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2014 Casualty Loss Reserve Seminar

Roll-forward Reserve Estimates

September 15, 2014

Mechanics Underlying Roll-forward Reserve Estimates

Agenda

Section 1 – Roll-forward Example

Section 2 – Potential roll-forward Methods

Question

Do you regularly use roll-forwards in your work?

Section 1 – Roll-forward Example

Accident Year (1)	Paid Loss @ 09/30/14 (2)	Estimated Annual Ultimate Loss (3)	Estimated Ultimate Loss @ 09/30/14 (4)	Estimated Unpaid Loss @ 09/30/14 (5)
2010	\$ 367,908	\$ 439,000	\$ 439,000	\$ 71,092
2011	555,288	700,000	700,000	144,712
2012	372,682	472,000	472,000	99,318
2013	100,588	305,000	305,000	204,412
2014	<u>44,332</u>	<u>425,000</u>	<u>318,750</u>	<u>274,418</u>
	\$ 1,440,798	\$ 2,341,000	\$ 2,234,750	\$ 793,952

Additional Exposure	106,250
Payments between 9/30 and 12/31	(54,829)

Roll-forward Unpaid Loss \$ 845,373

Section 2 – Potential Roll-forward Methods

In considering possible methods, there are two extremes:

1. Leave ultimate loss estimates or reserves unchanged and
2. Adjust for actual experience during the roll-forward period

The analysis performed to determine potential adjustments ranges from assuming a fixed IBNR-to-case ratio to an Actual versus Expected analysis to a full analysis.

Section 2 – Potential Roll-forward Methods

1. No change in ultimate loss or loss ratios, that is reduce reserves by payments in the period (e.g., month or quarter);
 - Might want to use loss ratios rather than losses if there is seasonality or an expected difference in premium
2. No change in reserves, that is adjust IBNR for changes in case reserves;
 - Might be used when case reserves are relatively stable and exhibit little change over time
3. Adjust for changes in case reserves by holding the IBNR-to-case ratio constant;
 - Might also be used when case reserves are relatively stable but has the benefit of adjusting the total reserve if there is a large change in case reserves

Section 2 – Potential Roll-forward Methods

4. Consider “actual vs. expected” movements;
 - Changes may be made either mechanically or judgmentally
 - Has the benefit of adjusting total reserves by actual experience within the roll-forward period
 - Much easier to perform than a full re-calculation of the reserve based upon year-end data
 - Consider both paid and incurred changes – incurred has the benefit of recognizing potentially large case reserve changes

Section 2 – Potential Roll-forward Methods ***(“Actual vs. expected” example)***

Accident Year	Paid Loss @ 09/30/14	Cumulative Paid Dev. Factors @ 09/30/14	Cumulative Paid Dev. Factors @ 12/31/14	Percentage Paid Between 09/30/14 and 12/31/14 As % of Reserves $[1/(4)-1/(3)]/[1-1/(3)]$	Percentage Paid Between 09/30/14 and 12/31/14 As % of Ultimate $[1/(4)-1/(3)]$
(1)	(2)	(3)	(4)	(5)	(6)
2010	\$ 367,908	1.300	1.275	6.7%	1.5%
2011	555,288	1.477	1.444	4.8%	1.5%
2012	372,682	1.840	1.768	4.9%	2.2%
2013	100,588	2.970	2.695	5.2%	3.4%
2014	44,332	9.397	6.907	4.3%	3.8%

Section 2 – Potential Roll-forward Methods **(“Actual vs. expected” example)**

Accident Year	Percentage Paid Between 09/30/14 and 12/31/14 <u>As % of Res</u> (5)	Percentage Paid Between 09/30/14 and 12/31/14 <u>As % of Ult</u> (6)	Paid Ultimate <u>(2) * (3)</u> (7)	Paid Loss Estimate 1 <u>[(7) - (2)] * (5)</u> (8)	Paid Loss Estimate 2 <u>(6) * (7)</u> (9)
2010	6.7%	1.5%	\$ 478,280	\$ 7,346	\$ 7,346
2011	4.8%	1.5%	820,122	12,596	12,596
2012	4.9%	2.2%	685,885	15,286	15,286
2013	5.2%	3.4%	298,769	10,292	10,292
2014	4.3%	3.8%	<u>416,610</u>	<u>15,988</u>	<u>15,988</u>
			\$ 2,699,666	\$ 61,508	\$ 61,508

Section 2 – Potential Roll-forward Methods **(“Actual vs. expected” example)**

Accident Year	Percentage Paid Between 09/30/14 and 12/31/14 <u>As % of Res</u> (5)	Percentage Paid Between 09/30/14 and 12/31/14 <u>As % of Ult</u> (6)	Selected Ultimate <u>Loss</u> (7)	Paid Loss Estimate 1 <u>[(7) - (2)] * (5)</u> (8)	Paid Loss Estimate 2 <u>(6) * (7)</u> (9)
2010	6.7%	1.5%	\$ 439,000	\$ 4,731	\$ 6,742
2011	4.8%	1.5%	700,000	6,883	10,751
2012	4.9%	2.2%	472,000	4,847	10,519
2013	5.2%	3.4%	305,000	10,615	10,506
2014	4.3%	3.8%	<u>425,000</u>	<u>16,349</u>	<u>16,310</u>
			\$ 2,341,000	\$ 43,425	\$ 54,829

Section 2 – Potential Roll-forward Methods **(“Actual vs. expected” example)**

Accident Year	Paid Loss Estimate 1 <u>[(7) - (2)] * (5)</u> (8)	Paid Loss Estimate 2 <u>(6) * (7)</u> (9)	Actual Payments (10)	Estimate 1 Difference <u>(10)-(8)</u> (11)	Estimate 2 Difference <u>(10)-(9)</u> (12)
2010	\$ 4,731	\$ 6,742	\$ 6,743	\$ 2,012	\$ 1
2011	6,883	10,751	13,456	6,573	2,705
2012	4,847	10,519	14,567	9,720	4,048
2013	10,615	10,506	9,873	(742)	(633)
2014	<u>16,349</u>	<u>16,310</u>	<u>16,490</u>	<u>141</u>	<u>180</u>
	\$ 43,425	\$ 54,829	\$ 61,129	\$ 17,704	\$ 6,300

Section 2 – Potential Roll-forward Methods

5. Mechanically apply same methods and assumptions;
 - Mechanical in nature so easier to perform than full analysis
 - Has the benefit of adjusting total reserves by actual experience within the roll-forward period
 - Use interpolated development factors but all other methods and assumptions (e.g., method weights, increased limits factors, etc.) are unchanged
6. Apply same methods and assumptions and review for necessary changes;
 - Similar to prior described method but introduces judgment
7. Bornhuetter-Ferguson approach, using previous ultimate loss ratios as initial expected loss ratios
8. Other.

Question

Which method do you most commonly use?

1. No change in ultimate loss or loss ratios
2. No change in reserves
3. Hold IBNR-to-case ratio constant
4. Consider “actual vs. expected” movements
5. Mechanically apply same method and assumptions
6. Apply same method and assumptions, but review
7. Bornhuetter-Ferguson approach, using previous ULR as IELR
8. Other

Section 2 – Potential Roll-forward Methods

Claims Reserving Working Party Paper, Lyons, et. al.

Asked survey respondents to:

Identify the main methods you regularly use when rolling projections forward, rather than re-projecting, for example when rolling forward to the next quarter.

The most popular responses were:

1. Apply same method and assumptions and review for necessary changes (regularly used by about 50%)
2. Look at 'actual vs expected' movements and use judgment (50%), closely followed by
3. No change in ultimates – just reduce reserves by payments in the quarter (35%).

Questions?

Thank you

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