

Reading: Friedland 07 (Development Technique)
Model: 2017.Fall #19
Problem Type: Reported Claims Development

Fr-07 (021a) Tail Factor (Problem)

- Find**
- a** Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023
 - b** Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	96	191	227	237
2021	96	191	227	
2022	96	191		
2023	96			

cumulative paid claims

AY	12	24	36	48
2020	60	151	206	228
2021	60	151	206	
2022	60	151		
2023	60			

reported claims development technique ultimates:

AY	amt
2020	240
2021	240

a link ratios for reported claim triangle

AY	12-24	24-36	36-48	48-ult
2013	1.988	1.187	1.044	
2014	1.988	1.187		
2015	1.988			
2016				
selected	1.988	1.187	1.044	1.014

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

$$= \frac{240}{237}$$

AY 2020 ultimate AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.500	1.257	1.059	1.014

$$\text{<===== (selected) x (prior [age -> ult])}$$

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	'22@24	'21@36	'20@48
diagonal	96	191	227	237
ultimate	240	240	240	240

$$\text{<===== (diagonal) x (age -> ult)}$$

Final answers:

AY 2022 ultimate loss based on reported losses: 240.000
 AY 2023 ultimate loss based on reported losses: 240.000

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate paid / reported.

cumulative paid / reported

AY	12	24	36	48
2013	0.63	0.79	0.91	0.96
2014	0.63	0.79	0.91	
2015	0.63	0.79		
2016	0.63			

Looking down the columns, we see there has been a general no trend in the paid/reported ratio

This likely means: *no material changes*

Possible scenarios corresponding to these observations are:

- [1] no material change in claims handling
- [2] no material change in case reserve adequacy

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Fr-07 (021b) Tail Factor (Problem)

- Find**
- a** Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023
 - b** Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	480	875	1,080	1,159
2021	462	863	1,001	
2022	444	852		
2023	429			

cumulative paid claims

AY	12	24	36	48
2020	300	756	1,029	1,140
2021	300	756	1,029	
2022	300	756		
2023	300			

reported claims development technique ultimates:

AY	amt
2020	1,200
2021	1,112

a link ratios for reported claim triangle

AY	12-24	24-36	36-48	48-ult
2013	1.823	1.234	1.073	
2014	1.870	1.160		
2015	1.917			
2016				
selected	1.870	1.197	1.073	1.036

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

$$= \frac{1,200}{1,159}$$

AY 2020 ultimate AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.487	1.330	1.111	1.036

$$\text{selected} \times (\text{prior [age -> ult]})$$

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	'22@24	'21@36	'20@48
diagonal	429	852	1,001	1,159
ultimate	1,066	1,133	1,112	1,200

$$\text{diagonal} \times \text{age -> ult}$$

Final answers:

AY 2022 ultimate loss based on reported losses: 1,133
 AY 2023 ultimate loss based on reported losses: 1,066

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate paid / reported.

cumulative paid / reported

AY	12	24	36	48
2013	0.63	0.86	0.95	0.98
2014	0.65	0.88	1.03	
2015	0.68	0.89		
2016	0.70			

Looking down the columns, we see there has been a general increase in the paid/reported ratio

This likely means: (paid values went up) OR (reported values went down) OR (a combination of both)

Possible scenarios corresponding to these observations are:

- [1] claims handling rules were LOOSENED
- [2] case reserve adequacy DECREASED

Reading: Friedland 07 (Development Technique)
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Fr-07 (021c) Tail Factor (Problem)

- Find**
- a** Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023
 - b** Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	290	574	680	710
2021	387	764	906	
2022	286	570		
2023	382			

cumulative paid claims

AY	12	24	36	48
2020	180	446	614	683
2021	234	590	735	
2022	171	439		
2023	223			

reported claims development technique ultimates:

AY	amt
2020	960
2021	1,279

a link ratios for reported claim triangle

AY	12-24	24-36	36-48	48-ult
2013	1.978	1.186	1.044	
2014	1.977	1.185		
2015	1.991			
2016				
selected	1.982	1.186	1.044	1.353

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

$$= \frac{960}{710}$$

AY 2020 ultimate AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	3.317	1.674	1.412	1.353

$$\text{<===== (selected) x (prior [age -> ult])}$$

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	'22@24	'21@36	'20@48
diagonal	382	570	906	710
ultimate	1,268	954	1,279	960

$$\text{<===== (diagonal) x (age -> ult)}$$

Final answers:

AY 2022 ultimate loss based on reported losses: 954
 AY 2023 ultimate loss based on reported losses: 1,268

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate paid / reported.

cumulative paid / reported

AY	12	24	36	48
2013	0.62	0.78	0.90	0.96
2014	0.61	0.77	0.81	
2015	0.60	0.77		
2016	0.58			

Looking down the columns, we see there has been a general decrease in the paid/reported ratio

This likely means: (paid values went down) OR (reported values went up) OR (a combination of both)

Possible scenarios corresponding to these observations are:

- [1] claims handling rules were TIGHTENED
- [2] case reserve adequacy INCREASED

Reading: Friedland 07 (Development Technique)
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Fr-07 (021d) Tail Factor (Problem)

- Find**
- a** Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023
 - b** Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	1,440	2,625	3,240	3,476
2021	1,385	2,589	3,003	
2022	1,333	2,556		
2023	1,286			

cumulative paid claims

AY	12	24	36	48
2020	900	2,232	3,070	3,414
2021	878	2,213	2,755	
2022	857	2,195		
2023	837			

reported claims development technique ultimates:

AY	amt
2020	3,600
2021	3,337

a link ratios for reported claim triangle

AY	12-24	24-36	36-48	48-ult
2013	1.823	1.234	1.073	
2014	1.870	1.160		
2015	1.917			
2016				
selected	1.870	1.197	1.073	1.036

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.487	1.330	1.111	1.036

$$= \frac{3,600}{3,476}$$

AY 2020 ultimate AY 12 @48 months

(selected) x (prior [age -> ult])
(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	'22@24	'21@36	'20@48
diagonal	1,286	2,556	3,003	3,476
ultimate	3,198	3,400	3,337	3,600

(diagonal) x (age -> ult)

Final answers:

AY 2022 ultimate loss based on reported losses: 3,400
 AY 2023 ultimate loss based on reported losses: 3,198

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate **paid / reported**.

cumulative paid / reported

AY	12	24	36	48
2013	0.63	0.85	0.95	0.98
2014	0.63	0.85	0.92	
2015	0.64	0.86		
2016	0.65			

Looking down the columns, we see there has been a general **increase** in the paid/reported ratio

This likely means: (paid values went up) OR (reported values went down) OR (a combination of both)

Possible scenarios corresponding to these observations are:

- [1] claims handling rules were LOOSENED
- [2] case reserve adequacy DECREASED