

Reserve Variability

*Report Card on Reserve Adequacy –
A+ or C-*

March 2013

Casualty Actuaries of the Northwest



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- Contribute.

Purpose

Loss reserving has been a fundamental element of actuarial practice and financial reporting for insurance companies for many years. The actuarial literature includes countless papers describing methods and data for evaluating unpaid claim estimates. So, while acknowledging that the reserves represent estimates, how well have those estimates performed with the benefit of hindsight?

Agenda

- Historical reserve adequacy
- Reserve development drivers
- Grading the industry
- Perspectives on current reserves

Historical reserve adequacy

Reserve accuracy poll

At year-end 2011, what percentage of US P&C insurance companies' hindsight reserves from year-end 2005 were within -10% to +10% of their originally recorded value?

- a) 76% – isn't it called actuarial “science”?
- b) 52% – but on the other hand, there's loads of judgment
- c) 33% – loads and loads of judgment
- d) 11% – but at least it can't be negative

Reserve accuracy poll

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- b) 52% – but on the other hand, there's loads of judgment
- c) 33% – loads and loads of judgment
- d) 11% – but at least it can't be negative

Percentage of companies with 2011 hindsight reserves within X% of initial recorded reserves

Companies with initial recorded reserves in excess of \$1 million

| Calendar Year End | Within +/- 5% | Within +/-10% | Within +/- 25% |
|--------------------------|----------------------|----------------------|-----------------------|
| 2002 | 14% | 29% | 63% |
| 2003 | 19% | 34% | 67% |
| 2004 | 19% | 36% | 65% |
| 2005 | 16% | 33% | 65% |
| 2006 | 15% | 31% | 65% |
| 2007 | 13% | 29% | 67% |
| 2008 | 20% | 41% | 73% |
| 2009 | 27% | 46% | 79% |
| 2010 | 41% | 64% | 88% |

Source: SNL, 2011, Individual Company Statutory Statements

Percentage of companies with 2011 hindsight reserves within X% of initial recorded reserves

Companies with initial recorded reserves in excess of \$500 million

| Calendar Year End | Within +/- 5% | Within +/-10% | Within +/- 25% |
|--------------------------|----------------------|----------------------|-----------------------|
| 2002 | 12% | 26% | 61% |
| 2003 | 21% | 37% | 73% |
| 2004 | 29% | 46% | 79% |
| 2005 | 23% | 49% | 87% |
| 2006 | 23% | 46% | 85% |
| 2007 | 20% | 41% | 88% |
| 2008 | 27% | 58% | 89% |
| 2009 | 38% | 66% | 95% |
| 2010 | 65% | 87% | 97% |

Source: SNL, 2011, Individual Company Statutory Statements

Percentage of companies with 2011 hindsight reserves within X% of initial recorded reserves

Companies with initial recorded reserves in excess of \$500 million, ex 2001 & prior

| Calendar Year End | Within +/- 5% | Within +/-10% | Within +/- 25% |
|--------------------------|----------------------|----------------------|-----------------------|
| 2002 | 33% | 63% | 81% |
| 2003 | 27% | 51% | 89% |
| 2004 | 24% | 42% | 85% |
| 2005 | 20% | 39% | 83% |
| 2006 | 17% | 33% | 81% |
| 2007 | 17% | 37% | 85% |
| 2008 | 19% | 48% | 87% |
| 2009 | 25% | 64% | 94% |
| 2010 | 64% | 86% | 97% |

Source: SNL, 2011, Individual Company Statutory Statements

Percentage of companies with 2011 hindsight reserves within 10% of initial recorded reserves

Companies with initial recorded reserves in excess of \$1 million – by line of business

| Calendar Year End | Within +/-10% | | | | | |
|-------------------|---------------|------------|---------|-----|-----|-------|
| | All | Other Liab | Med Mal | CMP | WC | PP AL |
| 2002 | 29% | 16% | 16% | 29% | 22% | 53% |
| 2003 | 34% | 21% | 26% | 26% | 26% | 41% |
| 2004 | 36% | 24% | 14% | 26% | 40% | 40% |
| 2005 | 33% | 25% | 13% | 29% | 37% | 34% |
| 2006 | 31% | 20% | 12% | 28% | 35% | 34% |
| 2007 | 29% | 21% | 11% | 27% | 40% | 42% |
| 2008 | 41% | 26% | 16% | 42% | 48% | 49% |
| 2009 | 46% | 36% | 24% | 45% | 59% | 54% |
| 2010 | 64% | 58% | 44% | 63% | 71% | 72% |

Source: SNL, 2011, Individual Company Statutory Statements

Calendar year-end hindsight (redundancy)/deficiency

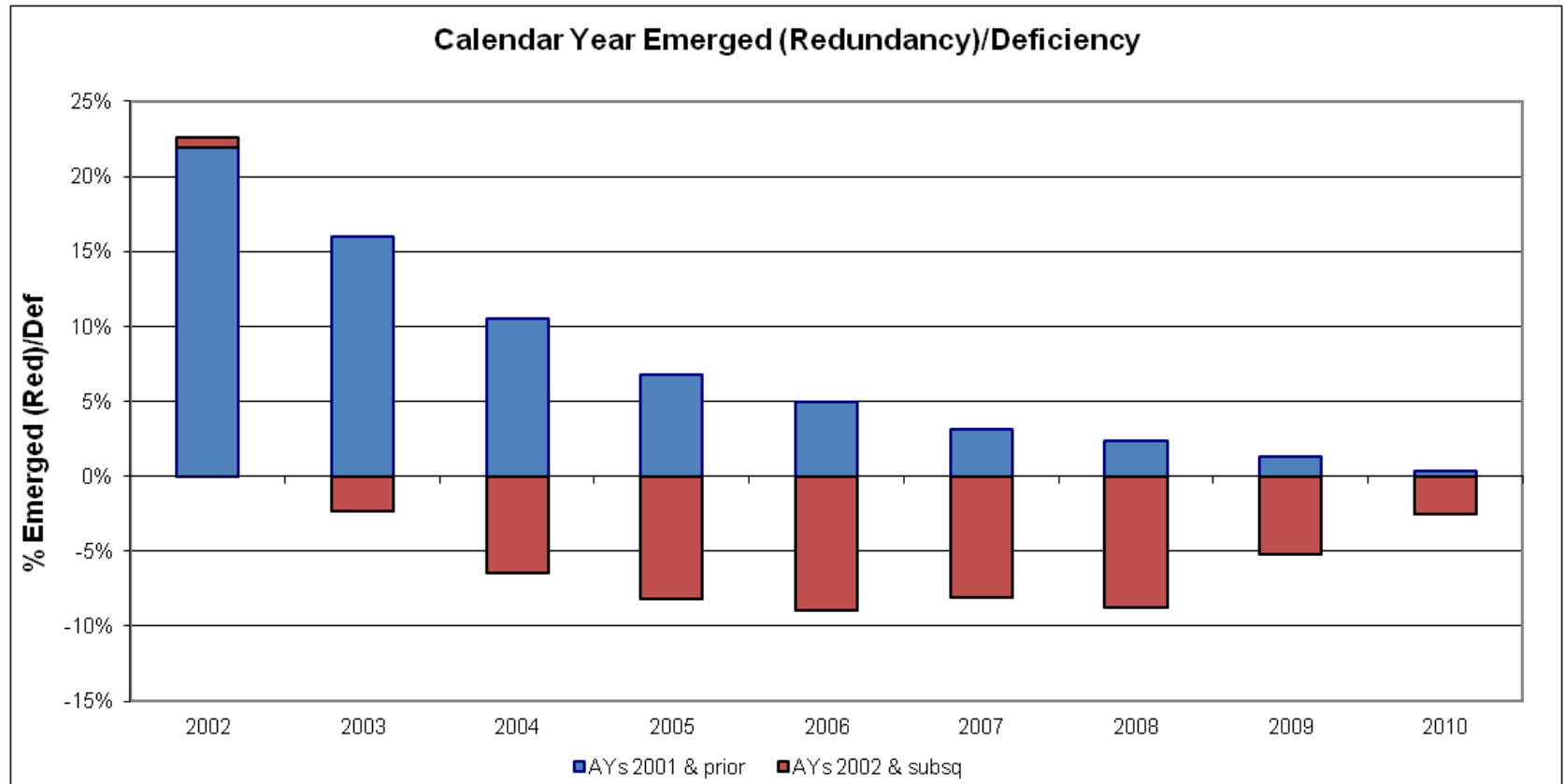
Emerged (redundancy)/deficiency as a % of initial booked reserves

| Calendar Year End | All | Other Liab | Med Mal | CMP | WC | PP AL |
|--------------------------|------------|-------------------|----------------|------------|-----------|--------------|
| 2002 | 23% | 58% | 6% | 18% | 27% | 1% |
| 2003 | 14% | 41% | -7% | 7% | 20% | -2% |
| 2004 | 4% | 19% | -15% | -3% | 11% | -5% |
| 2005 | -1% | 4% | -21% | -4% | 3% | -7% |
| 2006 | -4% | -1% | -24% | -10% | 0% | -6% |
| 2007 | -5% | -4% | -23% | -11% | 0% | -5% |
| 2008 | -6% | -2% | -19% | -8% | 1% | -6% |
| 2009 | -4% | -2% | -14% | -6% | 0% | -5% |
| 2010 | -2% | -2% | -7% | -3% | 0% | -3% |

Source: SNL, 2011, Individual Company Statutory Statements

Calendar year-end hindsight (redundancy)/deficiency

Emerged (redundancy)/deficiency as a % of initial booked reserves



Source: SNL, 2011, Individual Company Statutory Statements

Accident year hindsight (redundancy)/deficiency

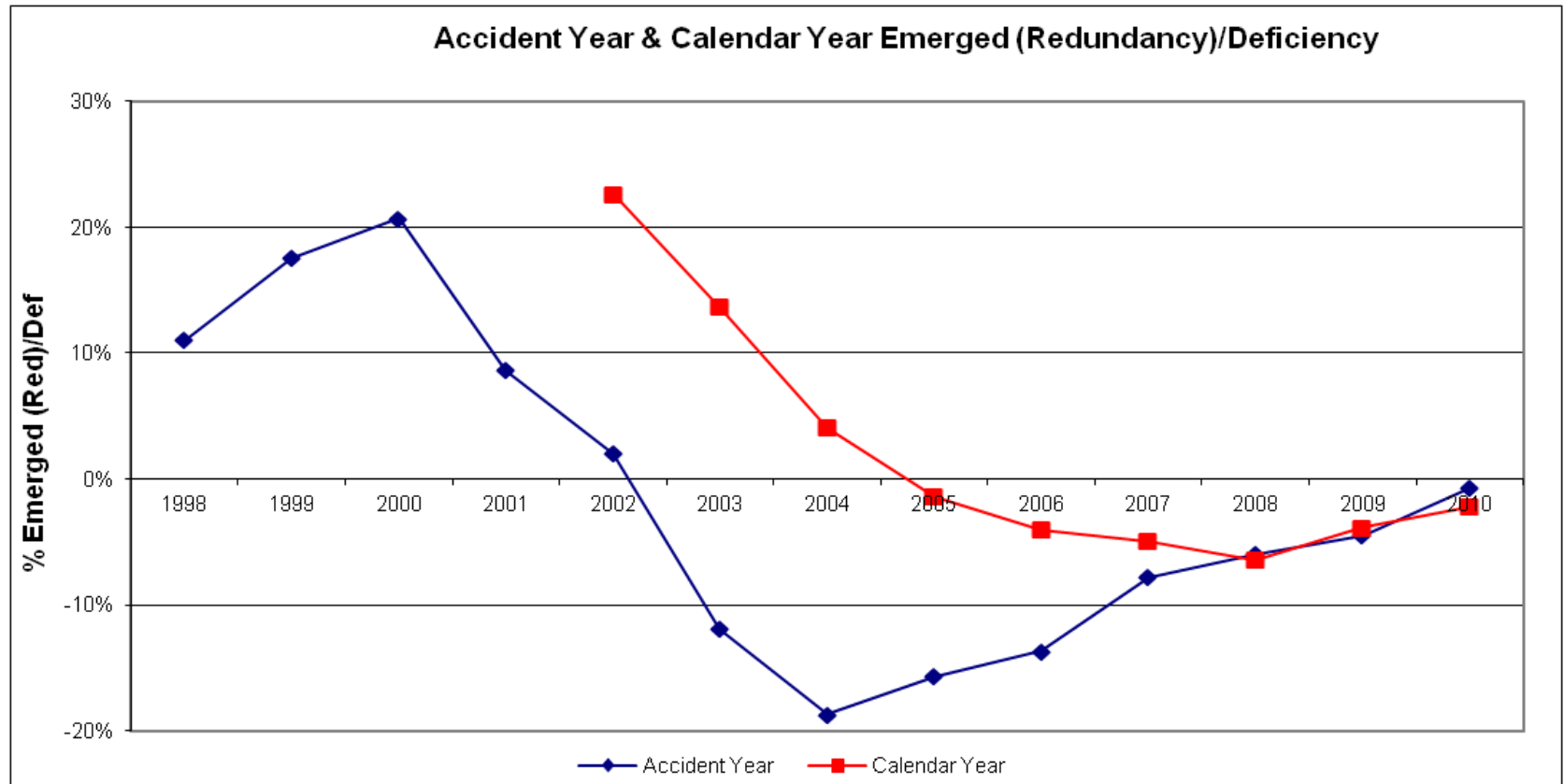
EmergEd (redundancy)/deficiency as a % of initial booked reserves

| Accident Year | All | Other Liab | Med Mal | CMP | WC | PP AL |
|----------------------|------------|-------------------|----------------|------------|-----------|--------------|
| 1998 | 11% | 26% | 19% | 15% | 23% | -4% |
| 1999 | 18% | 47% | 24% | 17% | 32% | 0% |
| 2000 | 21% | 44% | 28% | 23% | 34% | 2% |
| 2001 | 9% | 27% | 16% | 4% | 21% | -1% |
| 2002 | 2% | 24% | 6% | -5% | 13% | -3% |
| 2003 | -12% | -8% | -18% | -13% | -8% | -9% |
| 2004 | -19% | -27% | -30% | -16% | -23% | -11% |
| 2005 | -16% | -24% | -29% | -13% | -24% | -9% |
| 2006 | -14% | -19% | -30% | -16% | -15% | -6% |
| 2007 | -8% | -10% | -24% | -12% | -6% | -4% |
| 2008 | -6% | -6% | -14% | -8% | 2% | -5% |
| 2009 | -4% | -2% | -9% | -4% | 0% | -4% |
| 2010 | -1% | 0% | -5% | 0% | 5% | -2% |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year and calendar year hindsight emergence

Emerged (redundancy)/deficiency as a % of initial booked reserves



Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

All Lines of Business Combined

| AY | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | Hindsight |
|------|-------|----|----|----|----|----|----|----|-----|-----|-----------|
| 1987 | 0.696 | | | | | | | | | | 0.655 |
| 1988 | 0.718 | | | | | | | | | | 0.682 |
| 1989 | 0.767 | | | | | | | | | | 0.747 |
| 1990 | 0.760 | | | | | | | | | | 0.727 |
| 1991 | 0.755 | | | | | | | | | | 0.700 |
| 1992 | 0.800 | | | | | | | | | | 0.735 |
| 1993 | 0.737 | | | | | | | | | | 0.671 |
| 1994 | 0.779 | | | | | | | | | | 0.735 |
| 1995 | 0.732 | | | | | | | | | | 0.694 |
| 1996 | 0.738 | | | | | | | | | | 0.715 |
| 1997 | 0.693 | | | | | | | | | | 0.692 |
| 1998 | 0.715 | | | | | | | | | | 0.757 |
| 1999 | 0.717 | | | | | | | | | | 0.783 |
| 2000 | 0.729 | | | | | | | | | | 0.807 |
| 2001 | 0.768 | | | | | | | | | | 0.803 |
| 2002 | 0.678 | | | | | | | | | | 0.686 |
| 2003 | 0.641 | | | | | | | | | | 0.597 |
| 2004 | 0.630 | | | | | | | | | | 0.561 |
| 2005 | 0.665 | | | | | | | | | | 0.604 |
| 2006 | 0.597 | | | | | | | | | | 0.550 |
| 2007 | 0.638 | | | | | | | | | | 0.610 |
| 2008 | 0.735 | | | | | | | | | | 0.710 |
| 2009 | 0.685 | | | | | | | | | | 0.668 |
| 2010 | 0.684 | | | | | | | | | | 0.681 |
| 2011 | 0.740 | | | | | | | | | | 0.740 |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

Other Liability

| <u>AY</u> | <u>12</u> | <u>24</u> | <u>36</u> | <u>48</u> | <u>60</u> | <u>72</u> | <u>84</u> | <u>96</u> | <u>108</u> | <u>120</u> | <u>Hindsight</u> |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------|
| 1998 | 0.775 | | | | | | | | | | 0.953 |
| 1999 | 0.758 | | | | | | | | | | 1.065 |
| 2000 | 0.764 | | | | | | | | | | 1.043 |
| 2001 | 0.840 | | | | | | | | | | 1.038 |
| 2002 | 0.710 | | | | | | | | | | 0.854 |
| 2003 | 0.685 | | | | | | | | | | 0.637 |
| 2004 | 0.673 | | | | | | | | | | 0.507 |
| 2005 | 0.643 | | | | | | | | | | 0.505 |
| 2006 | 0.638 | | | | | | | | | | 0.531 |
| 2007 | 0.661 | | | | | | | | | | 0.603 |
| 2008 | 0.688 | | | | | | | | | | 0.653 |
| 2009 | 0.693 | | | | | | | | | | 0.683 |
| 2010 | 0.683 | | | | | | | | | | 0.683 |
| 2011 | 0.678 | | | | | | | | | | 0.678 |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

Medical Malpractice

| <u>AY</u> | <u>12</u> | <u>24</u> | <u>36</u> | <u>48</u> | <u>60</u> | <u>72</u> | <u>84</u> | <u>96</u> | <u>108</u> | <u>120</u> | <u>Hindsight</u> |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------|
| 1998 | 1.106 | | | | | | | | | | 1.311 |
| 1999 | 1.040 | | | | | | | | | | 1.282 |
| 2000 | 0.944 | | | | | | | | | | 1.193 |
| 2001 | 1.030 | | | | | | | | | | 1.187 |
| 2002 | 0.976 | | | | | | | | | | 1.031 |
| 2003 | 0.894 | | | | | | | | | | 0.741 |
| 2004 | 0.824 | | | | | | | | | | 0.584 |
| 2005 | 0.782 | | | | | | | | | | 0.558 |
| 2006 | 0.771 | | | | | | | | | | 0.548 |
| 2007 | 0.759 | | | | | | | | | | 0.580 |
| 2008 | 0.752 | | | | | | | | | | 0.651 |
| 2009 | 0.783 | | | | | | | | | | 0.715 |
| 2010 | 0.791 | | | | | | | | | | 0.755 |
| 2011 | 0.793 | | | | | | | | | | 0.793 |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

Commercial Multiple Peril

| <u>AY</u> | <u>12</u> | <u>24</u> | <u>36</u> | <u>48</u> | <u>60</u> | <u>72</u> | <u>84</u> | <u>96</u> | <u>108</u> | <u>120</u> | <u>Hindsight</u> |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------|
| 1998 | 0.738 | | | | | | | | | | 0.803 |
| 1999 | 0.736 | | | | | | | | | | 0.809 |
| 2000 | 0.712 | | | | | | | | | | 0.808 |
| 2001 | 0.746 | | | | | | | | | | 0.766 |
| 2002 | 0.603 | | | | | | | | | | 0.585 |
| 2003 | 0.560 | | | | | | | | | | 0.512 |
| 2004 | 0.587 | | | | | | | | | | 0.526 |
| 2005 | 0.614 | | | | | | | | | | 0.560 |
| 2006 | 0.528 | | | | | | | | | | 0.473 |
| 2007 | 0.549 | | | | | | | | | | 0.506 |
| 2008 | 0.691 | | | | | | | | | | 0.660 |
| 2009 | 0.604 | | | | | | | | | | 0.590 |
| 2010 | 0.639 | | | | | | | | | | 0.639 |
| 2011 | 0.747 | | | | | | | | | | 0.747 |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

Workers' Compensation

| <u>AY</u> | <u>12</u> | <u>24</u> | <u>36</u> | <u>48</u> | <u>60</u> | <u>72</u> | <u>84</u> | <u>96</u> | <u>108</u> | <u>120</u> | <u>Hindsight</u> |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------|
| 1998 | 0.765 | | | | | | | | | | 0.895 |
| 1999 | 0.785 | | | | | | | | | | 0.973 |
| 2000 | 0.767 | | | | | | | | | | 0.962 |
| 2001 | 0.747 | | | | | | | | | | 0.868 |
| 2002 | 0.708 | | | | | | | | | | 0.783 |
| 2003 | 0.720 | | | | | | | | | | 0.672 |
| 2004 | 0.703 | | | | | | | | | | 0.570 |
| 2005 | 0.690 | | | | | | | | | | 0.552 |
| 2006 | 0.681 | | | | | | | | | | 0.599 |
| 2007 | 0.701 | | | | | | | | | | 0.669 |
| 2008 | 0.717 | | | | | | | | | | 0.727 |
| 2009 | 0.742 | | | | | | | | | | 0.745 |
| 2010 | 0.773 | | | | | | | | | | 0.802 |
| 2011 | 0.773 | | | | | | | | | | 0.773 |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year loss ratio development

Private Passenger Auto Liability

| <u>AY</u> | <u>12</u> | <u>24</u> | <u>36</u> | <u>48</u> | <u>60</u> | <u>72</u> | <u>84</u> | <u>96</u> | <u>108</u> | <u>120</u> | <u>Hindsight</u> |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------------|
| 1998 | 0.715 | | | | | | | | | | 0.698 |
| 1999 | 0.750 | | | | | | | | | | 0.748 |
| 2000 | 0.790 | | | | | | | | | | 0.799 |
| 2001 | 0.784 | | | | | | | | | | 0.780 |
| 2002 | 0.760 | | | | | | | | | | 0.745 |
| 2003 | 0.709 | | | | | | | | | | 0.672 |
| 2004 | 0.677 | | | | | | | | | | 0.634 |
| 2005 | 0.670 | | | | | | | | | | 0.632 |
| 2006 | 0.658 | | | | | | | | | | 0.635 |
| 2007 | 0.688 | | | | | | | | | | 0.671 |
| 2008 | 0.694 | | | | | | | | | | 0.675 |
| 2009 | 0.728 | | | | | | | | | | 0.711 |
| 2010 | 0.732 | | | | | | | | | | 0.722 |
| 2011 | 0.716 | | | | | | | | | | 0.716 |

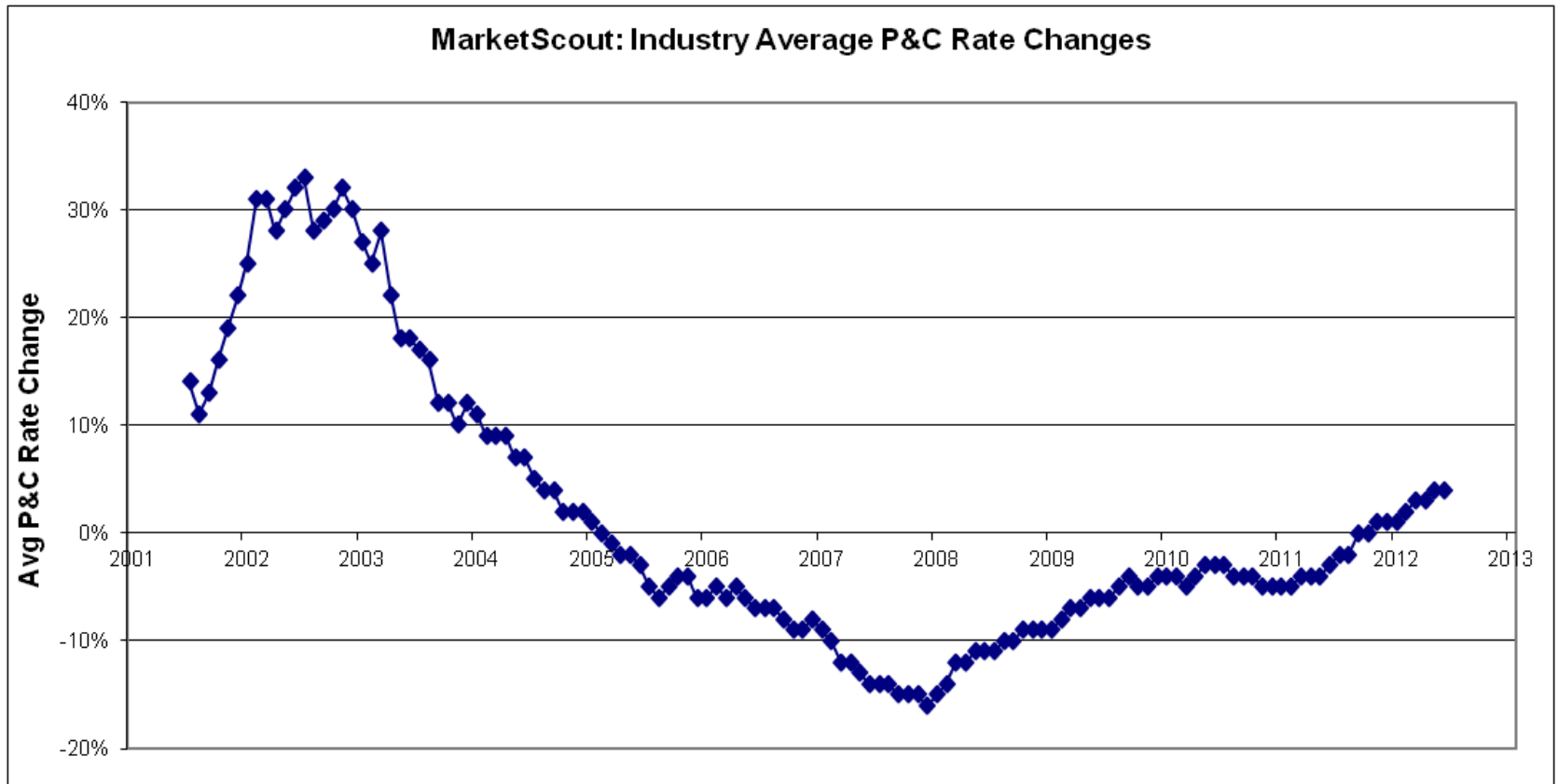
Source: SNL, 2011, Individual Company Statutory Statements

Reserve development drivers

What are the drivers of reserve development?

1. Organic development
2. Underwriting cycle
3. Connection of reserving cycle to pricing cycle
4. Optimism/pessimism
5. Regulation

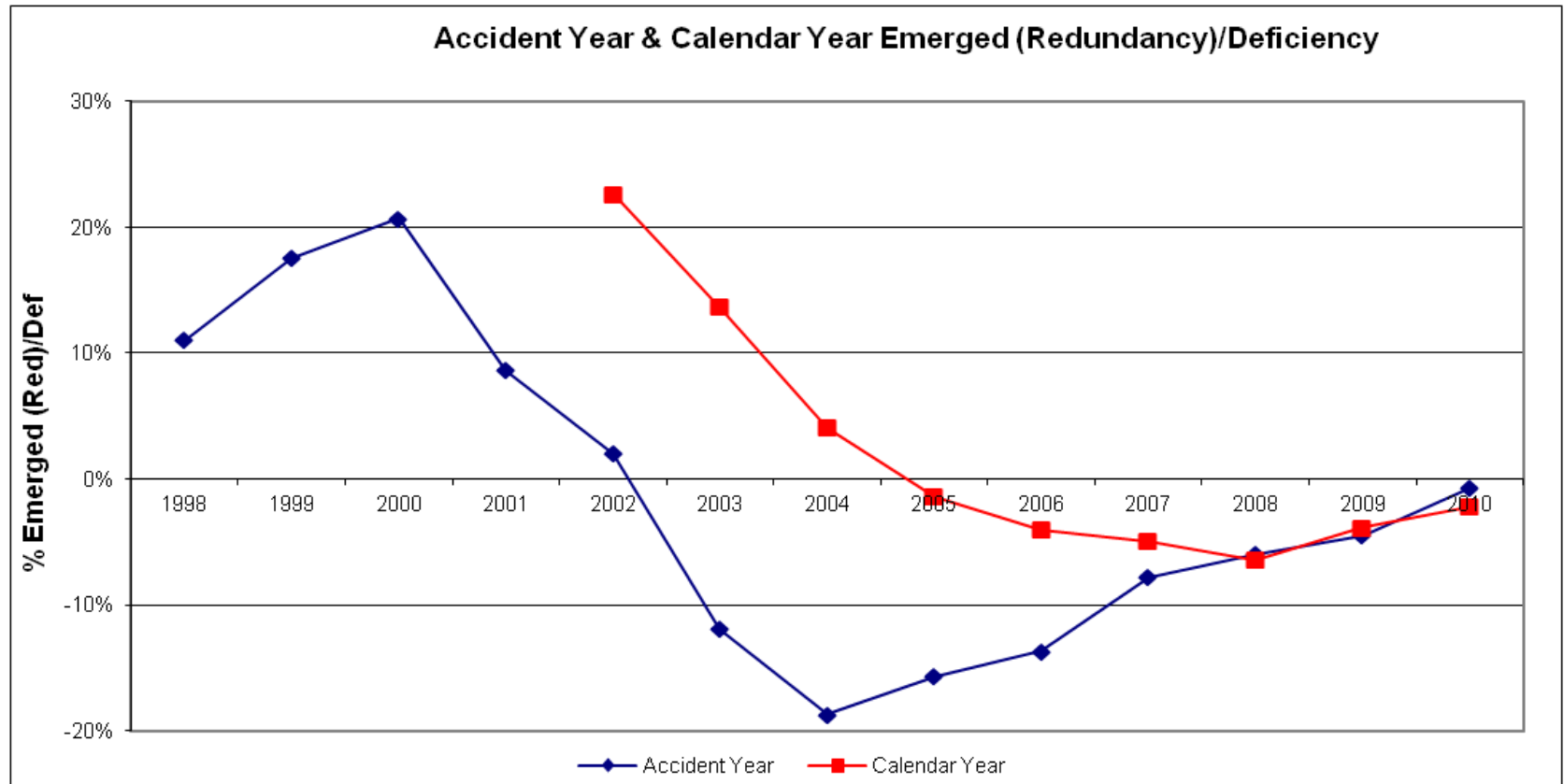
Industry average rate changes



Source: www.MarketScout.com

Accident year and calendar year hindsight emergence

Emerged (redundancy)/deficiency as a % of initial booked reserves



Source: SNL, 2011, Individual Company Statutory Statements

How does the underwriting cycle impact reserves?

**Pricing
Bias**



**Potential
Reserving
Bias**

How does reserve adequacy impact pricing?

**Pricing
Bias**



**Potential
Reserving
Bias**

Inherent link?

**Pricing
Bias**



**Potential
Reserving
Bias**

The current market

- Lengthy soft market
 - Potentially inadequate rates on recent accident years
 - Possible optimistic pricing & reserving
- 6 consecutive years of reserve take-downs
 - Calendar year operating results propped up by prior year releases
 - Releases mask accident year profitability issues
 - Erosion of reserve redundancies
- Weak macro-economic environment
 - Low investment income

Grading the industry

Grading the industry development

- Inspect distribution of companies' reserve development by line of business
- Grade the industry development based on ranges of development

Distribution of Company Reserve Development

All Lines of Business Combined

| | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | |
|---------------------|-------------|--------------|--|------|------|------|------|------|------|------|------|
| Reserve Development | | | | | | | | | | | |
| <u>low</u> | <u>high</u> | <u>grade</u> | <i>Distribution of companies to grade ranges</i> | | | | | | | | |
| -100% | -25% | F- | 145 | 209 | 270 | 321 | 342 | 328 | 252 | 166 | 72 |
| -25% | -20% | E- | 49 | 67 | 97 | 104 | 139 | 87 | 89 | 87 | 36 |
| -20% | -15% | D- | 56 | 73 | 108 | 123 | 113 | 155 | 130 | 116 | 70 |
| -15% | -10% | C- | 64 | 94 | 85 | 133 | 165 | 223 | 168 | 208 | 162 |
| -10% | -5% | B- | 96 | 118 | 176 | 203 | 221 | 205 | 285 | 263 | 282 |
| -5% | 5% | A | 185 | 267 | 284 | 252 | 219 | 216 | 321 | 449 | 698 |
| 5% | 10% | B | 95 | 95 | 79 | 52 | 45 | 57 | 63 | 59 | 91 |
| 10% | 15% | C | 89 | 59 | 51 | 50 | 51 | 44 | 59 | 62 | 40 |
| 15% | 20% | D | 85 | 97 | 50 | 41 | 37 | 47 | 28 | 20 | 19 |
| 20% | 25% | E | 102 | 55 | 31 | 26 | 18 | 24 | 16 | 12 | 7 |
| 25% | 100% | F | 265 | 156 | 117 | 87 | 75 | 66 | 60 | 59 | 41 |
| | | | 1231 | 1290 | 1348 | 1392 | 1425 | 1452 | 1471 | 1501 | 1518 |

Industry development & associated grade

| | | | | | | | | |
|-------|-------|------|-------|-------|-------|-------|-------|-------|
| 22.6% | 13.7% | 4.1% | -1.4% | -4.0% | -5.0% | -6.6% | -4.0% | -2.4% |
| E | C | A | A | A | A | B- | A | A |

Source: SNL, 2011, Individual Company Statutory Statements

Distribution of Company Reserve Development

Other Liability

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | | |
|--|------|------|------|------|------|------|------|------|------|-----|-----|
| Reserve Development | | | | | | | | | | | |
| <u>low</u> | | | | | | | | | | | |
| <u>high</u> | | | | | | | | | | | |
| <u>grade</u> | | | | | | | | | | | |
| <i>Distribution of companies to grade ranges</i> | | | | | | | | | | | |
| -100% | -25% | F- | 68 | 85 | 115 | 129 | 139 | 130 | 114 | 79 | 33 |
| -25% | -20% | E- | 8 | 13 | 25 | 27 | 35 | 50 | 43 | 39 | 17 |
| -20% | -15% | D- | 8 | 27 | 21 | 43 | 137 | 126 | 61 | 50 | 33 |
| -15% | -10% | C- | 20 | 24 | 34 | 69 | 42 | 54 | 124 | 109 | 61 |
| -10% | -5% | B- | 11 | 16 | 29 | 56 | 37 | 48 | 49 | 80 | 145 |
| -5% | 5% | A | 43 | 50 | 110 | 91 | 59 | 63 | 74 | 143 | 241 |
| 5% | 10% | B | 24 | 43 | 15 | 19 | 12 | 23 | 41 | 28 | 30 |
| 10% | 15% | C | 11 | 19 | 56 | 36 | 26 | 13 | 19 | 25 | 27 |
| 15% | 20% | D | 30 | 45 | 21 | 6 | 15 | 23 | 15 | 19 | 11 |
| 20% | 25% | E | 46 | 11 | 9 | 6 | 16 | 19 | 25 | 11 | 6 |
| 25% | 100% | F | 210 | 175 | 105 | 85 | 63 | 45 | 41 | 29 | 9 |
| | | | 479 | 508 | 540 | 567 | 581 | 594 | 606 | 612 | 613 |

Industry development & associated grade

| | | | | | | | | |
|-------|-------|-------|------|-------|-------|-------|-------|-------|
| 58.2% | 40.4% | 18.5% | 4.2% | -1.4% | -3.5% | -1.5% | -1.5% | -1.8% |
| F | F | D | A | A | A | A | A | A |

Source: SNL, 2011, Individual Company Statutory Statements

Distribution of Company Reserve Development

Medical Malpractice

| | | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------|-------------|--------------|--|------|------|------|------|------|------|------|------|
| | | | Reserve Development | | | | | | | | |
| <u>low</u> | <u>high</u> | <u>grade</u> | <i>Distribution of companies to grade ranges</i> | | | | | | | | |
| -100% | -25% | F- | 31 | 52 | 82 | 100 | 116 | 108 | 92 | 69 | 18 |
| -25% | -20% | E- | 3 | 15 | 7 | 6 | 21 | 16 | 23 | 22 | 9 |
| -20% | -15% | D- | 9 | 16 | 4 | 14 | 8 | 8 | 15 | 17 | 27 |
| -15% | -10% | C- | 8 | 4 | 13 | 7 | 7 | 22 | 21 | 31 | 38 |
| -10% | -5% | B- | 7 | 6 | 9 | 15 | 3 | 8 | 8 | 17 | 41 |
| -5% | 5% | A | 16 | 9 | 11 | 9 | 12 | 9 | 18 | 35 | 50 |
| 5% | 10% | B | 4 | 28 | 4 | 9 | 9 | 6 | 9 | 2 | 13 |
| 10% | 15% | C | 3 | 1 | 0 | 3 | 19 | 15 | 10 | 6 | 6 |
| 15% | 20% | D | 4 | 1 | 6 | 15 | 0 | 2 | 0 | 1 | 4 |
| 20% | 25% | E | 4 | 0 | 21 | 1 | 2 | 2 | 2 | 3 | 2 |
| 25% | 100% | F | 62 | 31 | 17 | 12 | 6 | 7 | 10 | 10 | 8 |
| | | | 151 | 163 | 174 | 191 | 203 | 203 | 208 | 213 | 216 |

Industry development & associated grade

| | | | | | | | | |
|------|-------|--------|--------|--------|--------|--------|--------|-------|
| 6.7% | -6.5% | -14.4% | -20.4% | -23.8% | -23.2% | -19.2% | -14.3% | -7.1% |
| B | B- | C- | E- | E- | E- | D- | C- | B- |

Source: SNL, 2011, Individual Company Statutory Statements

Distribution of Company Reserve Development

Commercial Multiple Peril

| | | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------|-------------|--------------|--|------|------|------|------|------|------|------|------|
| | | | Reserve Development | | | | | | | | |
| <u>low</u> | <u>high</u> | <u>grade</u> | <i>Distribution of companies to grade ranges</i> | | | | | | | | |
| -100% | -25% | F- | 46 | 53 | 61 | 88 | 128 | 89 | 68 | 48 | 25 |
| -25% | -20% | E- | 12 | 18 | 21 | 45 | 19 | 63 | 40 | 34 | 14 |
| -20% | -15% | D- | 11 | 10 | 46 | 20 | 43 | 32 | 46 | 32 | 14 |
| -15% | -10% | C- | 18 | 55 | 33 | 51 | 49 | 68 | 34 | 60 | 41 |
| -10% | -5% | B- | 16 | 18 | 36 | 26 | 32 | 50 | 97 | 60 | 68 |
| -5% | 5% | A | 90 | 65 | 79 | 84 | 77 | 64 | 78 | 129 | 195 |
| 5% | 10% | B | 23 | 32 | 21 | 16 | 22 | 12 | 24 | 19 | 38 |
| 10% | 15% | C | 13 | 15 | 23 | 12 | 9 | 16 | 10 | 27 | 10 |
| 15% | 20% | D | 6 | 25 | 16 | 5 | 13 | 14 | 7 | 4 | 5 |
| 20% | 25% | E | 11 | 23 | 18 | 22 | 10 | 4 | 3 | 1 | 6 |
| 25% | 100% | F | 141 | 89 | 61 | 60 | 37 | 27 | 28 | 14 | 8 |
| | | | 387 | 403 | 415 | 429 | 439 | 439 | 435 | 428 | 424 |

Industry development & associated grade

| | | | | | | | | |
|-------|------|-------|-------|--------|--------|-------|-------|-------|
| 17.6% | 6.8% | -2.7% | -4.5% | -10.3% | -11.3% | -8.5% | -6.2% | -2.7% |
| D | B | A | A | C- | C- | B- | B- | A |

Source: SNL, 2011, Individual Company Statutory Statements

Distribution of Company Reserve Development

Workers' Compensation

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | | |
|---------------------|--|------|------|------|------|------|------|------|------|-----|-----|
| Reserve Development | | | | | | | | | | | |
| <u>low</u> | | | | | | | | | | | |
| <u>high</u> | | | | | | | | | | | |
| <u>grade</u> | <i>Distribution of companies to grade ranges</i> | | | | | | | | | | |
| -100% | -25% | F- | 36 | 40 | 59 | 93 | 102 | 89 | 45 | 23 | 6 |
| -25% | -20% | E- | 6 | 13 | 37 | 35 | 61 | 24 | 29 | 14 | 7 |
| -20% | -15% | D- | 13 | 34 | 24 | 30 | 27 | 47 | 46 | 29 | 9 |
| -15% | -10% | C- | 27 | 17 | 23 | 41 | 46 | 43 | 34 | 47 | 35 |
| -10% | -5% | B- | 18 | 27 | 46 | 53 | 46 | 65 | 53 | 68 | 68 |
| -5% | 5% | A | 55 | 61 | 94 | 134 | 136 | 150 | 215 | 257 | 330 |
| 5% | 10% | B | 29 | 43 | 78 | 22 | 27 | 22 | 20 | 24 | 23 |
| 10% | 15% | C | 22 | 95 | 34 | 26 | 14 | 20 | 25 | 28 | 40 |
| 15% | 20% | D | 72 | 36 | 30 | 24 | 12 | 17 | 29 | 17 | 11 |
| 20% | 25% | E | 25 | 18 | 13 | 11 | 15 | 9 | 10 | 3 | 8 |
| 25% | 100% | F | 158 | 92 | 69 | 53 | 53 | 50 | 37 | 32 | 13 |
| | | | 461 | 476 | 507 | 522 | 539 | 536 | 543 | 542 | 550 |

Industry development & associated grade

| | | | | | | | | |
|-------|-------|-------|------|------|-------|------|------|------|
| 26.5% | 19.6% | 10.7% | 2.7% | 0.1% | -0.1% | 0.6% | 0.4% | 0.0% |
| F | D | C | A | A | A | A | A | A |

Source: SNL, 2011, Individual Company Statutory Statements

Distribution of Company Reserve Development

Private Passenger Auto Liability

| | | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------|-------------|--------------|--|------|------|------|------|------|------|------|------|
| | | | Reserve Development | | | | | | | | |
| <u>low</u> | <u>high</u> | <u>grade</u> | <i>Distribution of companies to grade ranges</i> | | | | | | | | |
| -100% | -25% | F- | 38 | 42 | 71 | 88 | 72 | 51 | 31 | 16 | 5 |
| -25% | -20% | E- | 15 | 15 | 24 | 34 | 39 | 20 | 32 | 11 | 6 |
| -20% | -15% | D- | 26 | 47 | 52 | 63 | 66 | 77 | 45 | 33 | 20 |
| -15% | -10% | C- | 40 | 88 | 94 | 83 | 93 | 88 | 83 | 103 | 35 |
| -10% | -5% | B- | 73 | 90 | 105 | 92 | 77 | 76 | 124 | 90 | 122 |
| -5% | 5% | A | 150 | 125 | 90 | 83 | 110 | 130 | 131 | 189 | 226 |
| 5% | 10% | B | 59 | 18 | 33 | 26 | 18 | 27 | 13 | 19 | 63 |
| 10% | 15% | C | 15 | 28 | 19 | 16 | 7 | 19 | 23 | 12 | 17 |
| 15% | 20% | D | 17 | 8 | 8 | 8 | 10 | 4 | 10 | 6 | 14 |
| 20% | 25% | E | 13 | 5 | 2 | 8 | 10 | 6 | 5 | 5 | 4 |
| 25% | 100% | F | 52 | 45 | 21 | 18 | 23 | 23 | 18 | 24 | 15 |
| | | | 498 | 511 | 519 | 519 | 525 | 521 | 515 | 508 | 527 |

Industry development & associated grade

| | | | | | | | | |
|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.8% | -2.4% | -5.3% | -6.8% | -5.9% | -5.1% | -5.9% | -5.3% | -3.4% |
| A | A | B- | B- | B- | B- | B- | B- | A |

Source: SNL, 2011, Individual Company Statutory Statements

Accident year hindsight (redundancy)/deficiency

Emerged (redundancy)/deficiency as a % of initial booked reserves

| Accident Year | All | Other Liab | Med Mal | CMP | WC | PP AL |
|----------------------|------------|-------------------|----------------|------------|-----------|--------------|
| 1998 | 11% C | 26% F | 19% D | 15% C | 23% E | -4% A |
| 1999 | 18% D | 47% F | 24% E | 17% D | 32% F | 0% A |
| 2000 | 21% E | 44% F | 28% F | 23% E | 34% F | 2% A |
| 2001 | 9% B | 27% F | 16% D | 4% A | 21% E | -1% A |
| 2002 | 2% A | 24% E | 6% B | -5% A | 13% C | -3% A |
| 2003 | -12% C- | -8% B- | -18% D- | -13% C- | -8% B- | -9% B- |
| 2004 | -19% D- | -27% F- | -30% F- | -16% D- | -23% E- | -11% C- |
| 2005 | -16% D- | -24% E- | -29% F- | -13% C- | -24% E- | -9% B- |
| 2006 | -14% C- | -19% D- | -30% F- | -16% D- | -15% C- | -6% B- |
| 2007 | -8% B- | -10% B- | -24% E- | -12% C- | -6% B- | -4% A |
| 2008 | -6% B- | -6% B- | -14% C- | -8% B- | 2% A | -5% A |
| 2009 | -4% A | -2% A | -9% B- | -4% A | 0% A | -4% A |
| 2010 | -1% A | 0% A | -5% A | 0% A | 5% A | -2% A |

Source: SNL, 2011, Individual Company Statutory Statements

Grading the industry development

- Distribution of companies to grade ranges varies by line of business
- Note that more recent calendar year reserve development appears to get better grades – why?
 - Are reserves now more adequate than they were 10 years ago?
 - Is it too early to know?
- Underlying accident year reserve development reveals poor grades

Thank you