



Balance sheet integrity

In focus: the underwriting cycle seminar

Casualty Actuarial Society
October 5-6, 2009

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 **ERNST & YOUNG**
Quality In Everything We Do

Agenda

- ▶ Define balance sheet integrity
- ▶ Explain Ernst & Young analysis
- ▶ Present analysis results and hindsight look for five Schedule P lines
 - ▶ Personal auto liability
 - ▶ Commercial auto liability
 - ▶ Commercial multi-peril
 - ▶ Medical malpractice – claims-made
 - ▶ Other liability – occurrence
- ▶ Present hindsight look only for two more lines
 - ▶ Workers compensation
 - ▶ All lines combined

The auditing actuary's role in assessing a balance sheet

- ▶ Basic steps of our work:
 - ▶ Review Company actuary's work, performing independent analysis wherever it appears necessary
 - ▶ Establish a range of reasonable liability estimates to see if Company held lies within range
 - ▶ Check movement since prior year to check if it is consistent with loss development in interim
 - ▶ Check position in our range for consistency with prior year
- ▶ Ideally, we serve as a helpful peer review
- ▶ Possible problems we look for
 - ▶ Hiding bad news that will have to emerge eventually
 - ▶ Managing earnings

Defining balance sheet integrity — the auditing actuary's perspective

There are three quantities to consider when assessing the integrity of the reserves (considering each accident year in isolation):

1. Booked loss ratio (known)
 2. Company actuary's estimate of ultimate loss ratio (often unknown or partially known)
 3. Our estimate of ultimate loss ratio (known)
 4. True ultimate loss ratio (not known for several years)
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- ▶ True balance sheet integrity is the narrowness of the gap between 1 and 2.
 - ▶ Auditing actuaries measure the narrowness of the gap between 1 and 3.
 - ▶ With hindsight, the narrowness of the gap between 1 and 4 can give us some insight into what the degree of balance sheet integrity might have been at the time.

Ernst & Young analysis — description

Mechanical procedure for deriving our own ultimate loss estimates, established to minimize judgment bias:

- ▶ Development factors selected for paid and reported loss & DCC triangles
- ▶ Ultimates from chain-ladder projections compared to premium to select IELR for Bornhuetter-Ferguson projections
- ▶ Ultimates selected from among projections and liability estimated for each accident year
- ▶ Booked A&O expenses accepted without analysis

(continued)

Ernst & Young analysis — description

We wanted to compare:

- ▶ Our estimates of accident year ultimate loss ratios to booked loss ratios at 12 months
- ▶ Our estimates of year-end liabilities (excluding accident years over 10 years old) to booked

This was possible for loss and LAE net of reinsurance only, as Schedule P does not provide triangles gross of reinsurance.

(continued)

Ernst & Young analysis — description

- ▶ We also looked back at booked ultimate loss ratios for each accident year, going back to AY 1995
- ▶ We did this for loss and LAE net of reinsurance, gross of reinsurance, and ceded to reinsurance
- ▶ Ceded loss ratios fluctuate widely due to interaction of gross and net, so it was hard to discern a pattern in the charts we developed

Ernst & Young analysis — selected lines

Criteria for five lines selected:

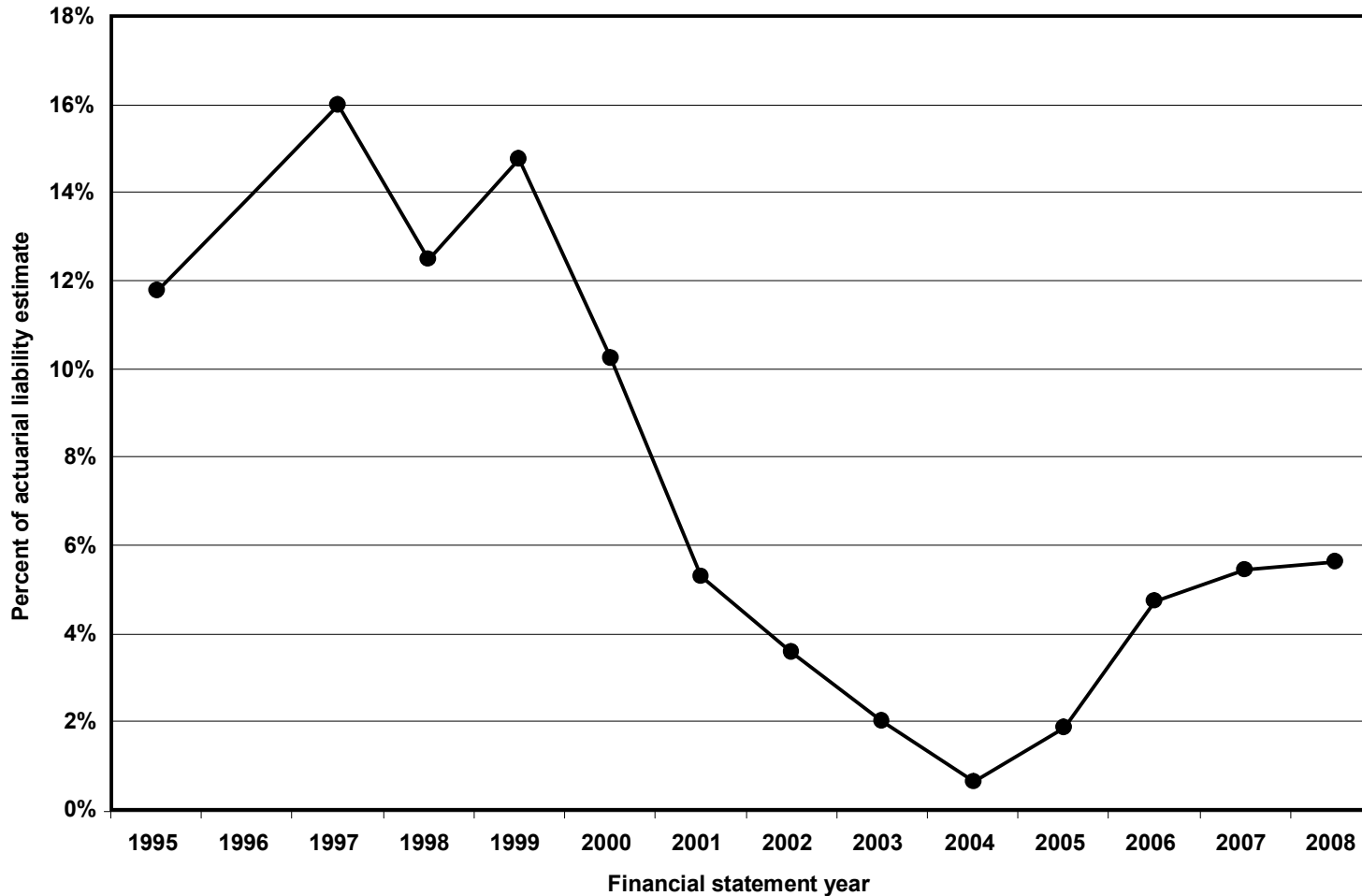
- ▶ 10 years of data in Schedule P
- ▶ Perceived consistency across industry (i.e., not reinsurance lines)
- ▶ Developing fast enough to ignore development beyond 120 months

Selected lines:

- ▶ Personal auto liability
- ▶ Commercial auto liability
- ▶ Commercial multi-peril
- ▶ Medical malpractice — claims-made
- ▶ Other liability — occurrence

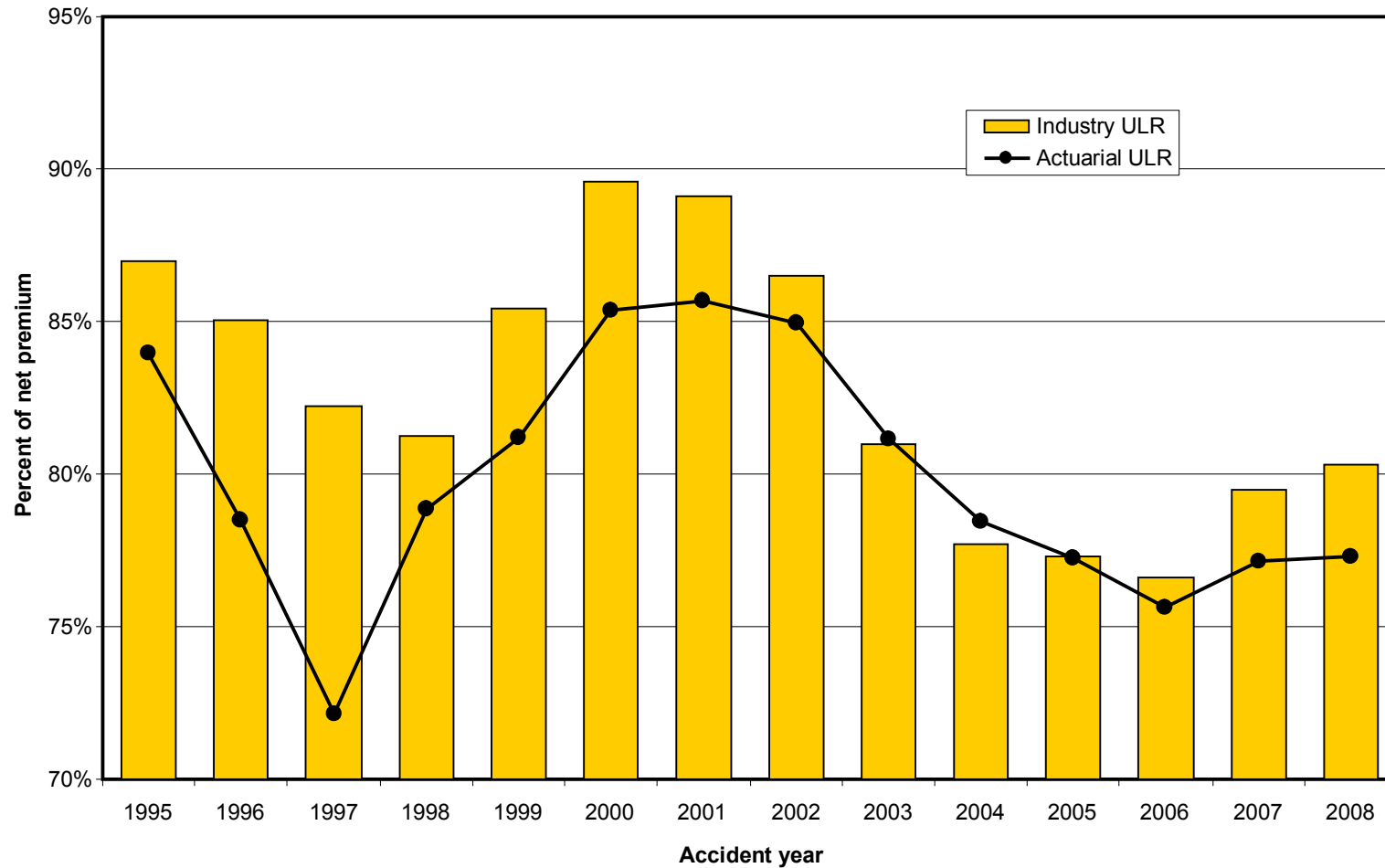
Personal auto liability (1) — total liability gap

Industry PAL: over/(under)-estimation of year-end liabilities



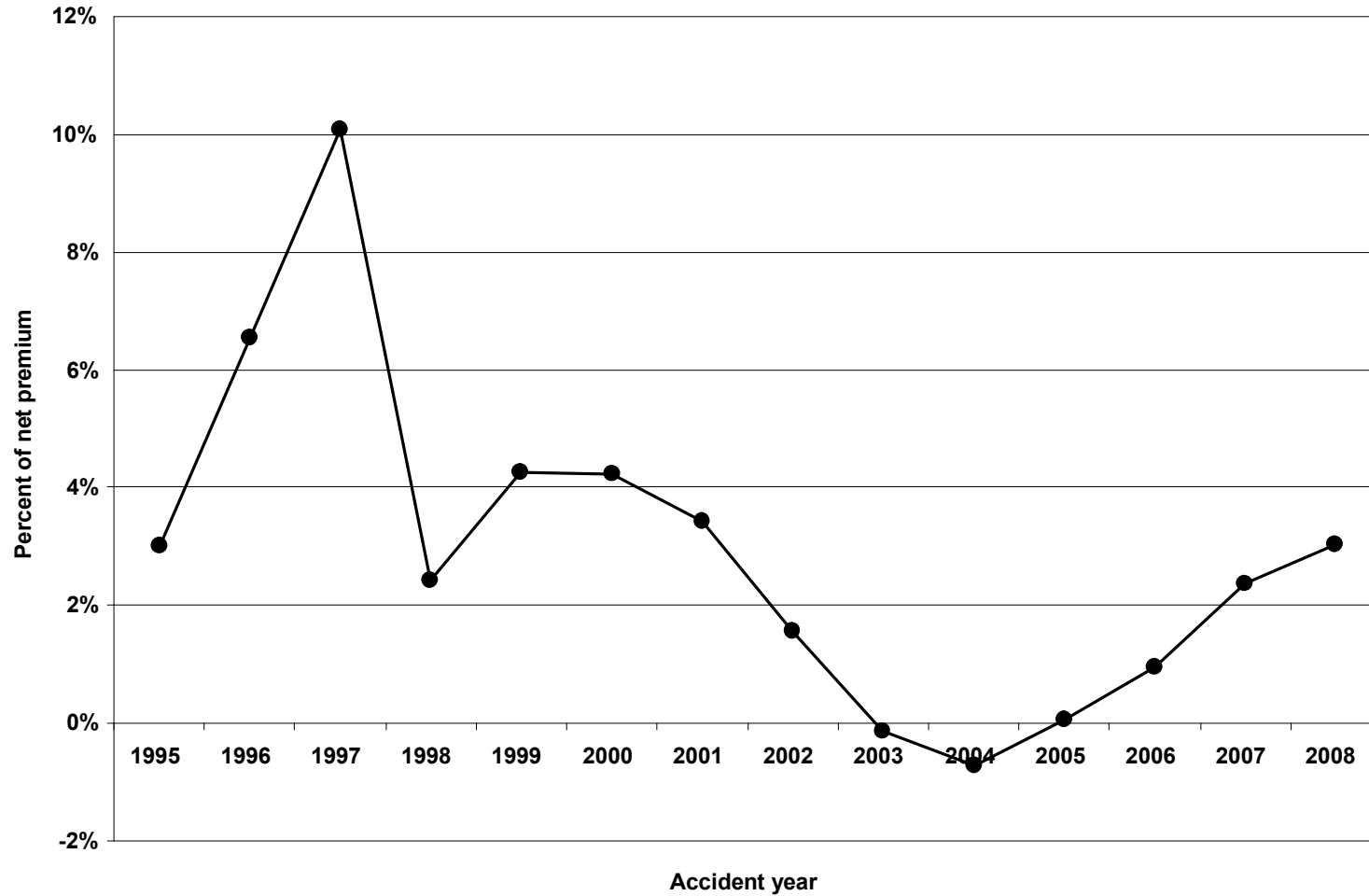
Personal auto liability (2) — AY gap

Industry PAL, accident year net ultimate loss ratios at 12 months

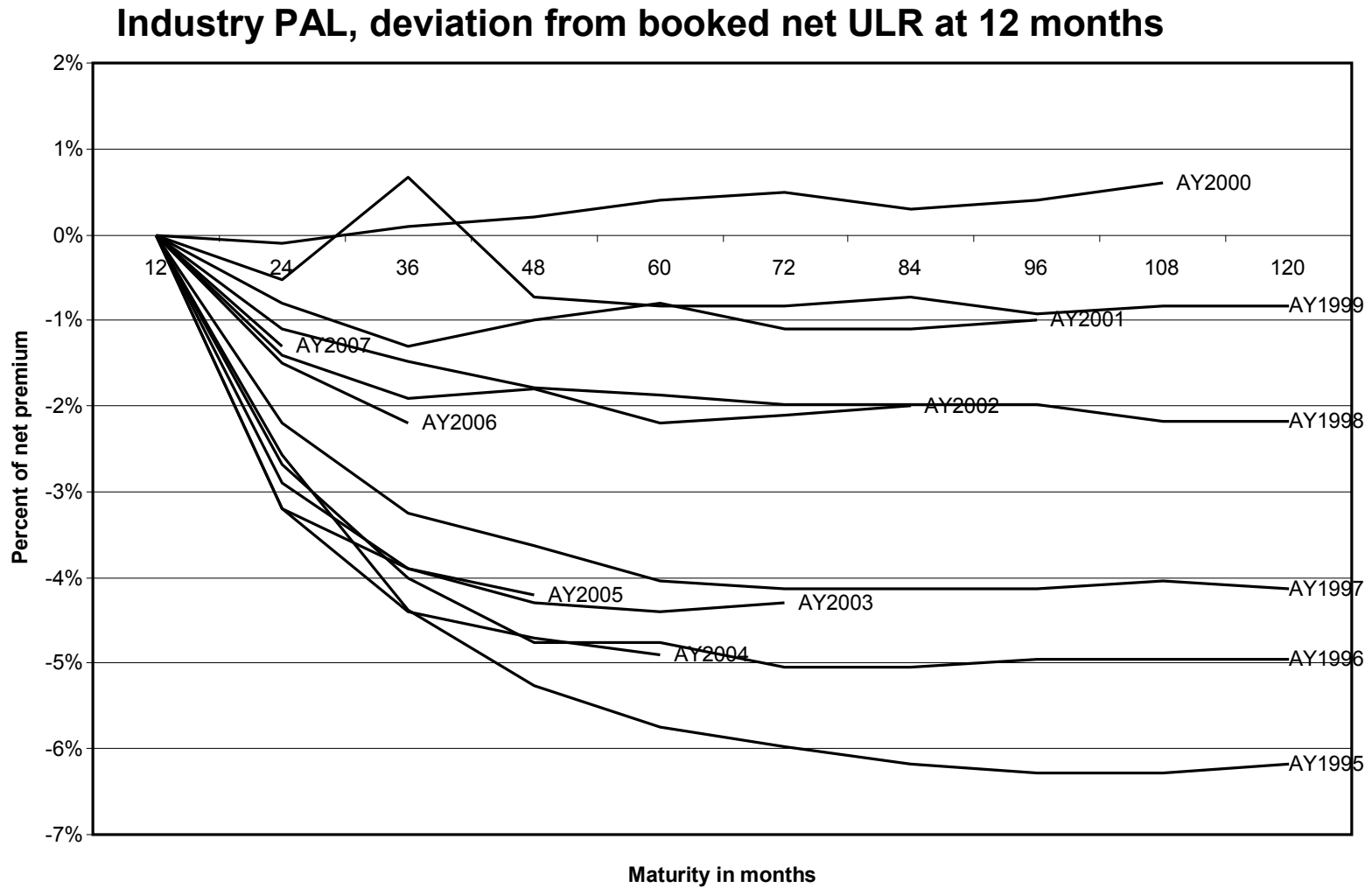


Personal auto liability (3) — AY gap

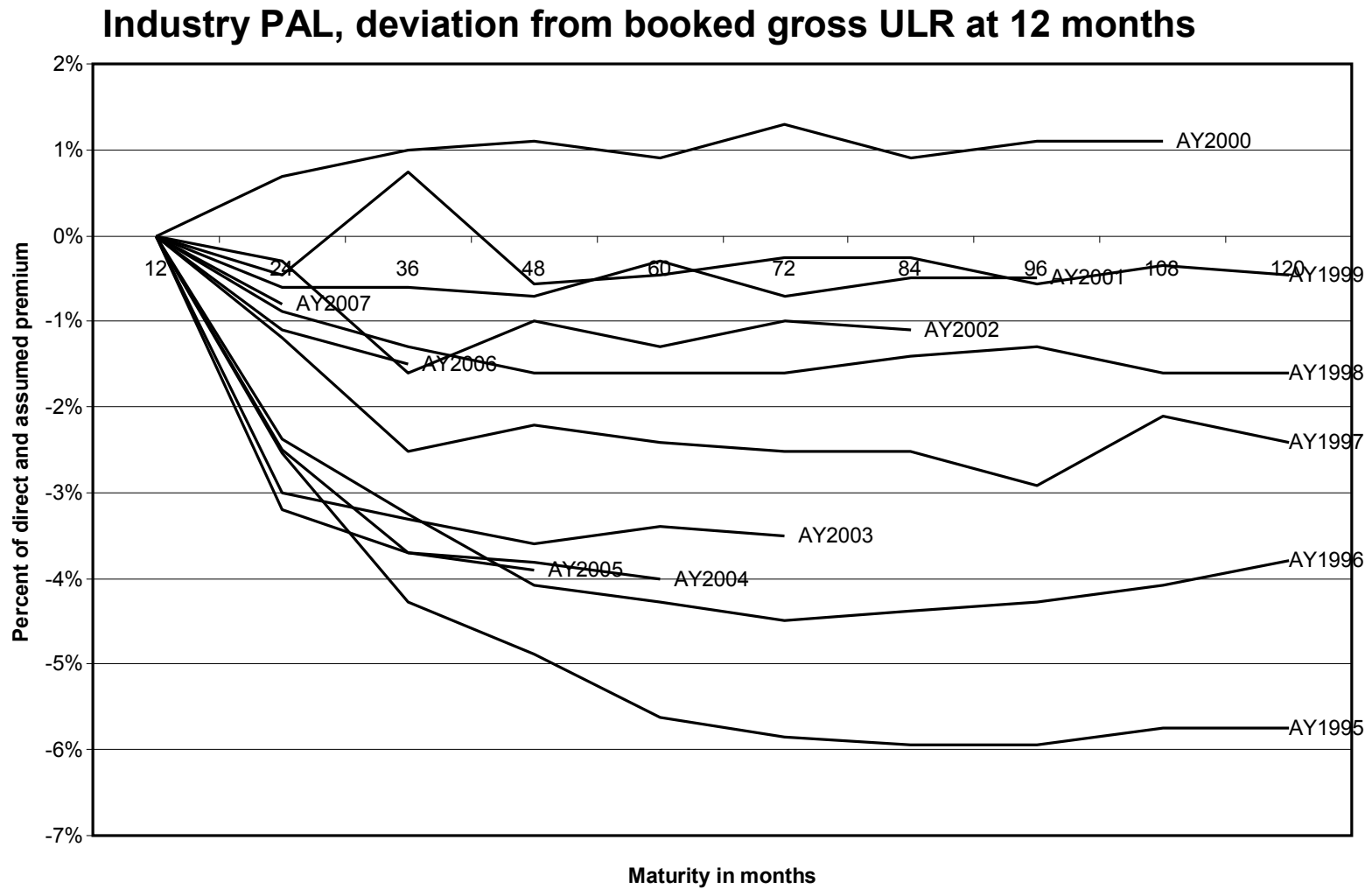
Industry PAL: over/(under)-estimation of accident year ULR at 12 months



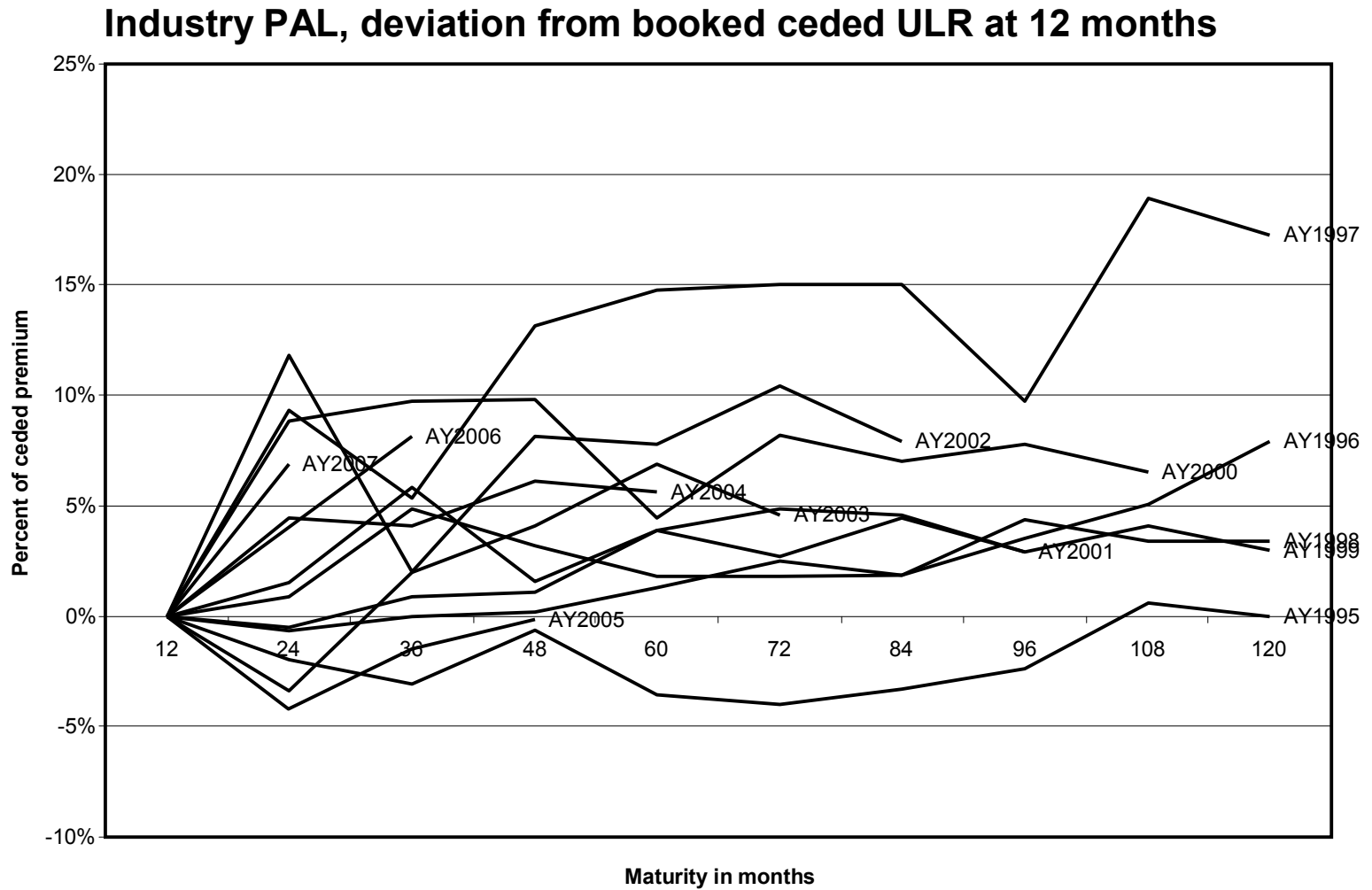
Personal auto liability (4) — *net* hindsight



Personal auto liability (5) — gross hindsight

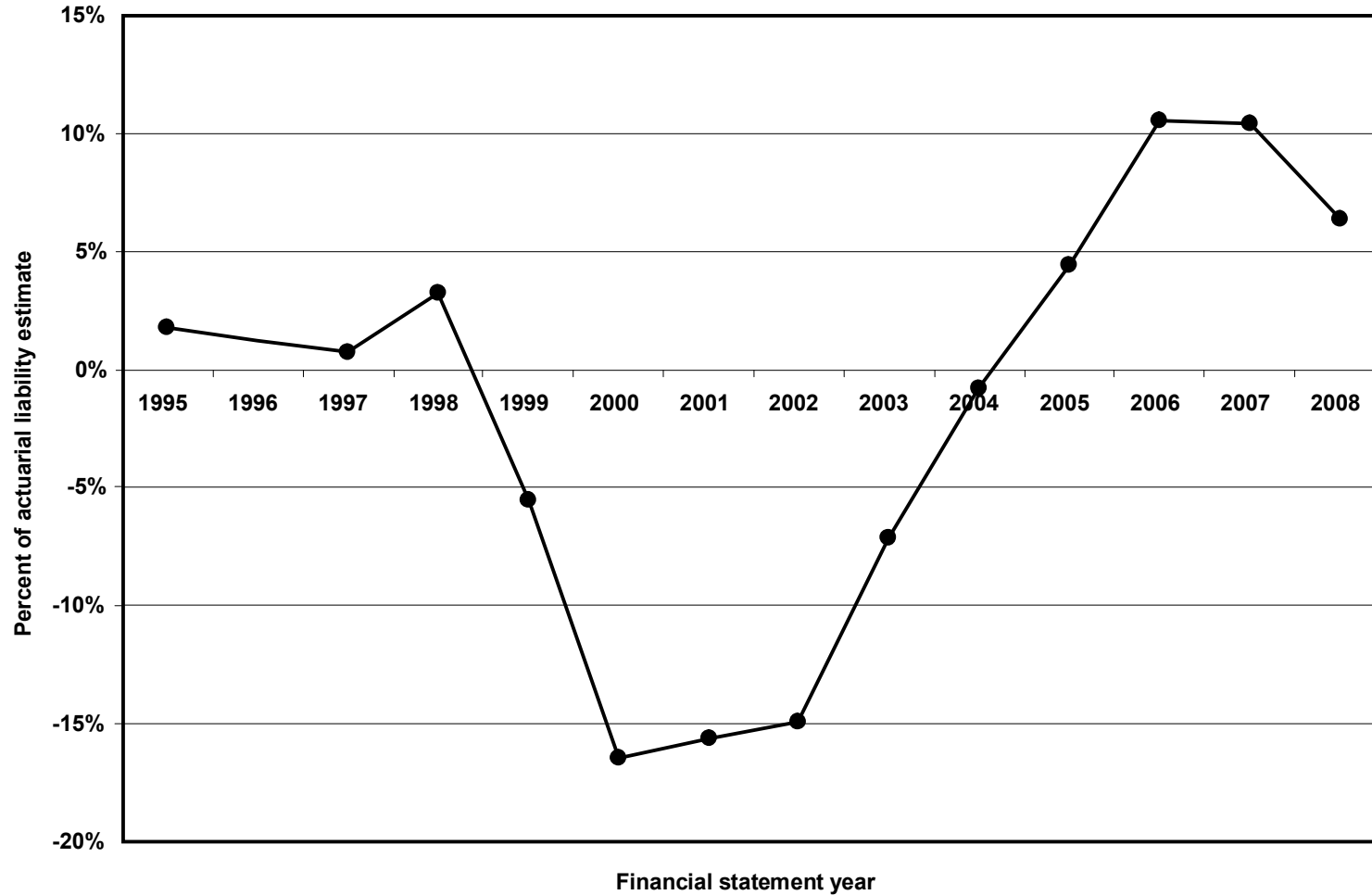


Personal auto liability (6) — *ceded* hindsight



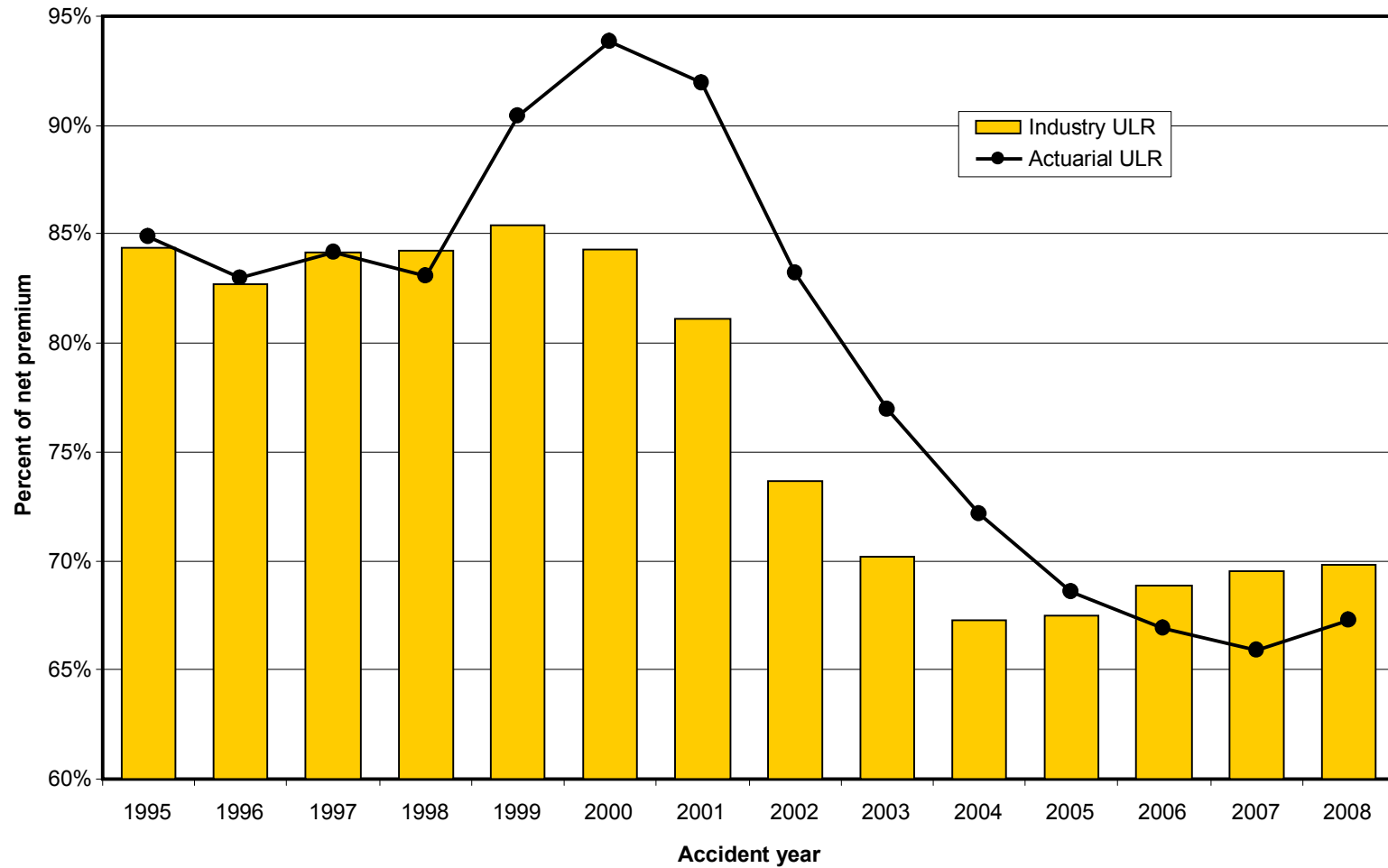
Commercial auto liability (1) — total liability gap

Industry CAL: over/(under)-estimation of year-end liabilities



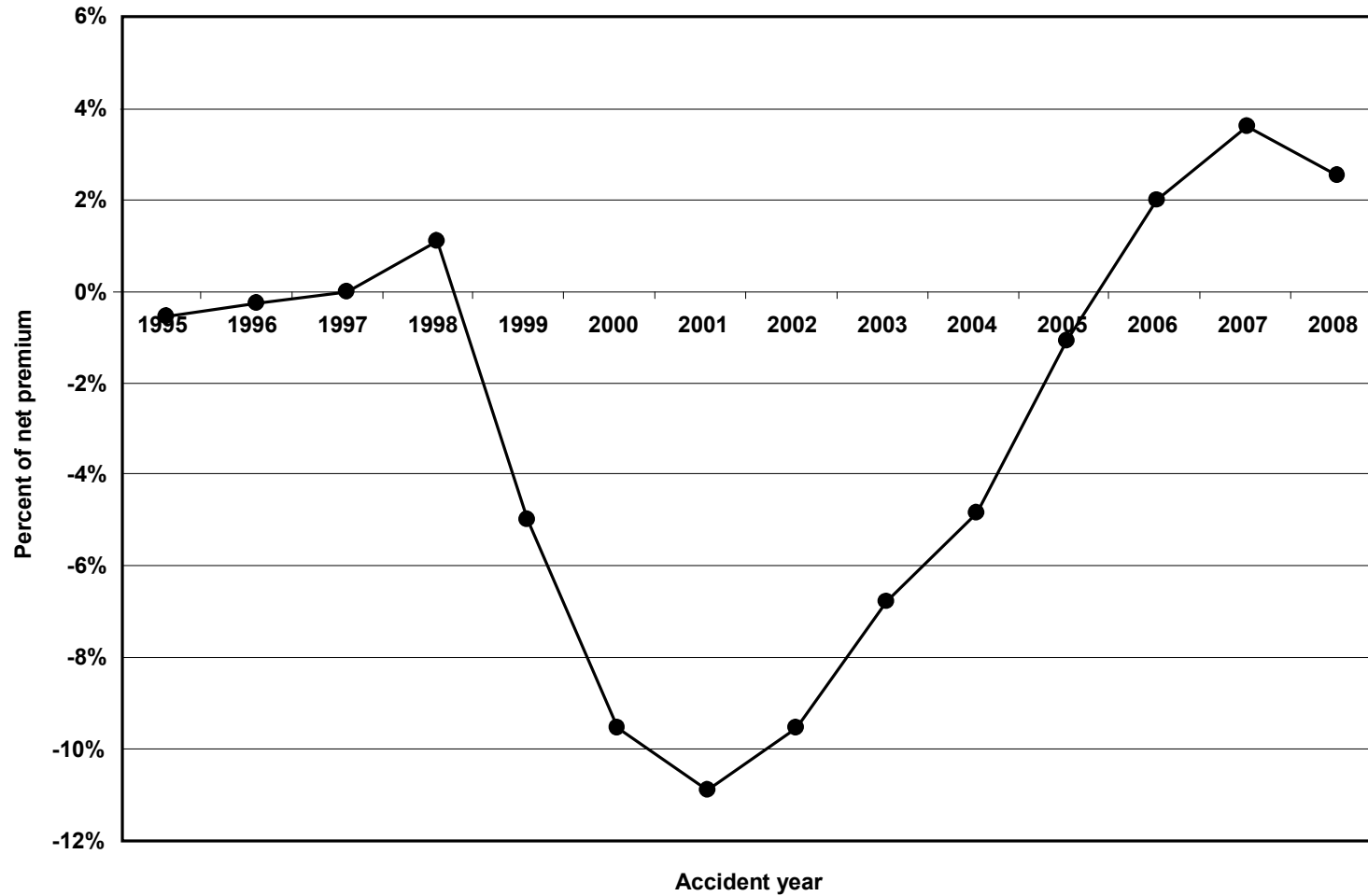
Commercial auto liability (2) — AY gap

Industry CAL, accident year net ultimate loss ratios at 12 months



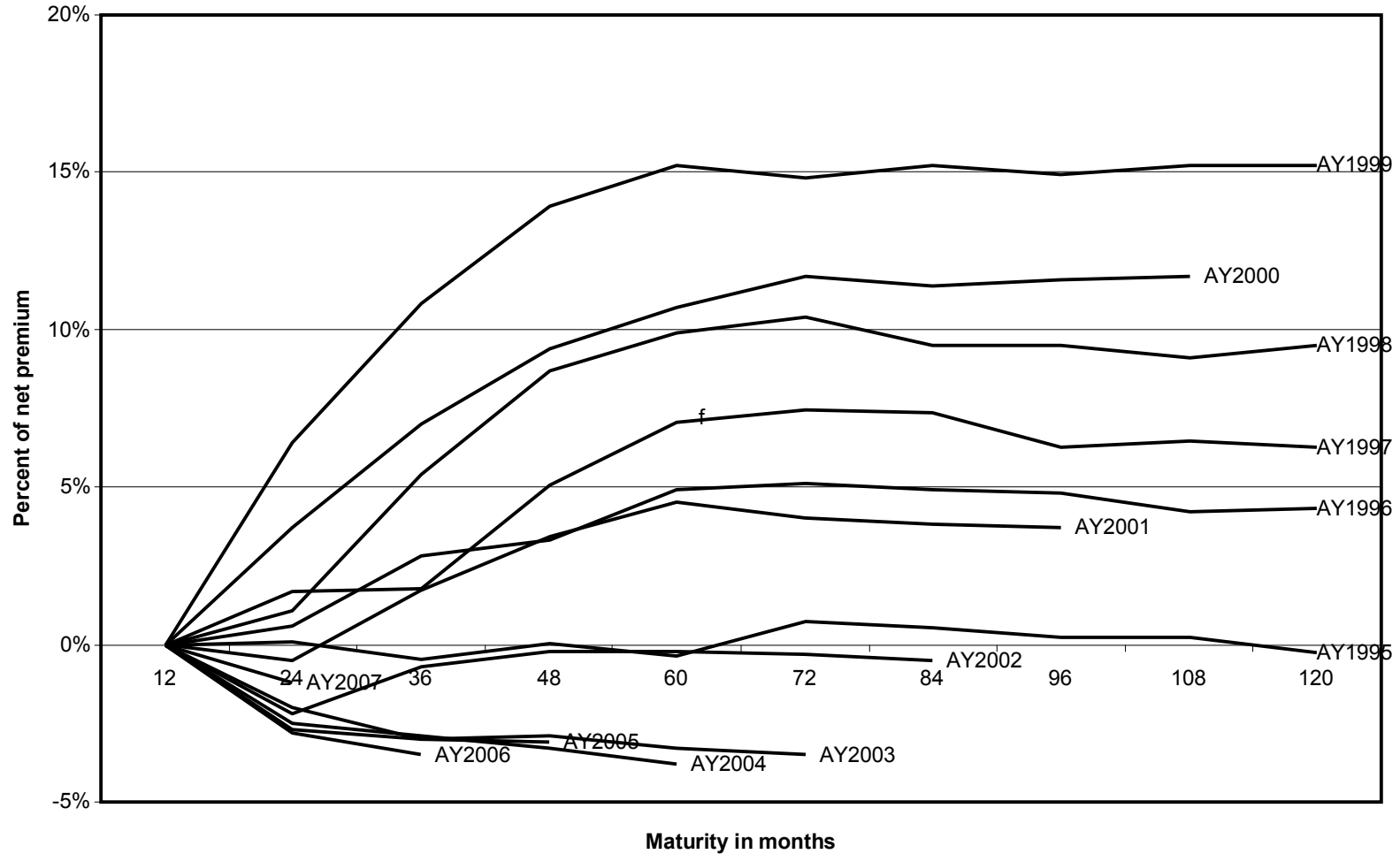
Commercial auto liability (3) — AY gap

Industry CAL: over/(under)-estimation of accident year ULR at 12 months

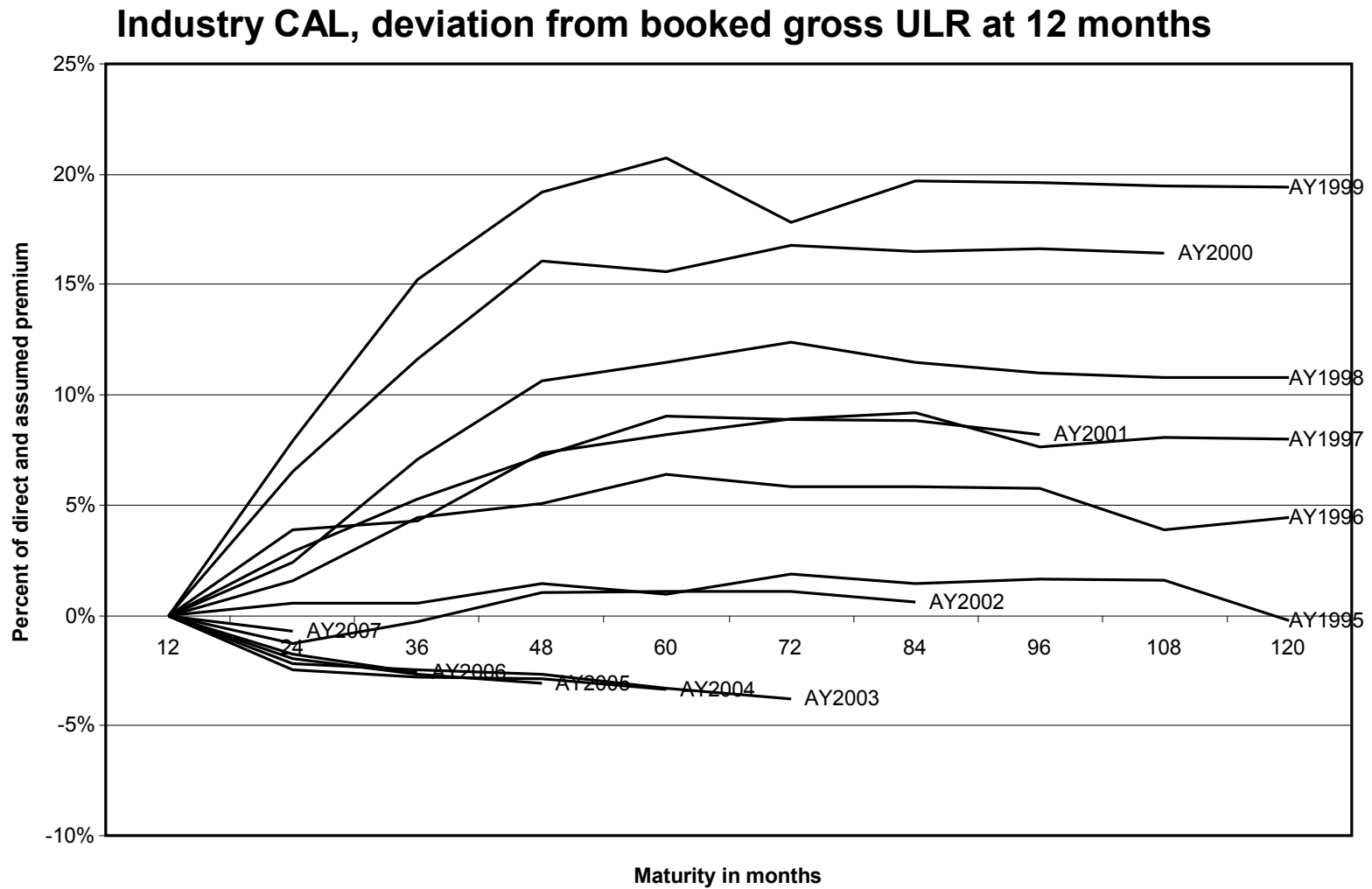


Commercial auto liability (4) — *net* hindsight

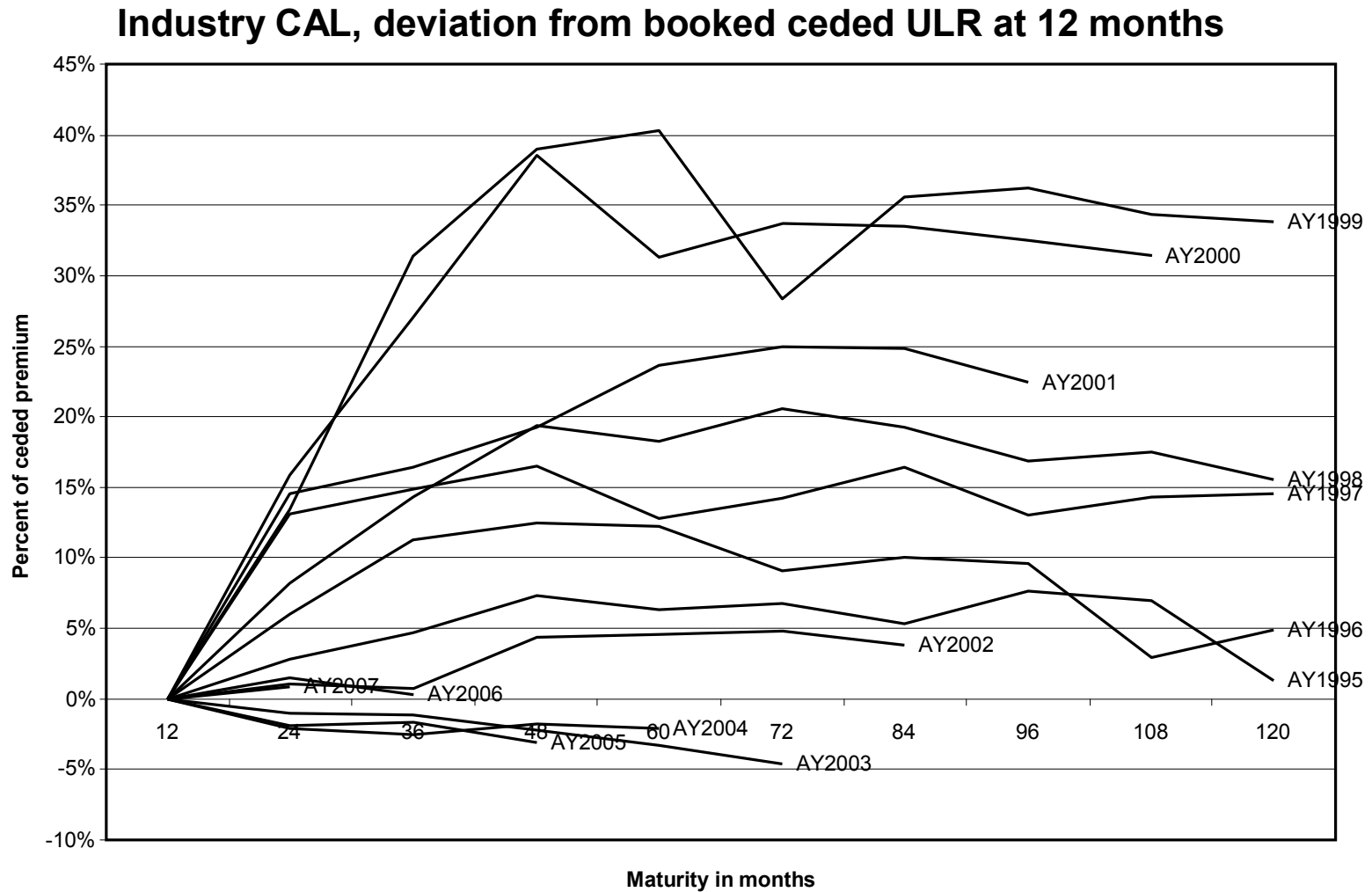
Industry CAL, deviation from booked net ULR at 12 months



Commercial auto liability (5) — gross hindsight

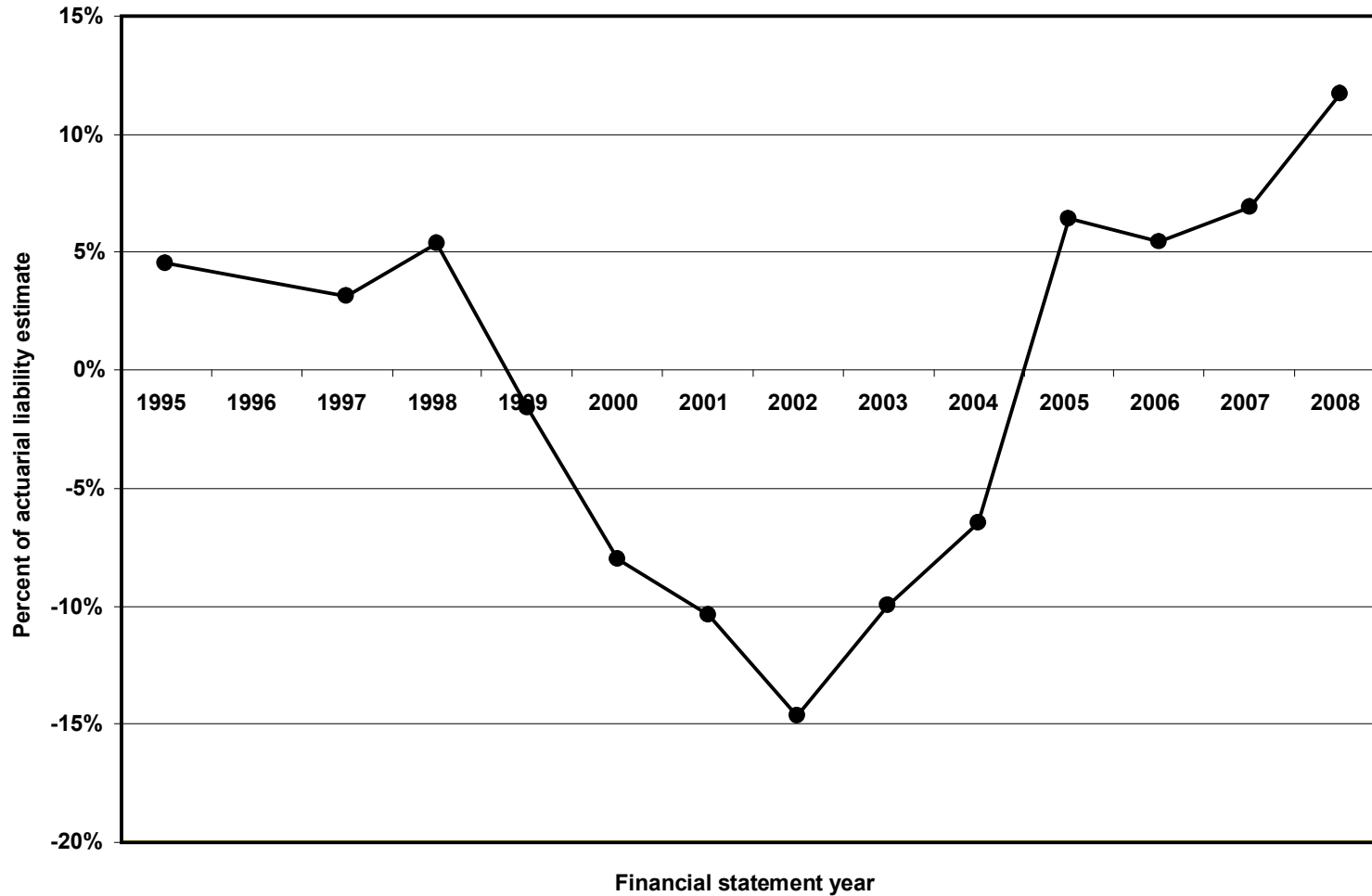


Commercial auto liability (6) — ceded hindsight



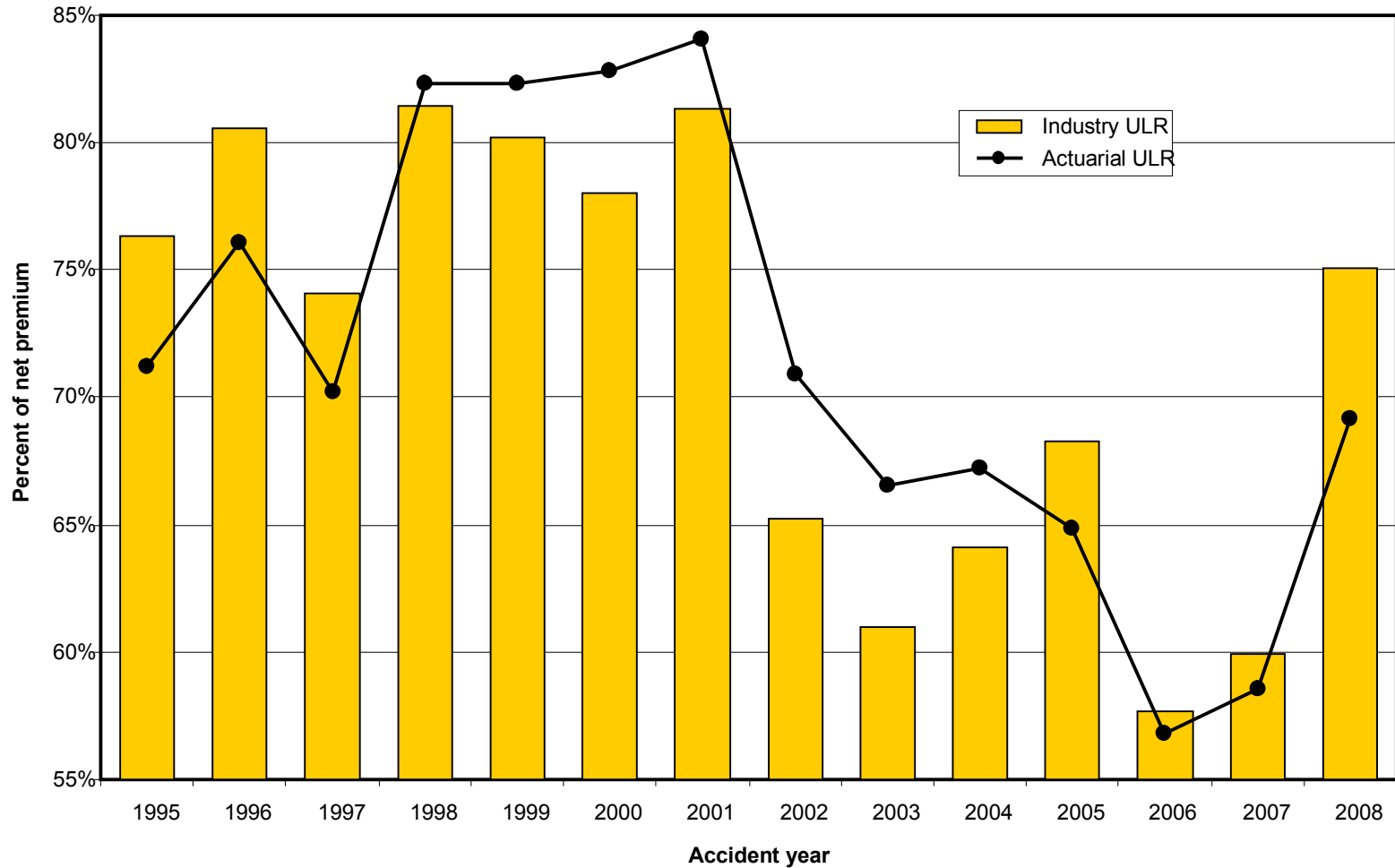
Commercial multi-peril (1) — total liability gap

Industry CMP: over/(under)-estimation of year-end liabilities



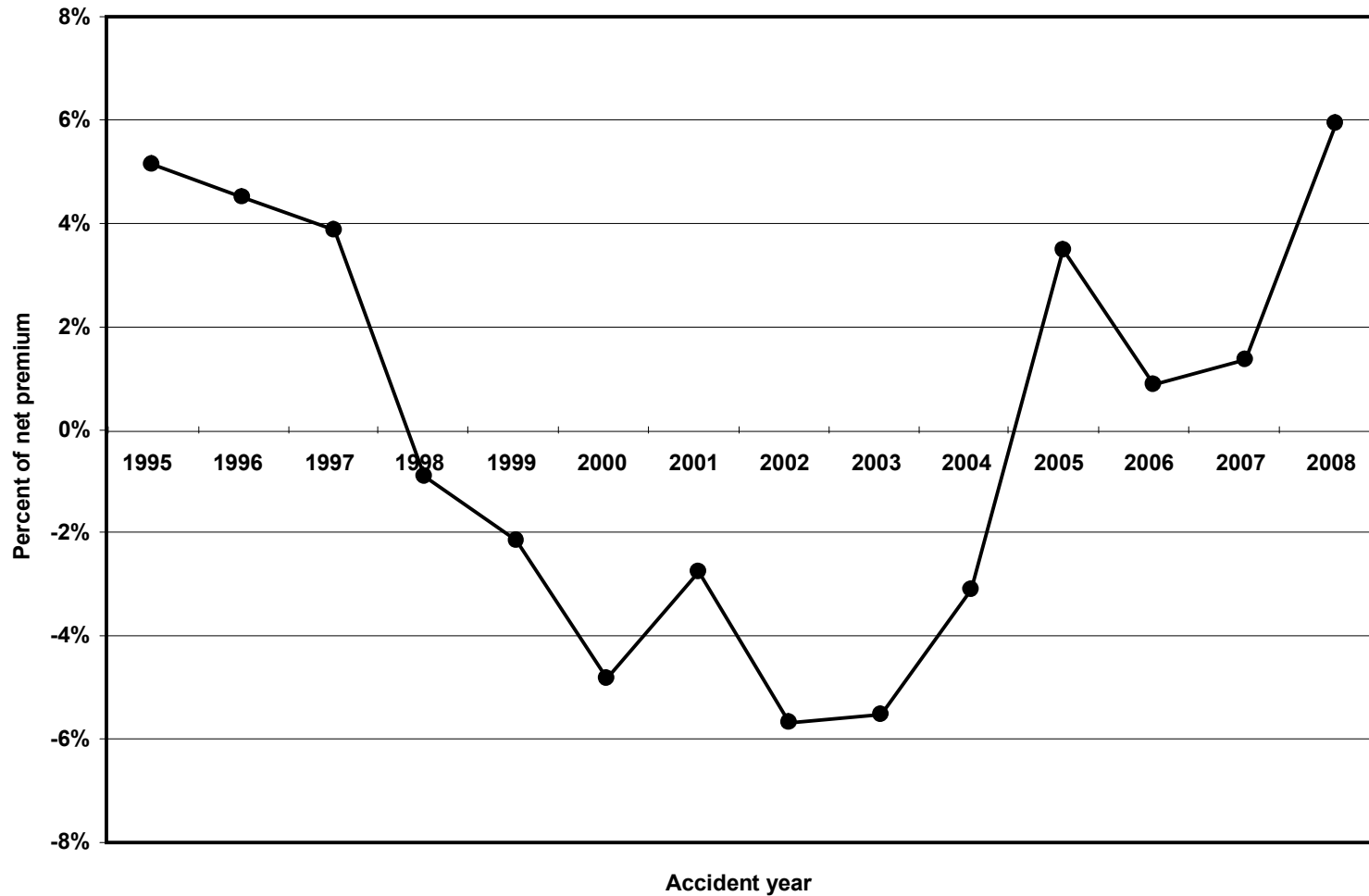
Commercial multi-peril (2) — AY gap

Industry CMP, accident year net ultimate loss ratios at 12 months

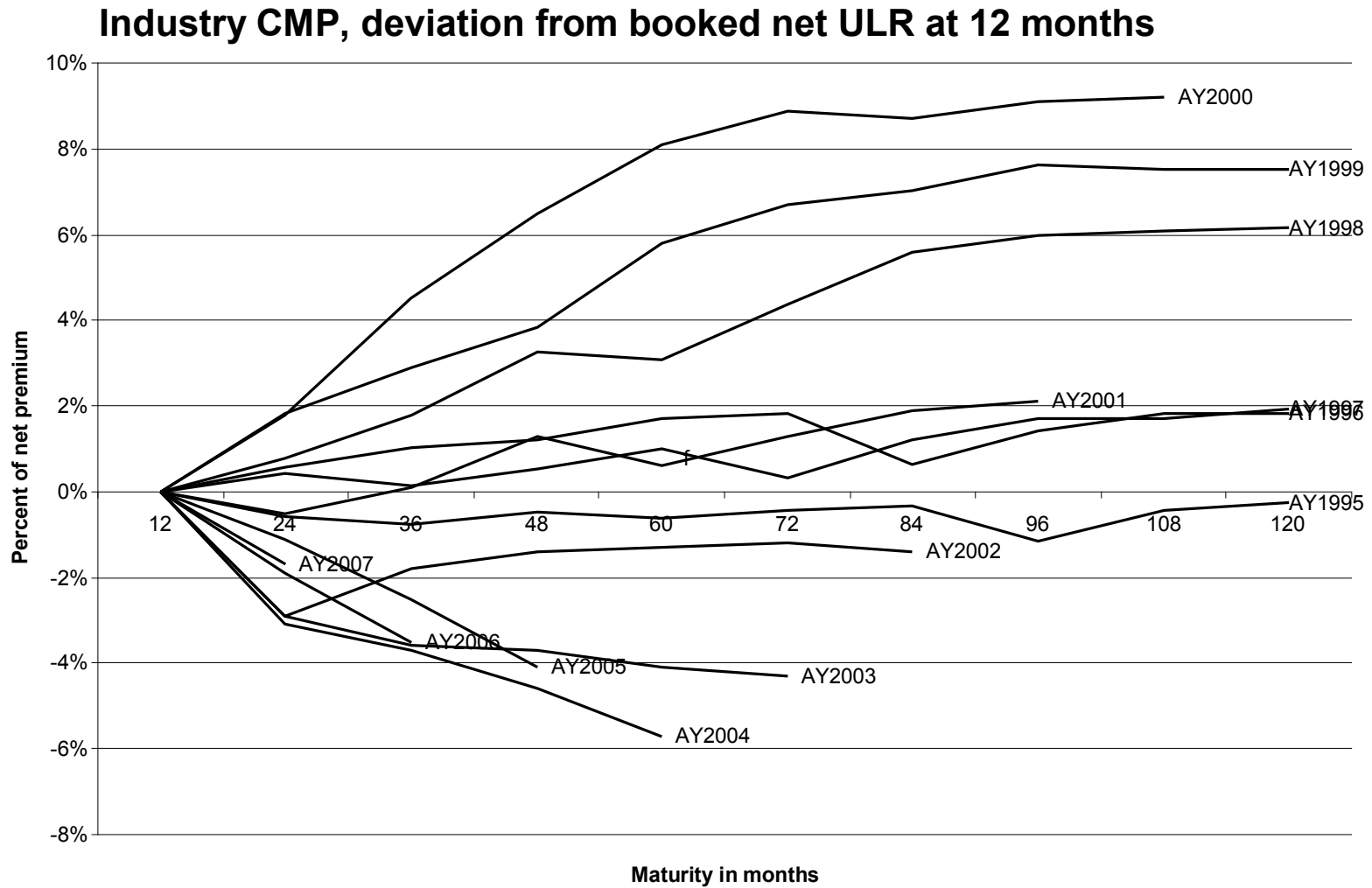


Commercial multi-peril (3) — AY gap

Industry CMP: over/(under)-estimation of accident year ULR at 12 months

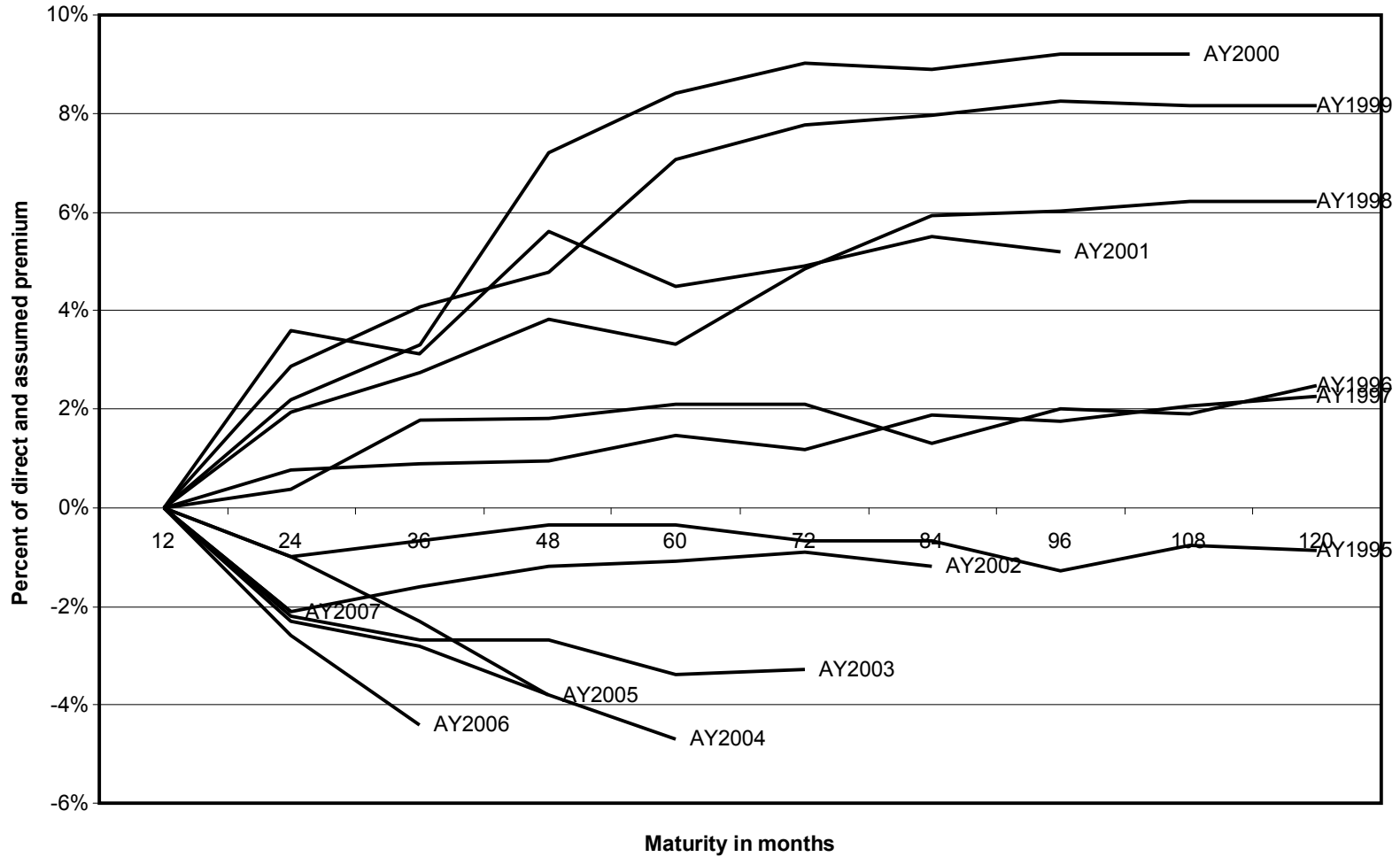


Commercial multi-peril (4) — *net* hindsight

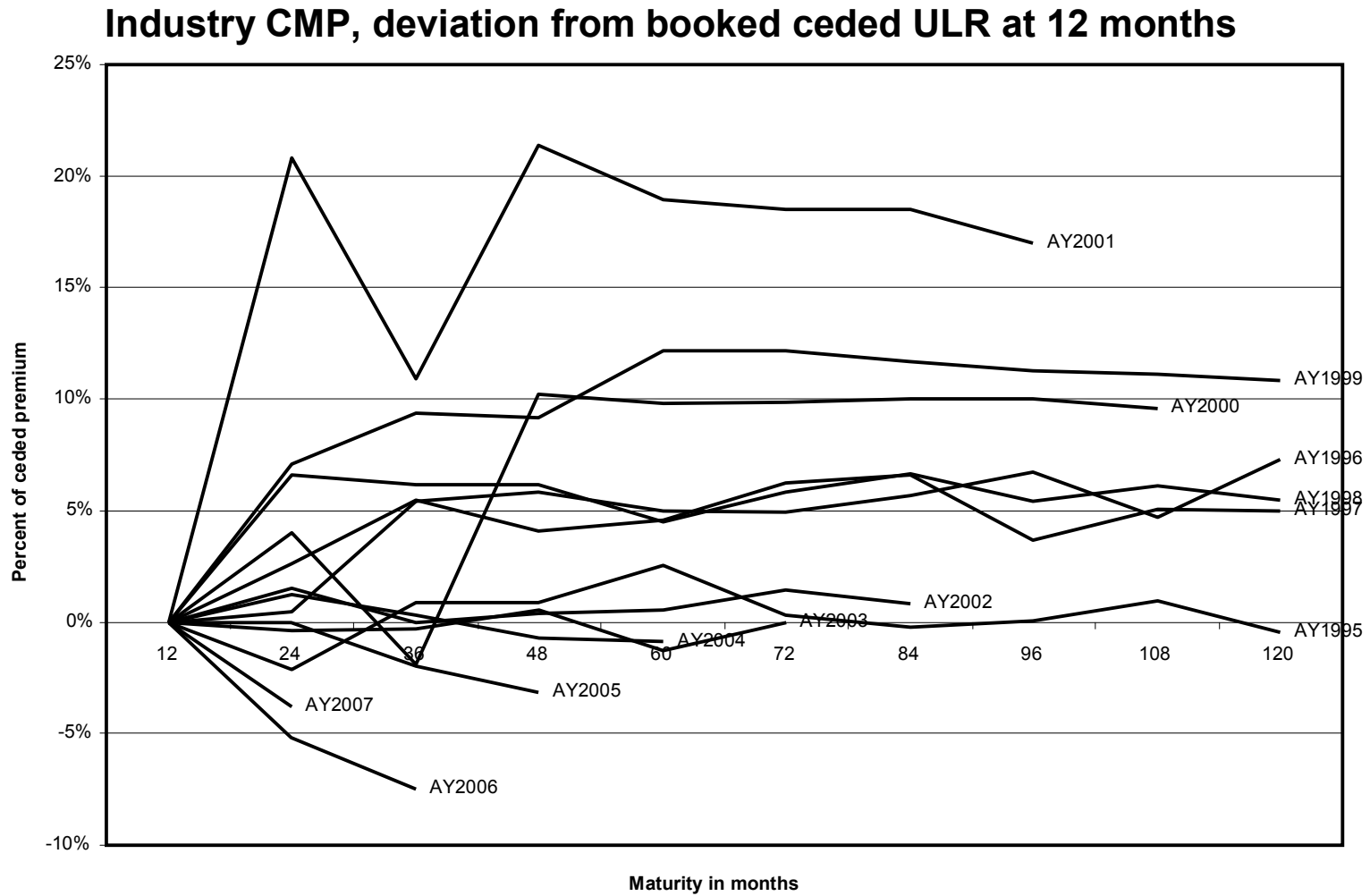


Commercial multi-peril (5) — gross hindsight

Industry CMP, deviation from booked gross ULR at 12 months

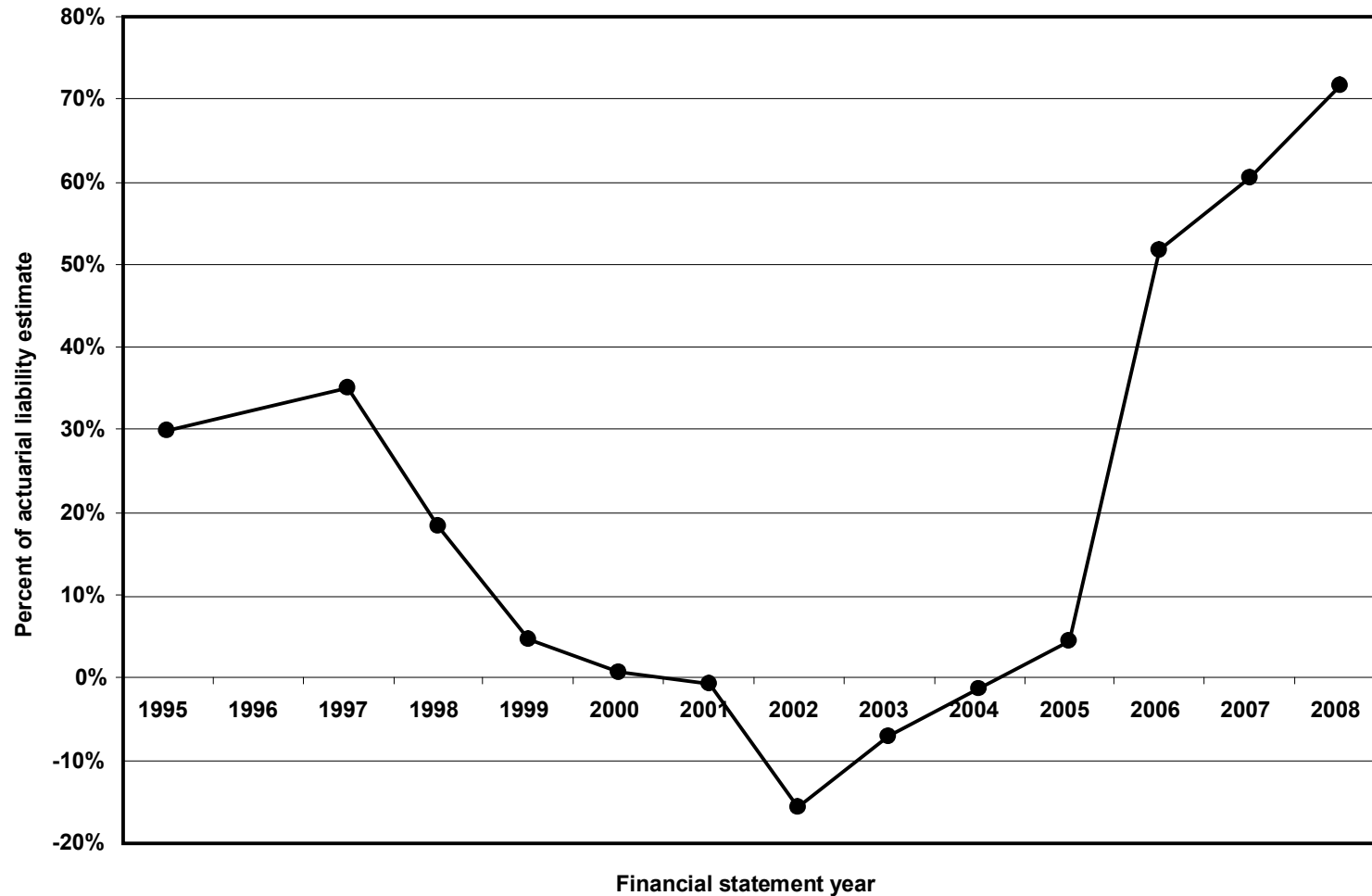


Commercial multi-peril (6) — *ceded* hindsight



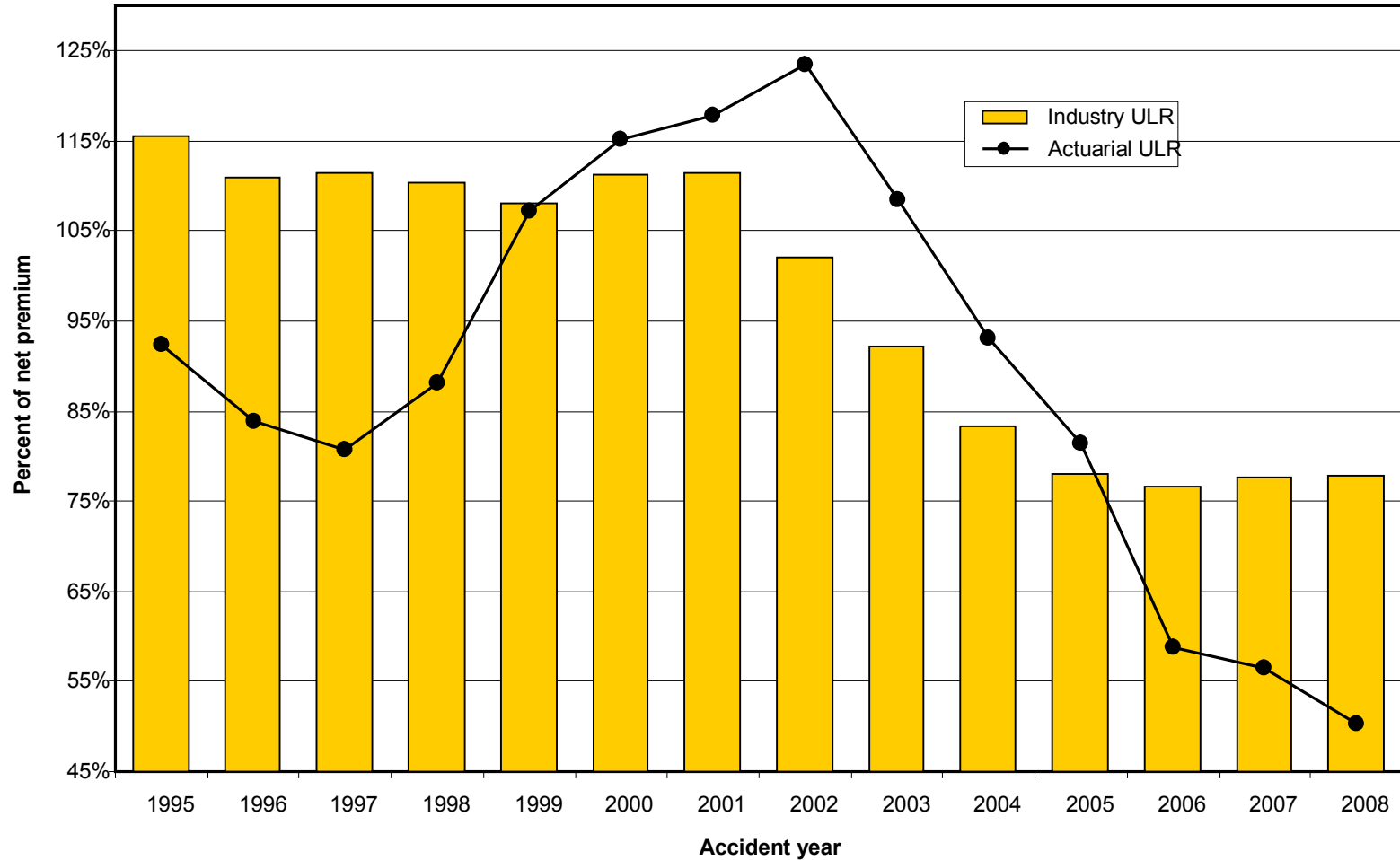
Medical malpractice, claims-made (1) — total liability gap

Industry MM-CM: over/(under)-estimation of year-end liabilities



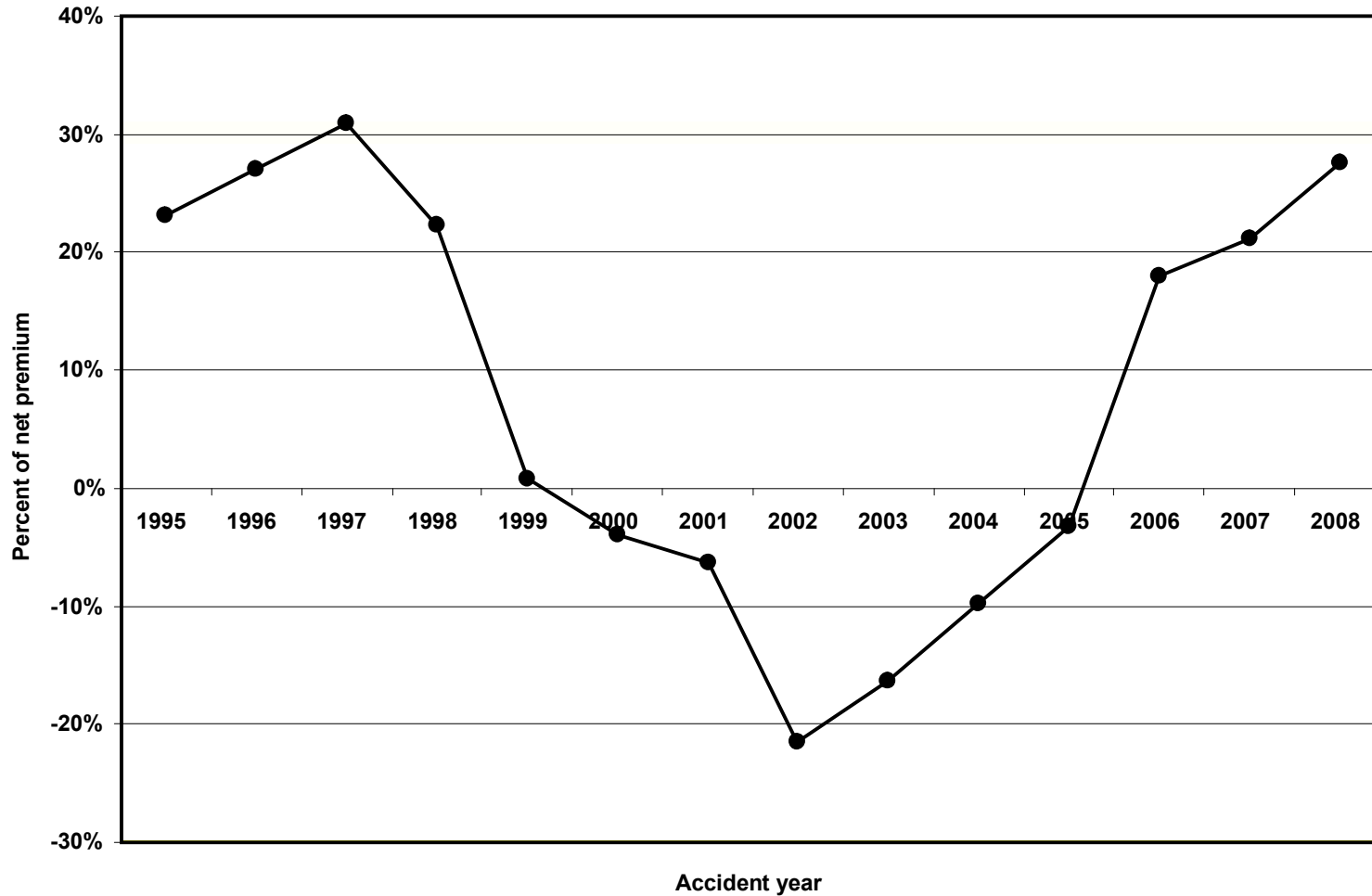
Medical malpractice, claims-made (2) — AY gap

Industry MM-CM, accident year net ultimate loss ratios at 12 months

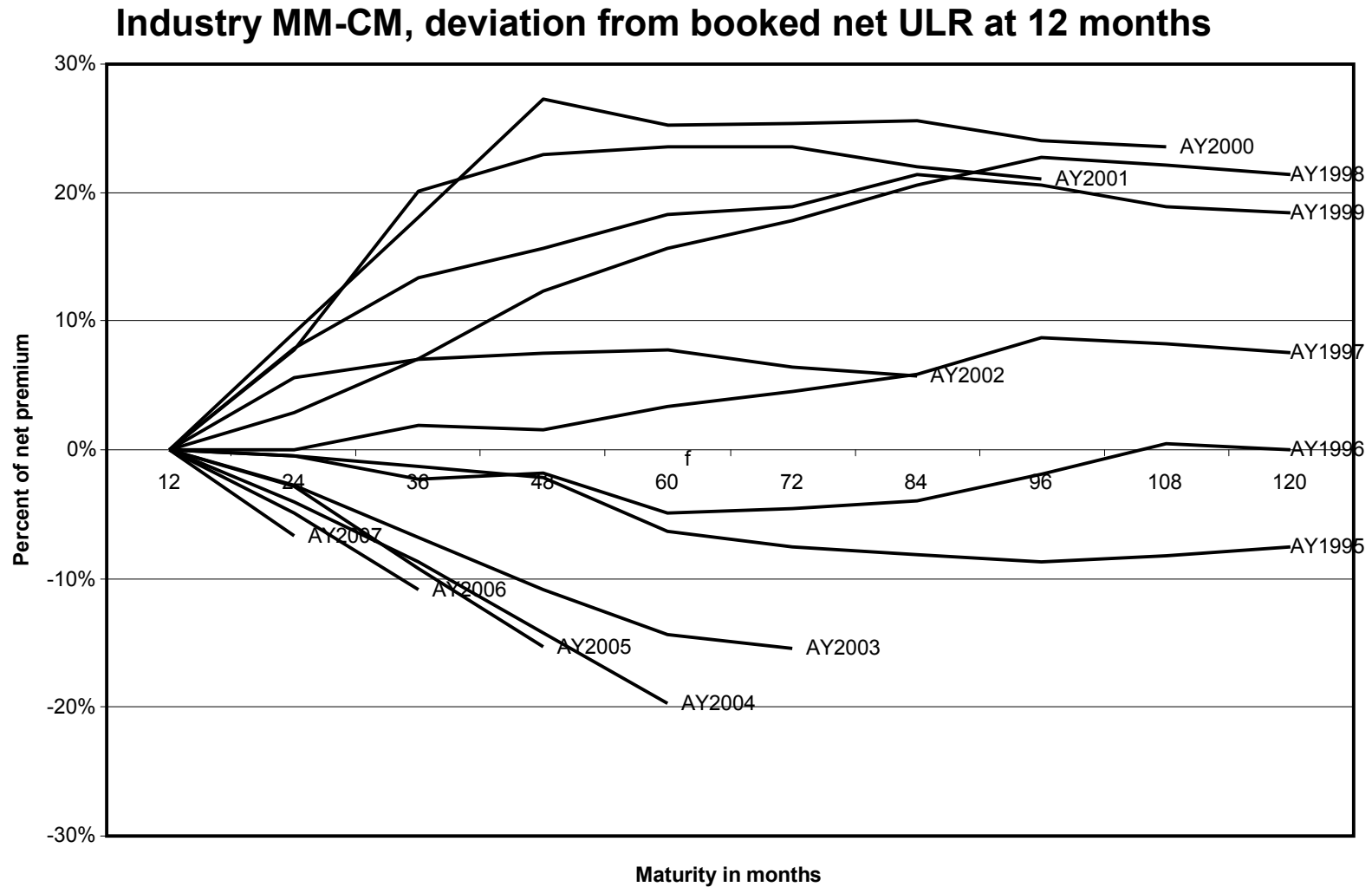


Medical malpractice, claims-made (3) — AY gap

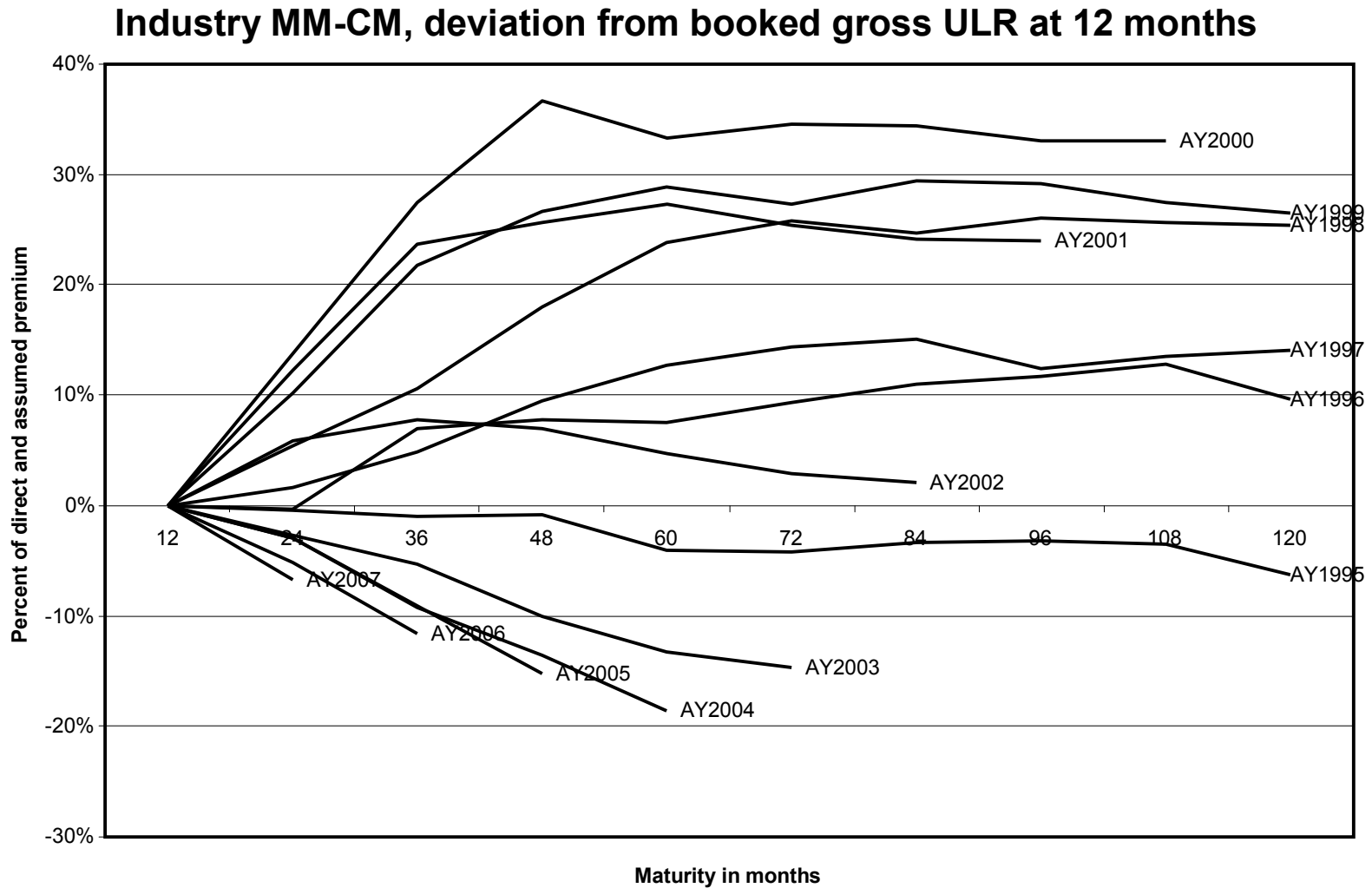
Industry MM-CM: over/(under)-estimation of accident year ULR at 12 months



Medical malpractice, claims-made (4) — *net hindsight*

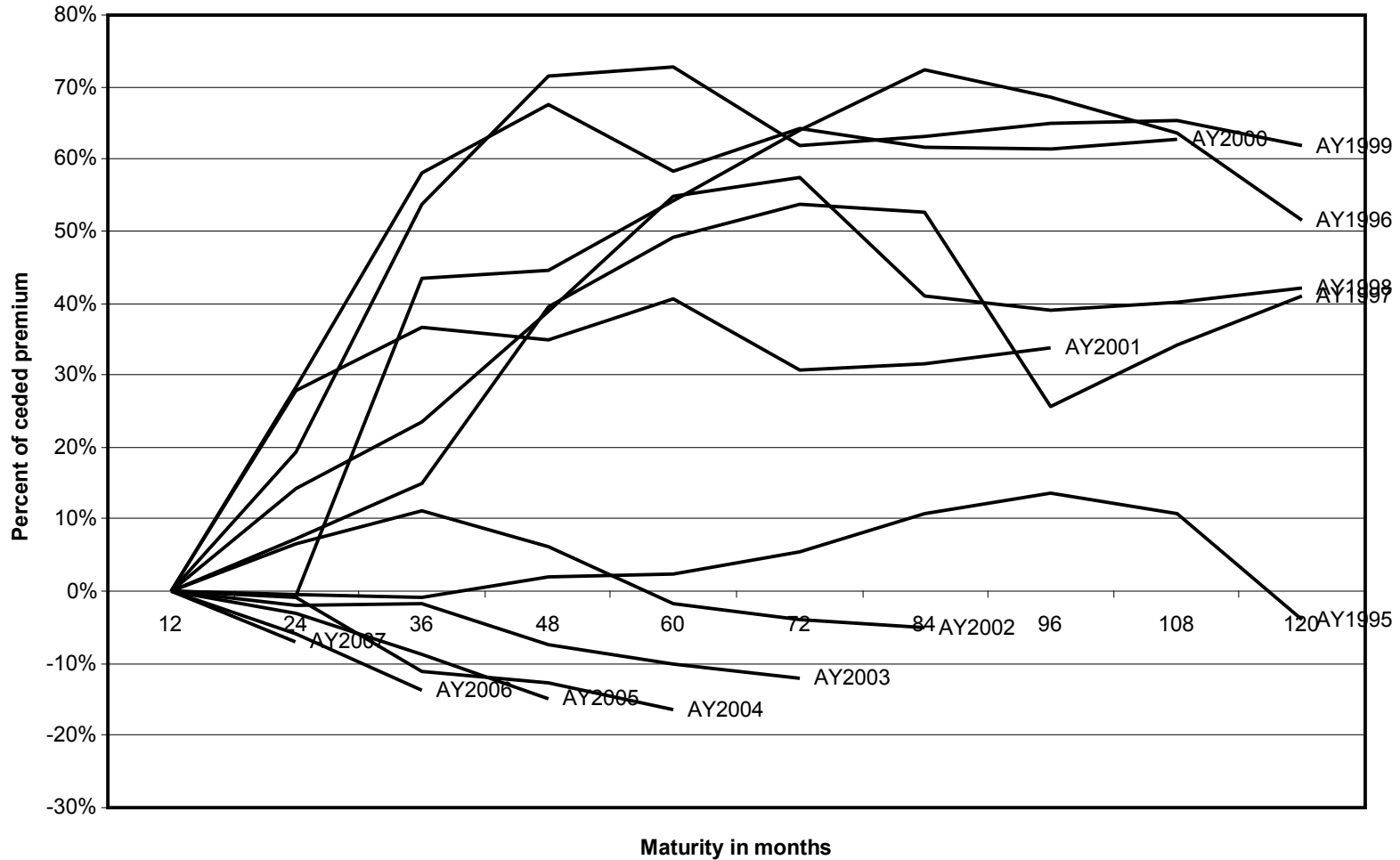


Medical malpractice, claims-made (5) — gross hindsight



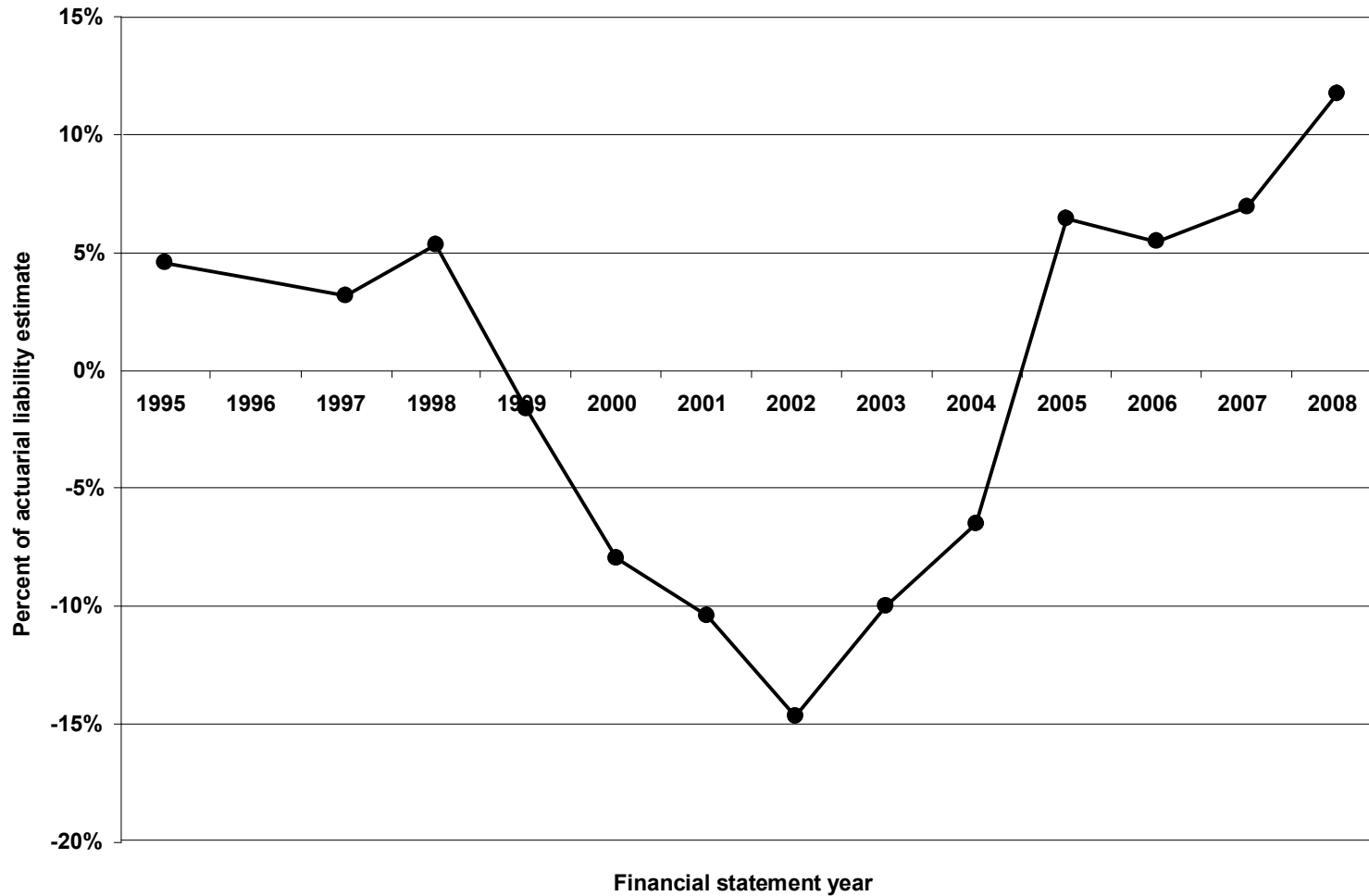
Medical malpractice, claims-made (6) — *ceded* hindsight

Industry MM-CM, deviation from booked ceded ULR at 12 months



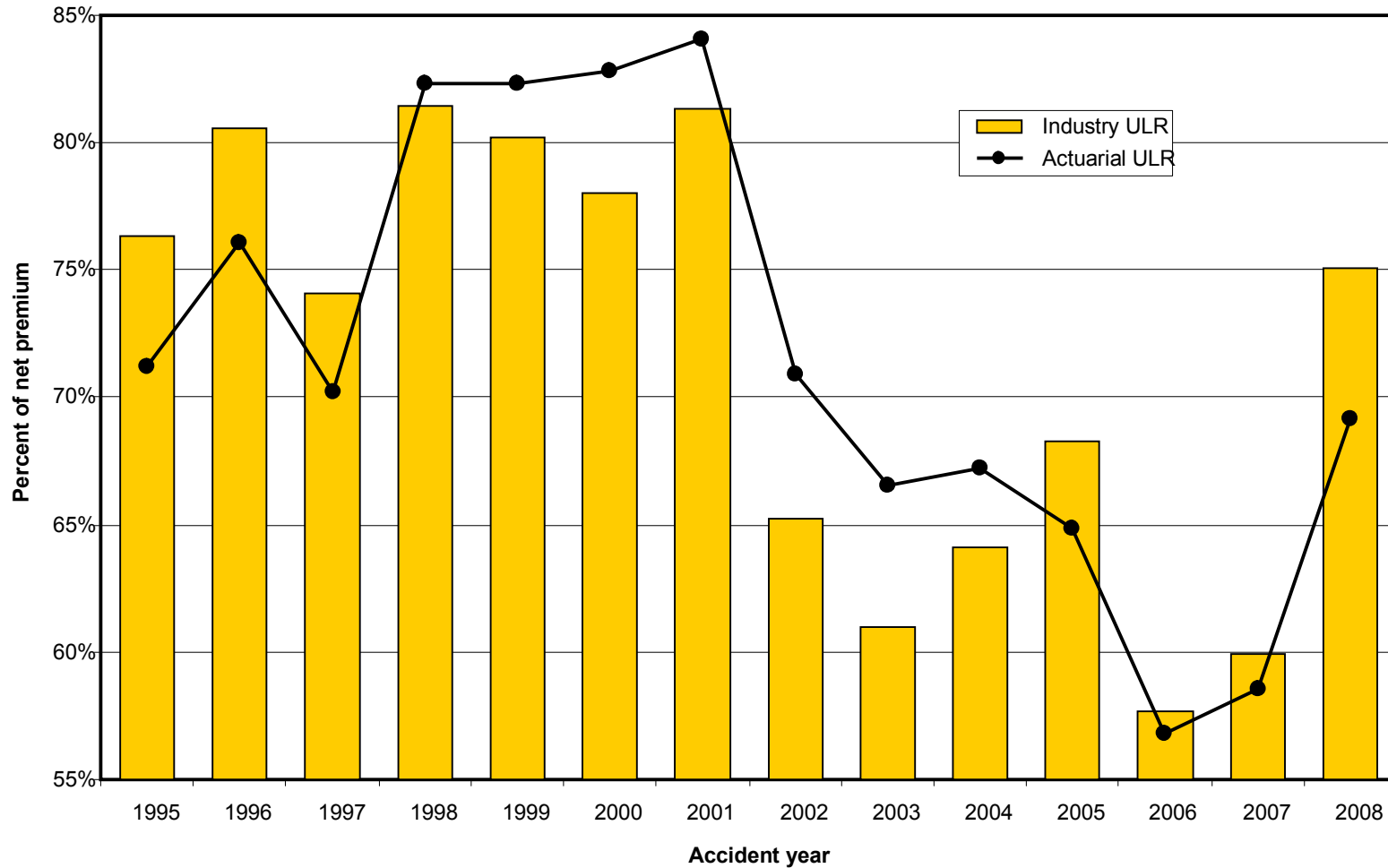
Other liability, occurrence (1) — total liability gap

Industry OL-Occ: over/(under)-estimation of year-end liabilities



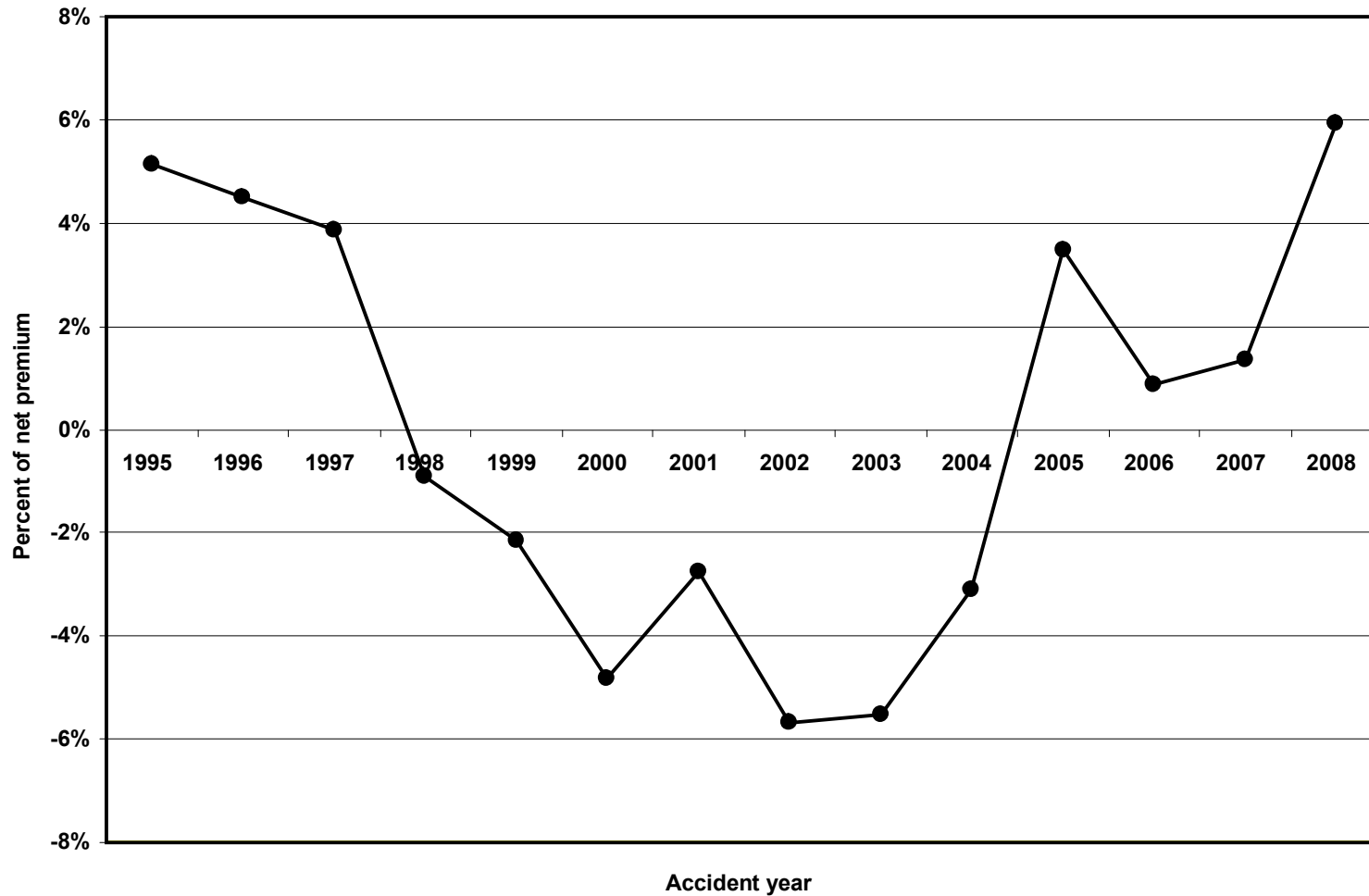
Other liability, occurrence (2) — AY gap

Industry OL-Occ, accident year net ultimate loss ratios at 12 months



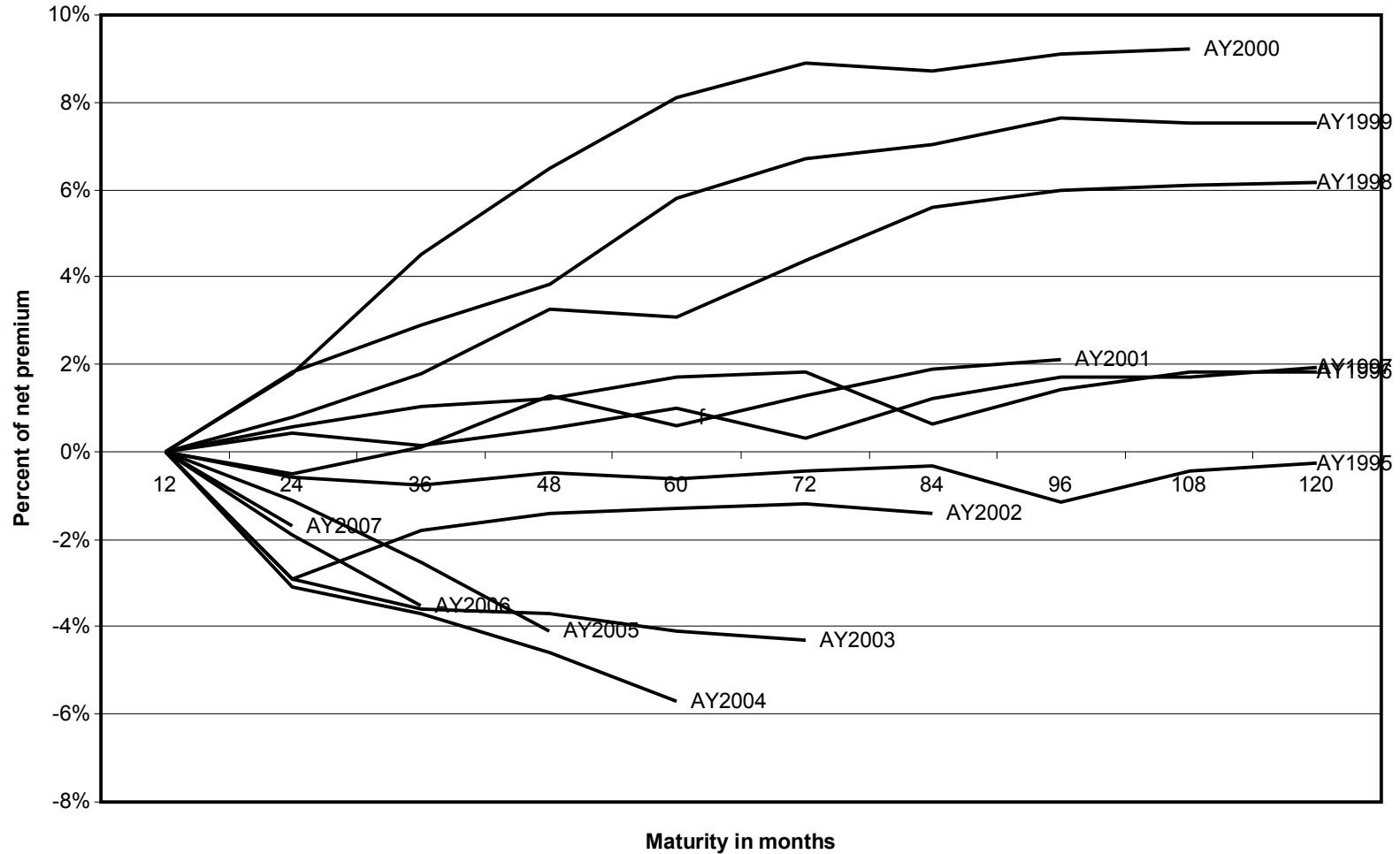
Other liability, occurrence (3) — AY gap

Industry OL-Occ: over/(under)-estimation of accident year ULR at 12 months



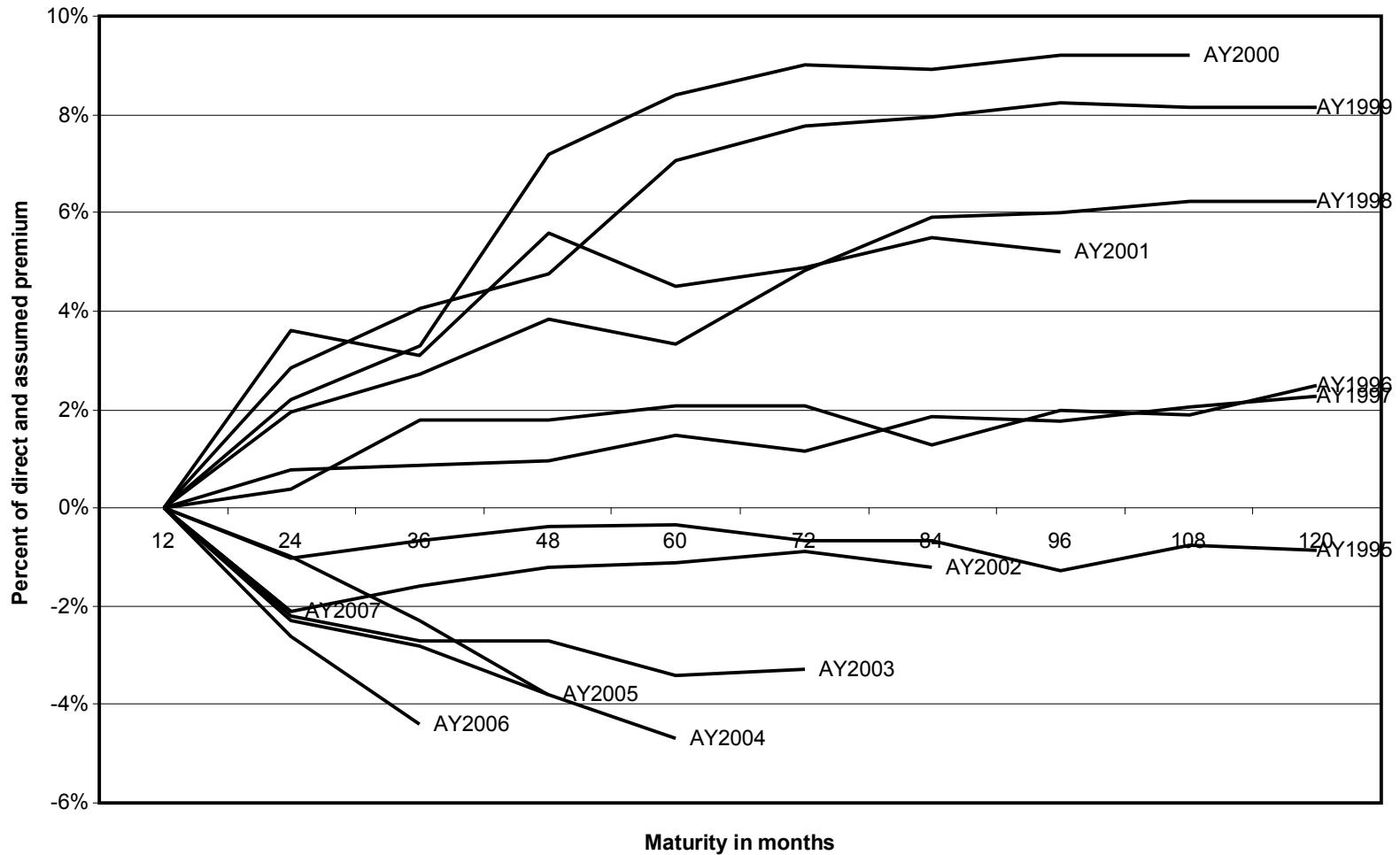
Other liability, occurrence (4) — *net* hindsight

Industry OL-Occ, deviation from booked net ULR at 12 months



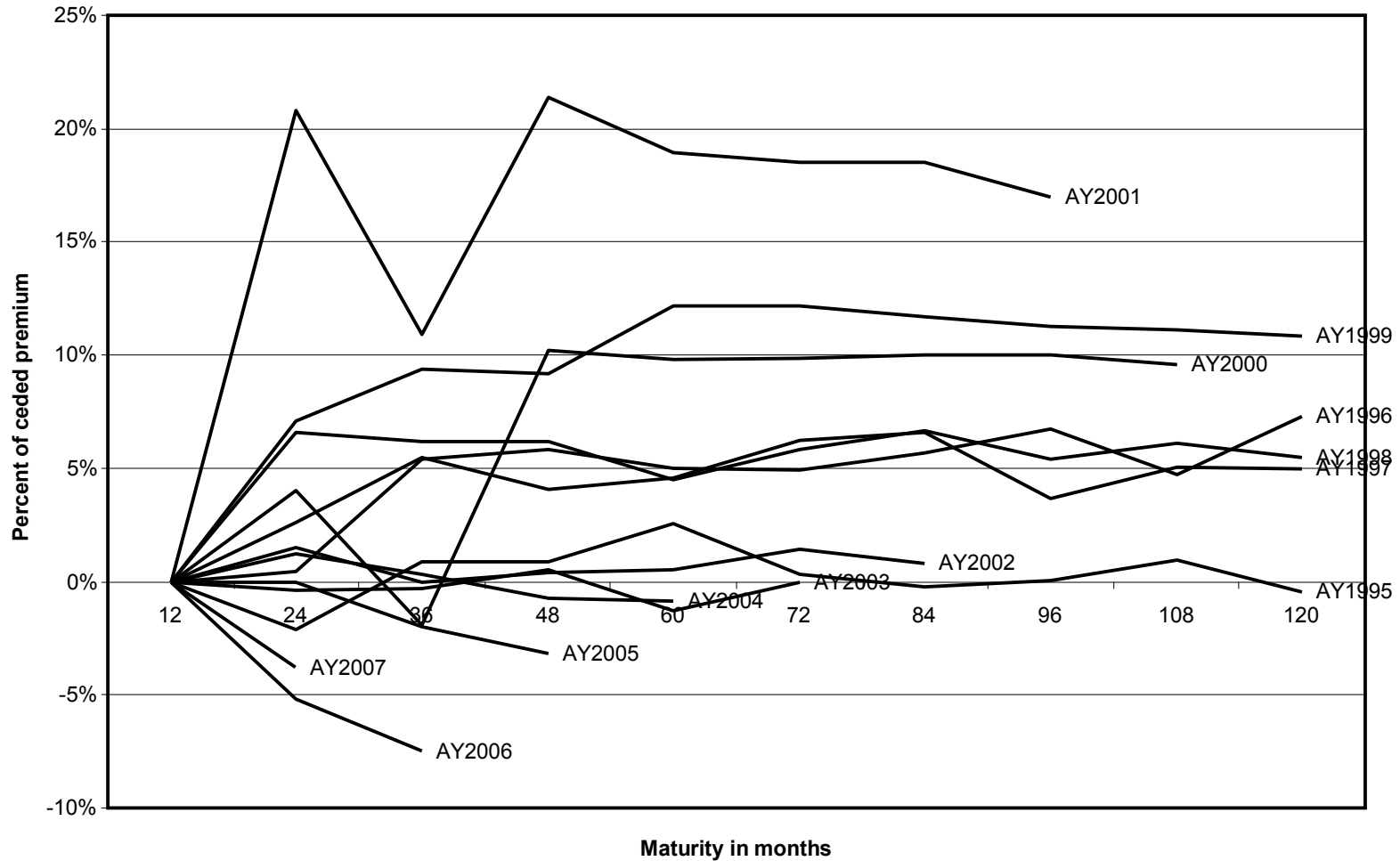
Other liability, occurrence (5) — gross hindsight

Industry OL- Occ, deviation from booked gross ULR at 12 months



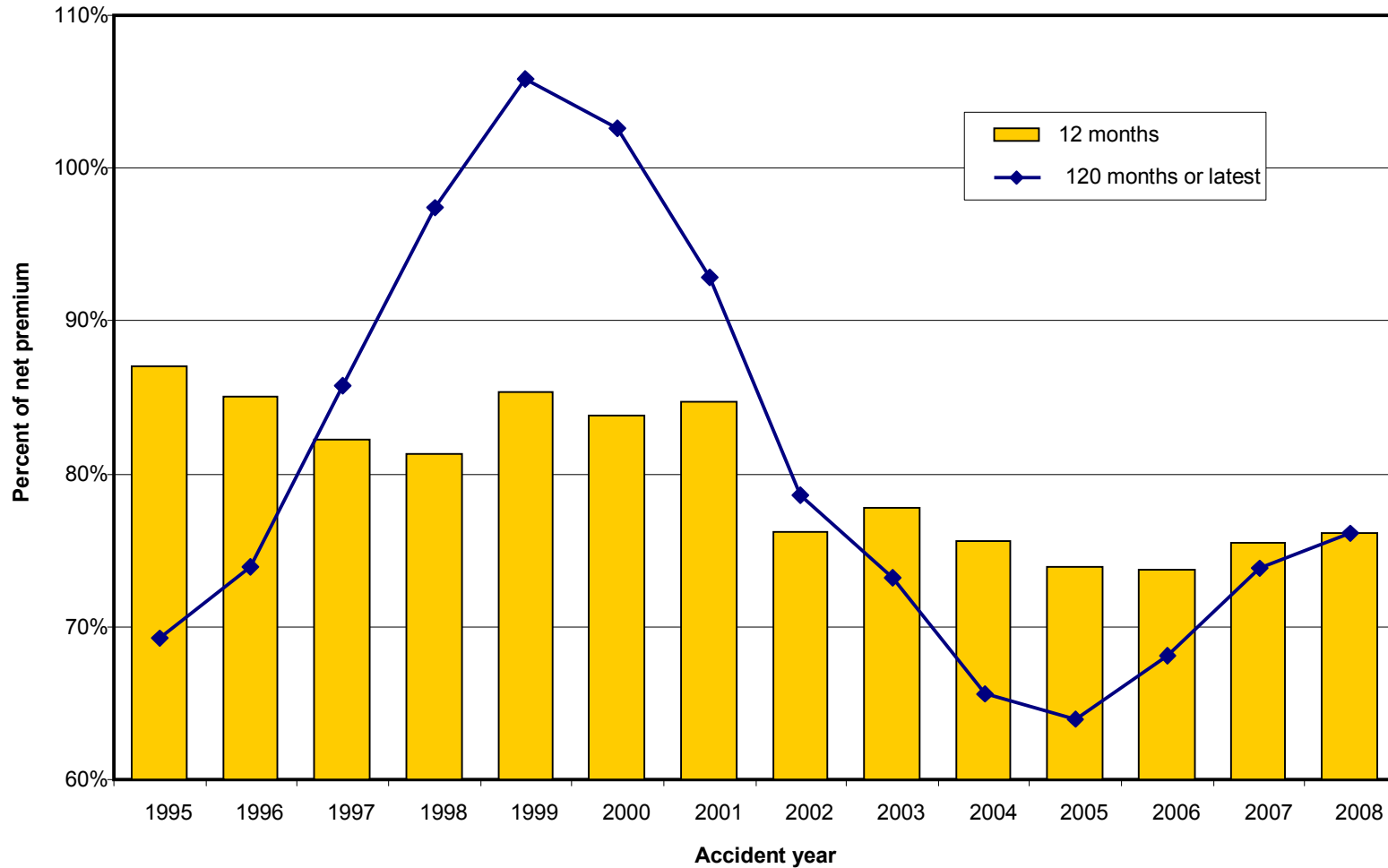
Other liability, occurrence (6) — ceded hindsight

Industry OL- Occ, deviation from booked ceded ULR at 12 months

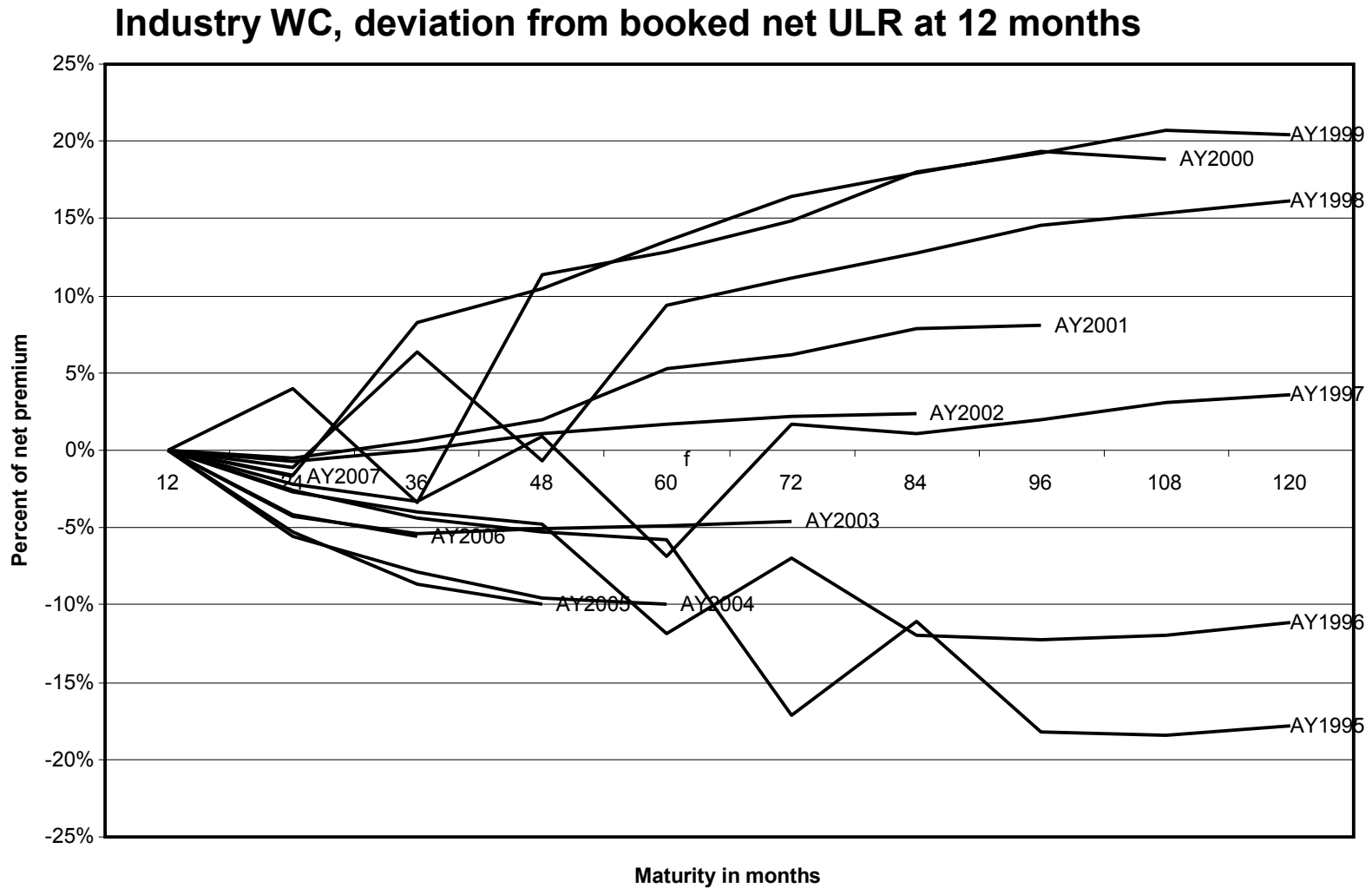


Workers compensation (1) — AY ULR development from 12 months

Industry WC, accident year net ultimate loss ratios at 12 months

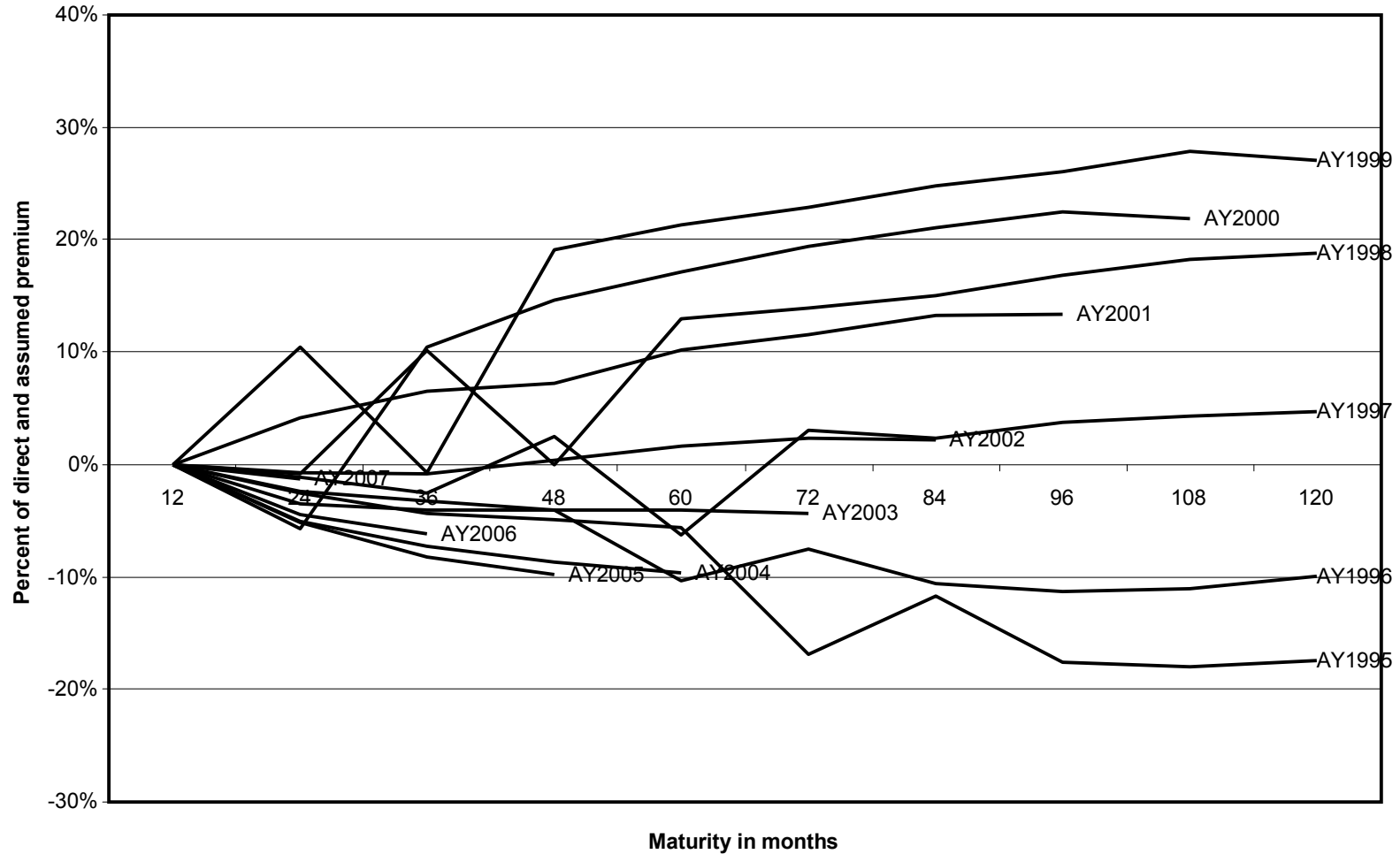


Workers compensation (2) — *net* hindsight

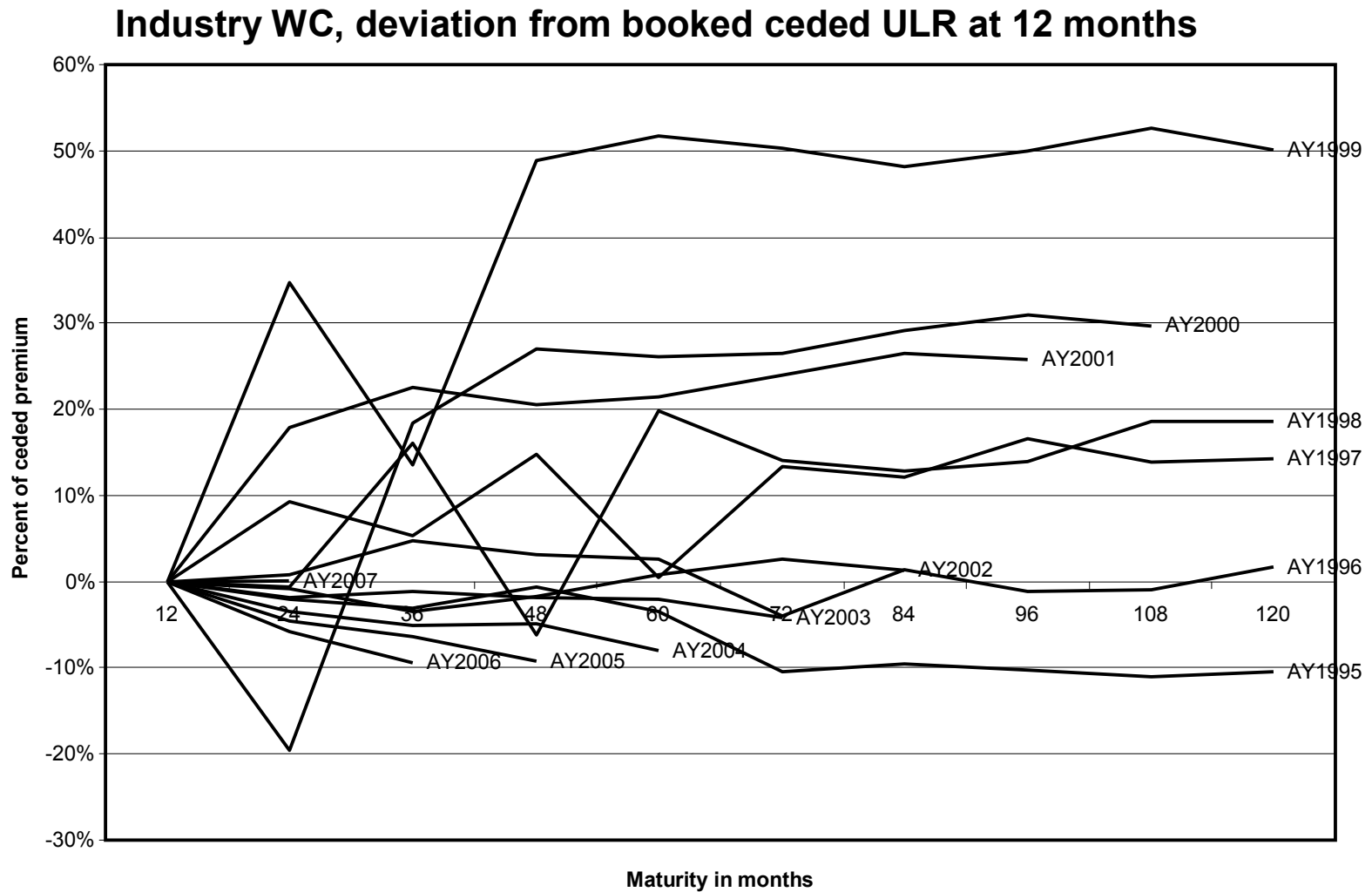


Workers compensation (3) — gross hindsight

Industry WC, deviation from booked gross ULR at 12 months

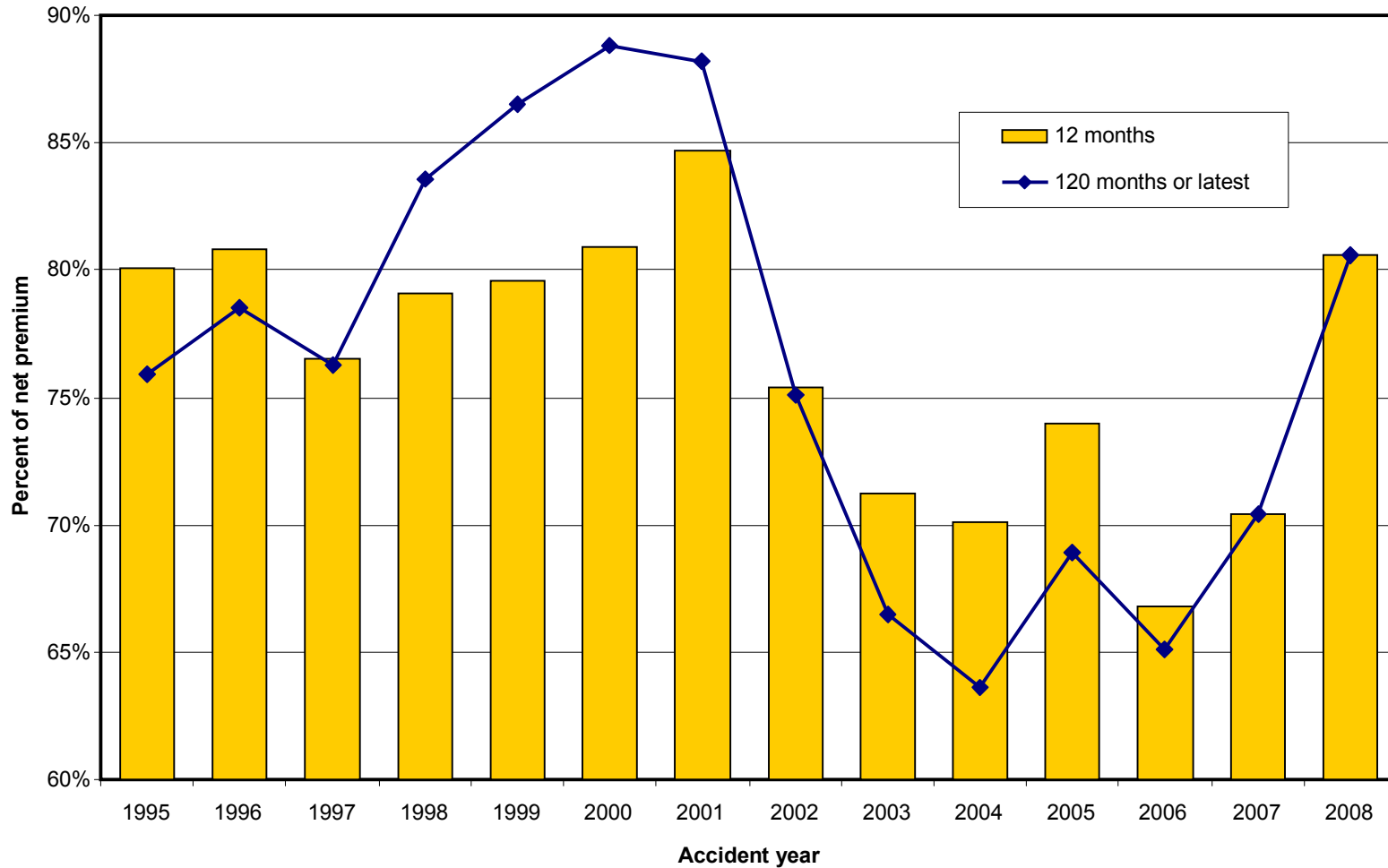


Workers compensation (4) — ceded hindsight

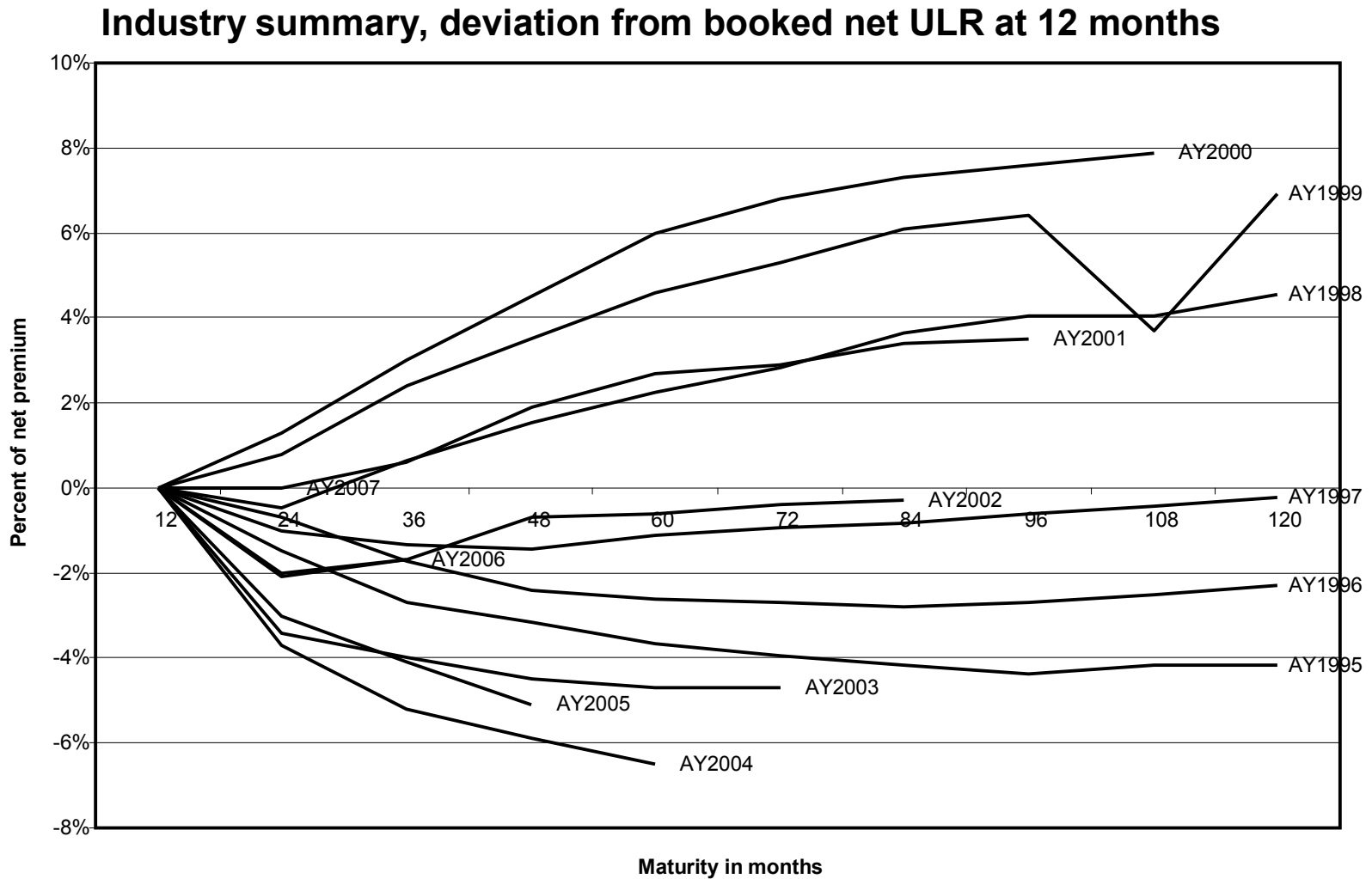


All lines (1) — AY ULR development from 12 months

Industry summary, accident year net ultimate loss ratios at 12 months

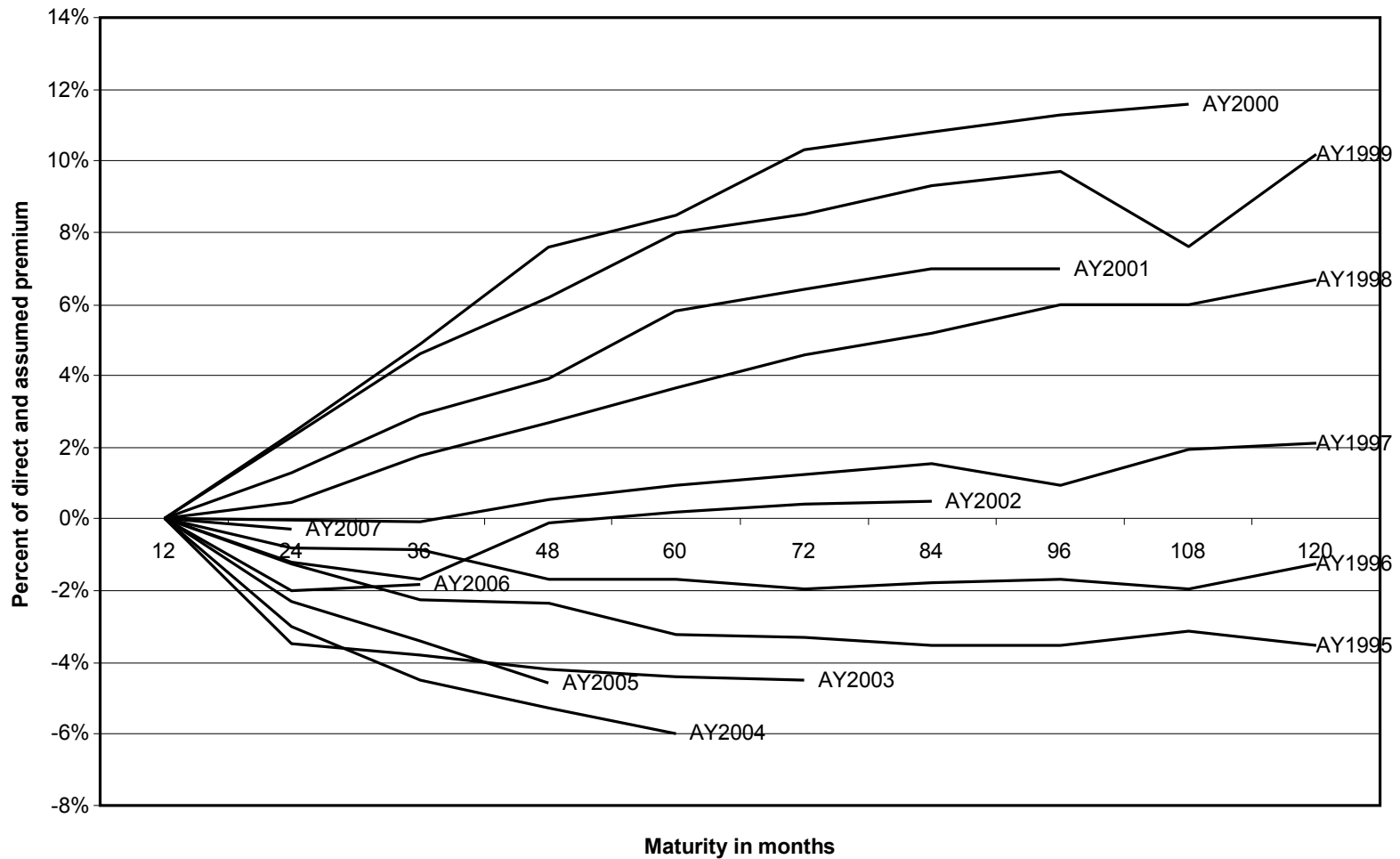


All lines (2) — *net* hindsight



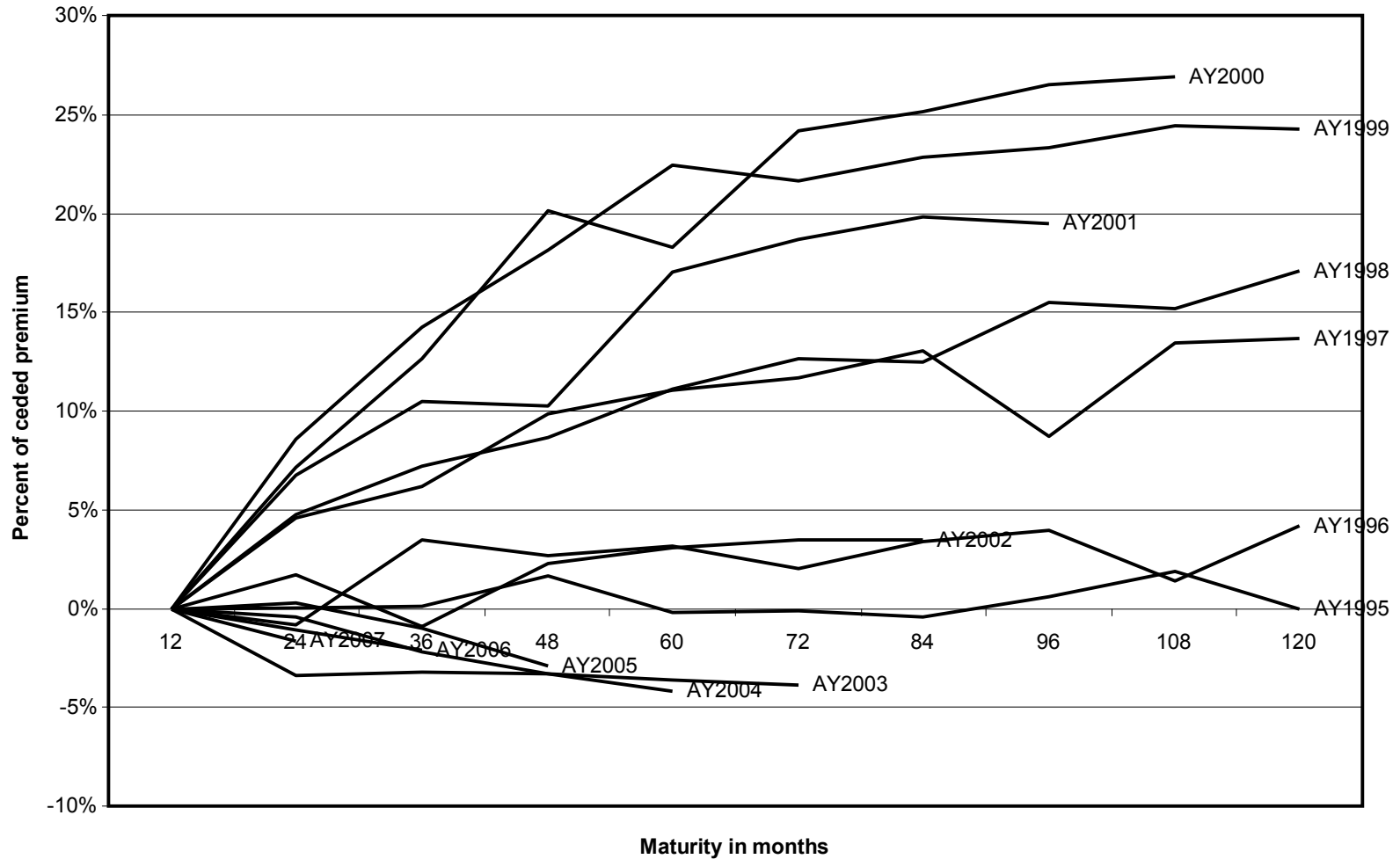
All lines (3) — gross hindsight

Industry summary, deviation from booked gross ULR at 12 months



All lines (4) — ceded hindsight

Industry summary, deviation from booked ceded ULR at 12 months



Summary

The industry in the aggregate reserved inadequately when prices were known to be low, and conversely, over-reserved when prices were high.

A mechanical liability estimation approach usually came closer to the later-known ultimate loss ratios than the booked loss ratios (compare slides 1 & 3 for each line).