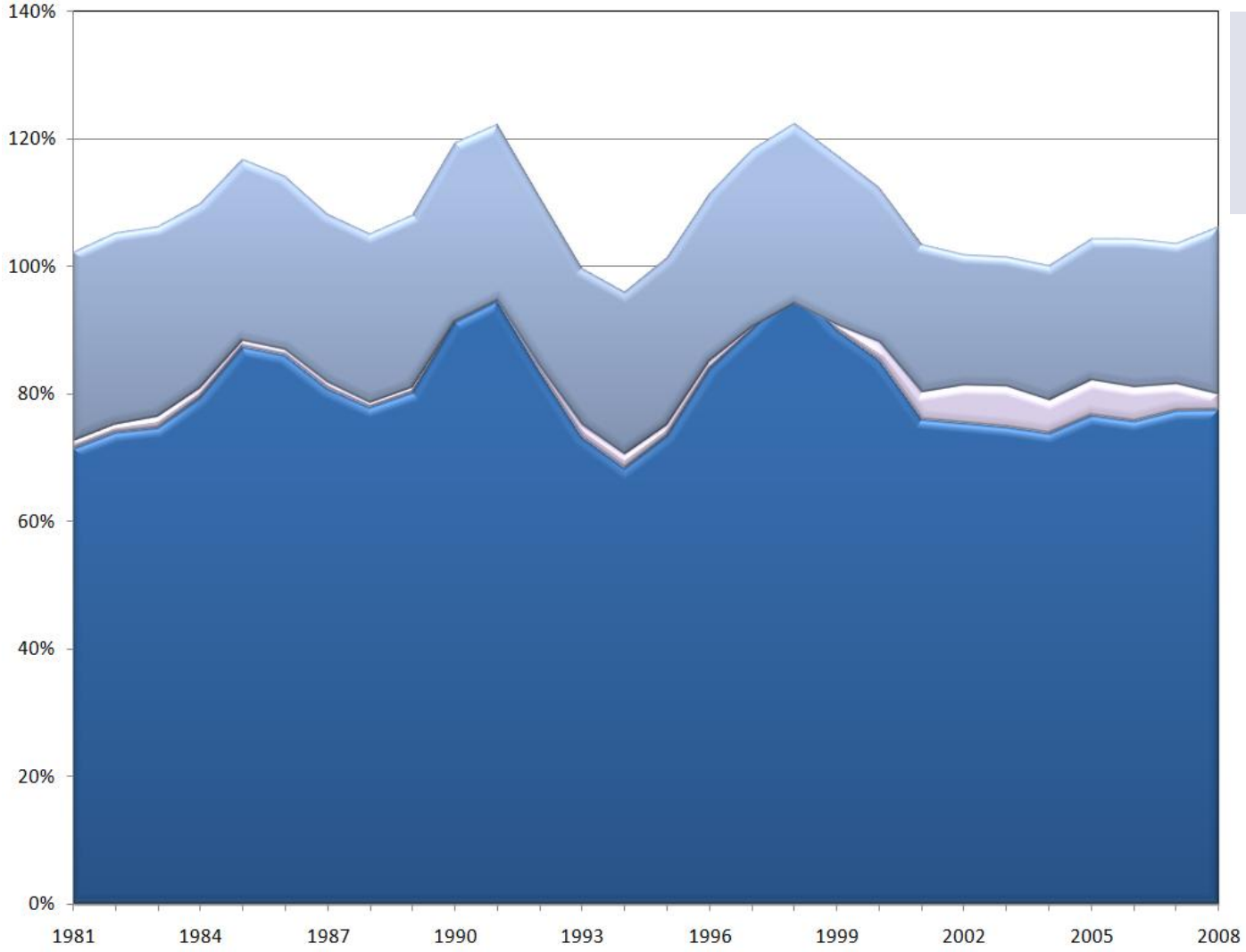
Financial Year Loss Ratios - comparison



Financial Year Loss Ratios include prior year reserve adjustments.
The two data sets are very similar.

Factors affecting the insurance cycle

Financial Year Underwriting Result – as % of Gross Premium



The total of: expenses and the net cost of reinsurance, has remained remarkably stable ≈ 28% of Gross Premium

Factors affecting the insurance cycle

Investment return

- The following assumptions have been made for calculating investment return:
  - Invested asset split is taken from Form 13 with assets categorised into 3 groups:
    - Cash (≈13% across the whole period)
    - Bonds (risen steadily from ≈45% to 60% in recent times)
    - Equities (decreased as Bond % has risen)
  - Annual investment return assumed to be:
    - Cash: 75% of Bond 1 year Spot rate (source: BoE)
    - Bonds: 100% of Bond 1 year Spot rate (source: BoE)
    - Equities: FTSE 100 index (FT 30 + 5% dividend yield assumed pre 1984)
- The resultant annual investment return is:

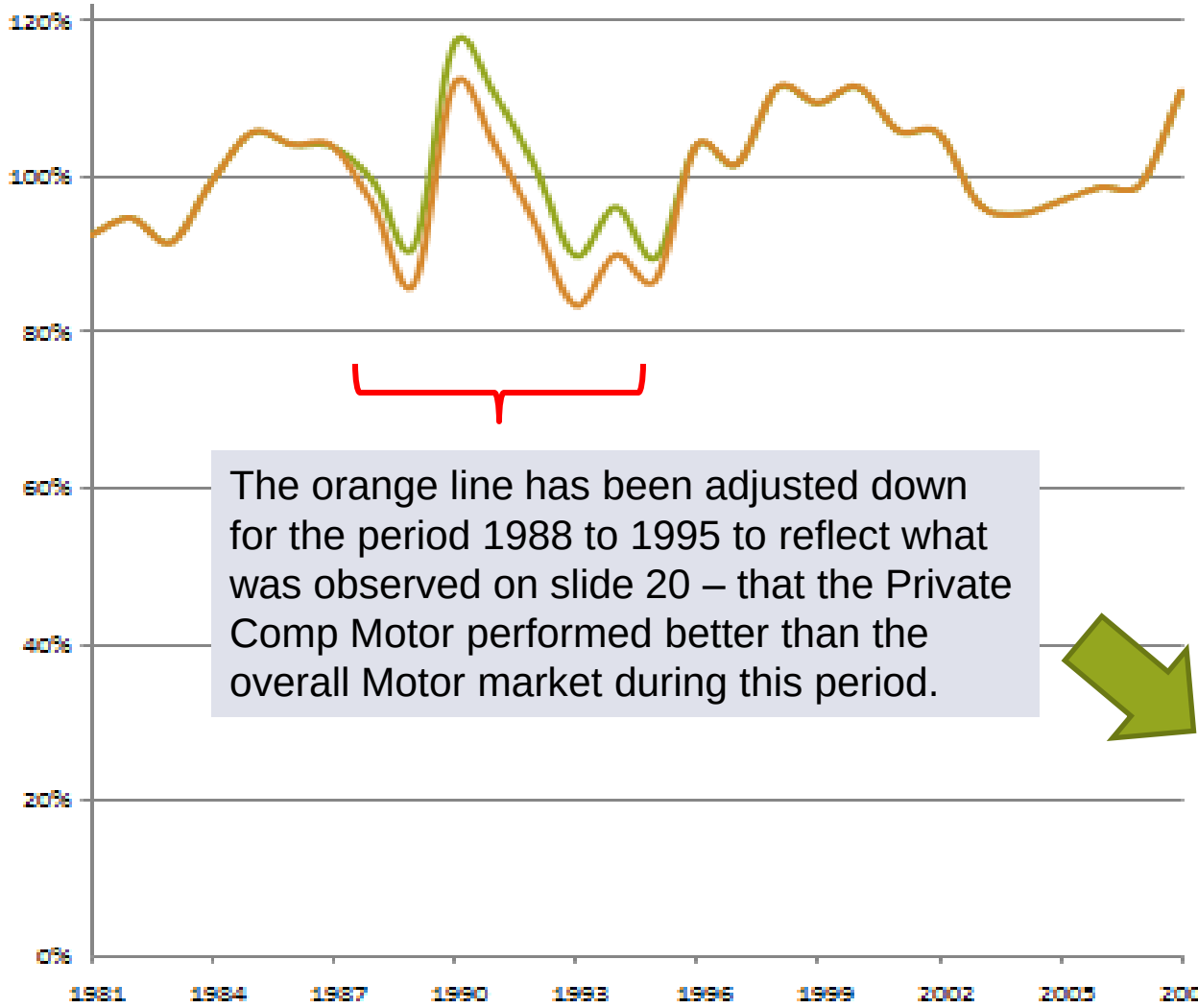
1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
13.4%	13.9%	19.1%	13.4%	13.9%	12.7%	5.7%	7.6%	21.6%	2.5%	12.6%	10.3%	11.2%	0.0%	12.0%

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
7.0%	15.1%	9.8%	7.4%	0.9%	-2.7%	-4.2%	5.8%	5.3%	7.9%	5.7%	4.5%	-4.3%	6.3%

- The amount invested is assumed to be equal to Net O/S claim reserves (varies between 80 to 100% of Gross Premium).

Factors affecting the insurance cycle

Financial result after investment return

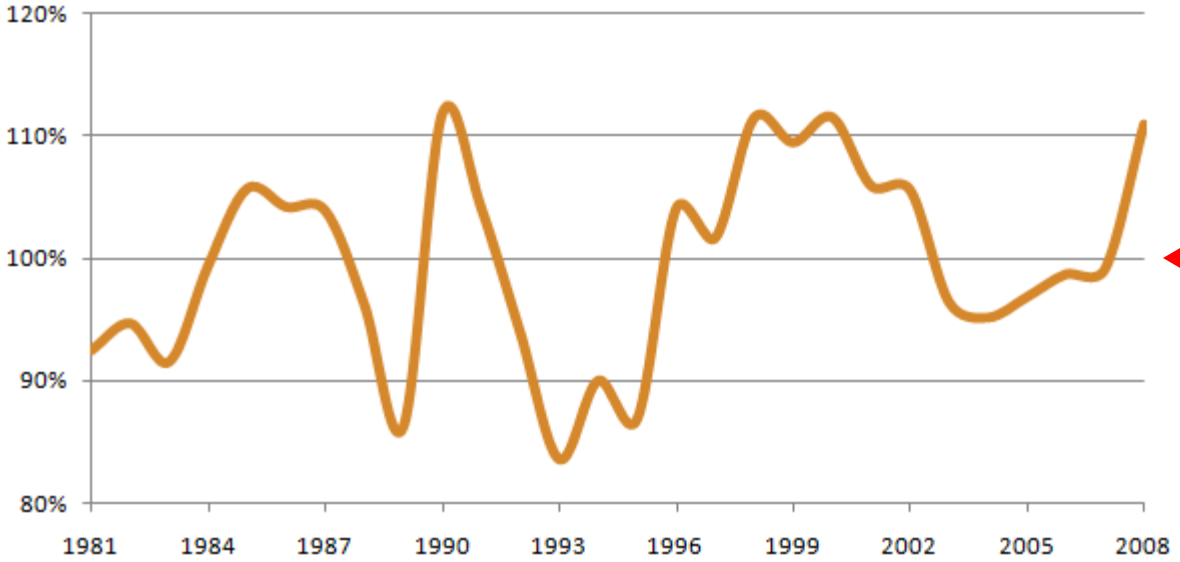


The orange line has been adjusted down for the period 1988 to 1995 to reflect what was observed on slide 20 – that the Private Comp Motor performed better than the overall Motor market during this period.

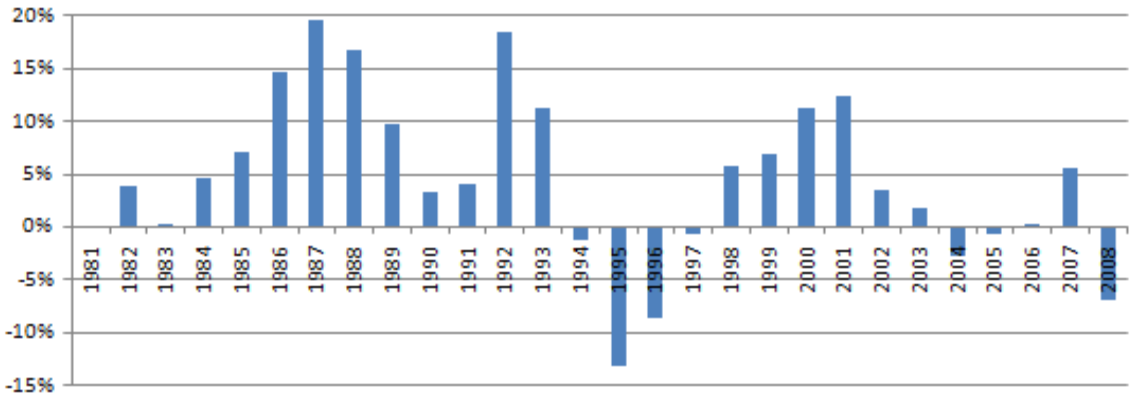
The adjusted (orange) line is used on the next slide

Factors affecting the insurance cycle

Does the market appear to behave rationally?



The average over the period is 100% of Gross Premium



The market does appear to adjust back towards 100%, but rate changes lag good (or bad) experience by 1-2 years.

Is it possible to predict price movements?

Observations drawn from previous slides

- The “market” does appear to behave rationally – with a lag, prices adjust to move Financial Year results back towards an “average” level.
- => prices follow (with a lag) the market results

i) industry capitalisation, and ii) number of motor insurers are probably also relevant.

- Is it possible to model future market results?
  - **Investment return** – core component of existing ICA models => yes (in theory)
  - **Loss costs** – here we really mean average claim severity. History suggests (slide 15) that claim severity remains remarkably stable over distinct periods of time. => possible (with an assumption)
  - **Expenses / reinsurance** – historically this has remained constant.
  - **Reserve adjustments** – historically not a major factor. The experience of the mid 2000’s indicates that the market reserves for ultimates by assuming that recent observed claim severity trends continue. => transition periods, between different periods of claims inflation, will result in reserve redundancies / deficiencies.

Contact Details

For comments & questions and details of similar products for UK Insurance classes

Paul Figg, FIA

E-mail: paul.figg@riskboutique.com

Contact details for AM Best

UK FSA Returns Database & Analysis System - Best's Statement File UK

AM Best Europe - Information Services Ltd

Bryan Martyn, Manager, Regional Sales - Products & Services

6th Floor, 12 Arthur Street, London, EC4R 9AB, UK

Tel: +44 (0)207 397 0292; E-mail: bryan.martyn@ambest.com