DEMO: F-07 (040)

Scenarios 1,2,3,4

1. Base Case
2. Increasing AY Loss Ratios
3. Increasing Case O/S Strength
4. Combination of 2 & 3

6	= current time	En.Scenario_1	
6	= end time	Enhanced Simulation	

Simlation RESULTS directly below:

436	= rows in premium table	Fr-07 (040) Scenario 1
256	= rows in loss table	

Amounts Paid Loss — Development Year

AY	1	2	3	4	5	6
1	720	1,800	2,880	3,600	3,960	4,320
2	720	1,800	2,880	3,600	3,960	
3	720	1,800	2,880	3,600		
4	720	1,800	2,880			
5	720	1,800				
6	720					

paid tail length = 6
(set by simulation)

Paid Estimates

CY EP	CY EE	CY PLR	est. AY ULR	real AY ULR
7,200	12.0	10.0%	60.0%	60.0%
7,200	12.0	25.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	50.0%	60.0%	60.0%
7,200	12.0	55.0%	60.0%	60.0%
7,200	12.0	60.0%	60.0%	60.0%

Amounts Rptd Loss — Development Year

AY	1	2	3	4	5	6
1	2,160	2,880	3,600	3,960	4,320	4,320
2	2,160	2,880	3,600	3,960	4,320	
3	2,160	2,880	3,600	3,960		
4	2,160	2,880	3,600			
5	2,160	2,880				
6	2,160					

rptd tail length = 5
(set by simulation)

LDFs for Paid Loss — age => age

AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	2.50	1.60	1.25	1.10	1.09	
2	2.50	1.60	1.25	1.10		
3	2.50	1.60	1.25			
4	2.50	1.60				
5	2.50					
6						

a little high but is fully developed
(tail factor = 1.00)

	1-2	2-3	3-4	4-5	5-6	6-ult
avg	2.50	1.60	1.25	1.10	1.09	
avg: wtd	2.50	1.60	1.25	1.10	1.09	
median	2.50	1.60	1.25	1.10	1.09	
avg: x-HL	2.50	1.60	1.25			
avg: 3	2.50	1.60	1.25			
select	2.50	1.60	1.25	1.10	1.09	
age => ult (CDF)	6.00	2.40	1.50	1.20	1.09	1.00
ultimate	4,320	4,320	4,320	4,320	4,320	4,320
AY ==>	6	5	4	3	2	1

Rptd Estimates

CY EP	CY EE	CY RLR	est. AY ULR	real AY ULR
7,200	12.0	30.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	50.0%	60.0%	60.0%
7,200	12.0	55.0%	60.0%	60.0%
7,200	12.0	60.0%	60.0%	60.0%
7,200	12.0	60.0%	60.0%	60.0%

Scenario 1

Loss Ratio: consistent for all AYs
Case Strength: consistent for all CYs

RESULT

Paid Devlpt: 100% accurate
Rptd Devlpt: 100% accurate

LDFs for Rptd Loss — age => age

AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	1.33	1.25	1.10	1.09	1.00	
2	1.33	1.25	1.10	1.09		
3	1.33	1.25	1.10			
4	1.33	1.25				
5	1.33					
6						

fully developed
(tail factor = 1.00)

	1-2	2-3	3-4	4-5	5-6	6-ult
avg	1.33	1.25	1.10	1.09	1.00	
avg: wtd	1.33	1.25	1.10	1.09	1.00	
median	1.33	1.25	1.10	1.09	1.00	
avg: x-HL	1.33	1.25	1.10			
avg: 3	1.33	1.25	1.10			
select	1.33	1.25	1.10	1.09	1.00	
age => ult (CDF)	2.00	1.50	1.20	1.09	1.00	1.00
ultimate	4,320	4,320	4,320	4,320	4,320	4,320
AY ==>	6	5	4	3	2	1

6	= current time	En.Scenario_2	Simlation RESULTS directly below:	436 = rows in premium table Fr-07 (040) Scenario 2
6	= end time	Enhanced Simulation		256 = rows in loss table

Amounts	Paid Loss	Development Year				
AY	1	2	3	4	5	6
1	720	1,800	2,880	3,600	3,960	4,320
2	720	1,800	2,880	3,600	3,960	
3	780	1,950	3,120	3,900	<- +5% on LR	
4	780	1,950	3,120			
5	840	2,100			<- +5% on LR	
6	840					

Paid Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	PLR	ULR	ULR
7,200	12.0	10.0%	60.0%	60.0%
7,200	12.0	25.0%	60.0%	60.0%
7,200	12.0	40.8%	65.0%	65.0%
7,200	12.0	52.1%	65.0%	65.0%
7,200	12.0	59.2%	70.0%	70.0%
7,200	12.0	66.3%	70.0%	70.0%

Amounts	Rptd Loss	Development Year				
AY	1	2	3	4	5	6
1	2,160	2,880	3,600	3,960	4,320	4,320
2	2,160	2,880	3,600	3,960	4,320	
3	2,340	3,120	3,900	4,290	<- +5% on LR	
4	2,340	3,120	3,900			
5	2,520	3,360			<- +5% on LR	
6	2,520					

LDFs	for Paid Loss		age => age			
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	2.50	1.60	1.25	1.10	1.09	
2	2.50	1.60	1.25	1.10		
3	2.50	1.60	1.25			
4	2.50	1.60		*development pattern*		
5	2.50			*is stable*		
6						
avg	2.50	1.60	1.25	1.10	1.09	
avg: wtd	2.50	1.60	1.25	1.10	1.09	
median	2.50	1.60	1.25	1.10	1.09	
avg: x-HL	2.50	1.60	1.25			
avg: 3	2.50	1.60	1.25			
select	2.50	1.60	1.25	1.10	1.09	
age => ult	6.00	2.40	1.50	1.20	1.09	1.00
(CDF)						
ultimate	5,040	5,040	4,680	4,680	4,320	4,320
AY ==>	6	5	4	3	2	1

Rptd Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	RLR	ULR	ULR
7,200	12.0	30.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	52.5%	65.0%	65.0%
7,200	12.0	58.3%	65.0%	65.0%
7,200	12.0	66.7%	70.0%	70.0%
7,200	12.0	67.9%	70.0%	70.0%

Scenario 2

Loss Ratio: **increases across AYs**

Case Strength: **consistent for all CYs**

RESULT

Paid Devlpt: **100% accurate**

Rptd Devlpt: **100% accurate**

LDFs	for Rptd Loss		age => age			
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	1.33	1.25	1.10	1.09	1.00	
2	1.33	1.25	1.10	1.09		
3	1.33	1.25	1.10			
4	1.33	1.25		*development pattern*		
5	1.33			*is stable*		
6						
avg	1.33	1.25	1.10	1.09	1.00	
avg: wtd	1.33	1.25	1.10	1.09	1.00	
median	1.33	1.25	1.10	1.09	1.00	
avg: x-HL	1.33	1.25	1.10			
avg: 3	1.33	1.25	1.10			
select	1.33	1.25	1.10	1.09	1.00	
age => ult	2.00	1.50	1.20	1.09	1.00	1.00
(CDF)						
ultimate	5,040	5,040	4,680	4,680	4,320	4,320
AY ==>	6	5	4	3	2	1

6	= current time	En.Scenario_3	
6	= end time	Enhanced Simulation	

Simlation RESULTS directly below:

436 = rows in premium table Fr-07 (040) Scenario 3
256 = rows in loss table

Amounts	Paid Loss	Development Year				
AY	1	2	3	4	5	6
1	720	1,800	2,880	3,600	3,960	4,320
2	720	1,800	2,880	3,600	3,960	
3	720	1,800	2,880	3,600		
4	720	1,800	2,880			
5	720	1,800				
6	720					

Paid Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	PLR	ULR	ULR
7,200	12.0	10.0%	60.0%	60.0%
7,200	12.0	25.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	50.0%	60.0%	60.0%
7,200	12.0	55.0%	60.0%	60.0%
7,200	12.0	60.0%	60.0%	60.0%

Amounts	Rptd Loss	Development Year				
AY	1	2	3	4	5	6
1	2,160	2,880	3,600	4,032	4,392	4,320
2	2,160	2,880	3,744	4,032	4,392	
3	2,160	3,024	3,744	4,032		
4	2,448	3,096	3,744			
5	2,448	3,096				
6	2,448					

case strength +20%
for all claims rptd
in CY 4,5,6

LDFs	for Paid Loss	age => age				
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	2.50	1.60	1.25	1.10	1.09	
2	2.50	1.60	1.25	1.10		
3	2.50	1.60	1.25			
4	2.50	1.60				
5	2.50					
6						
avg	2.50	1.60	1.25	1.10	1.09	
avg: wtd	2.50	1.60	1.25	1.10	1.09	
median	2.50	1.60	1.25	1.10	1.09	
avg: x-HL	2.50	1.60	1.25			
avg: 3	2.50	1.60	1.25			
select	2.50	1.60	1.25	1.10	1.09	
age => ult (CDF)	6.00	2.40	1.50	1.20	1.09	1.00
ultimate	4,320	4,320	4,320	4,320	4,320	4,320
AY ==>	6	5	4	3	2	1

development pattern
is stable

Rptd Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	RLR	ULR	ULR
7,200	12.0	30.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	50.0%	60.0%	60.0%
7,200	12.0	64.0%	60.8%	60.0%
7,200	12.0	62.0%	62.8%	60.0%
7,200	12.0	60.0%	65.5%	60.0%

Scenario 3

Loss Ratio: **consistent for all AYs**
Case Strength: **increased at CY 4**

RESULT

Paid Devlpt: **100% accurate**
Rptd Devlpt: **over-estimates**
(for AY=4,5,6)

LDFs	for Rptd Loss	age => age				
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	1.33	1.25	1.12	1.09	0.98	
2	1.33	1.30	1.08	1.09		
3	1.40	1.24	1.08			
4	1.26	1.21				
5	1.26					
6						
avg	1.32	1.25	1.09	1.09	0.98	
avg: wtd	1.32	1.25	1.09	1.09	0.98	
median	1.33	1.24	1.08	1.09	0.98	
avg: x-HL	1.31	1.24	1.08			
avg: 3	1.31	1.25	1.09			
select	1.32	1.25	1.09	1.09	0.98	
age => ult (CDF)	1.93	1.46	1.17	1.07	0.98	1.00
ultimate	4,717	4,523	4,378	4,320	4,320	4,320
AY ==>	6	5	4	3	2	1

development pattern
*is **NOT** stable*

selections are too high for AY=4,5,6

6	= current time	En.Scenario_4	Simlation RESULTS directly below:	436 = rows in premium table
6	= end time	Enhanced Simulation		256 = rows in loss table

Fr-07 (040) Scenario 4

Amounts	Paid Loss	Development Year				
AY	1	2	3	4	5	6
1	720	1,800	2,880	3,600	3,960	4,320
2	720	1,800	2,880	3,600	3,960	
3	780	1,950	3,120	3,900	<-- +5% on LR	
4	780	1,950	3,120			
5	840	2,100			<------- +5% on LR	
6	840					

Paid Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	PLR	ULR	ULR
7,200	12.0	10.0%	60.0%	60.0%
7,200	12.0	25.0%	60.0%	60.0%
7,200	12.0	40.8%	65.0%	65.0%
7,200	12.0	52.1%	65.0%	65.0%
7,200	12.0	59.2%	70.0%	70.0%
7,200	12.0	66.3%	70.0%	70.0%

Amounts	Rptd Loss	Development Year				
AY	1	2	3	4	5	6
1	2,160	2,880	3,600	4,032	4,392	4,320
2	2,160	2,880	3,744	4,032	4,392	
3	2,340	3,276	4,056	4,368	<-- +5% on LR	
4	2,652	3,354	4,056			
5	2,856	3,612			<------- +5% on LR	
6	2,856					

case strength +20% for all clms reported in CY 4.5.6

LDFs	for Paid Loss		age => age			
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	2.50	1.60	1.25	1.10	1.09	
2	2.50	1.60	1.25	1.10		
3	2.50	1.60	1.25			
4	2.50	1.60				
5	2.50					
6						

Rptd Estimates			est.	real
CY	CY	CY	AY	AY
EP	EE	RLR	ULR	ULR
7,200	12.0	30.0%	60.0%	60.0%
7,200	12.0	40.0%	60.0%	60.0%
7,200	12.0	52.5%	65.0%	65.0%
7,200	12.0	67.8%	65.9%	65.0%
7,200	12.0	69.3%	73.3%	70.0%
7,200	12.0	68.3%	76.4%	70.0%

LDFs	for Rptd Loss		age => age			
AY	1-2	2-3	3-4	4-5	5-6	6-ult
1	1.33	1.25	1.12	1.09	0.98	
2	1.33	1.30	1.08	1.09		
3	1.40	1.24	1.08			
4	1.26	1.21				
5	1.26					
6						

*development pattern is **NOT** stable*

avg	2.50	1.60	1.25	1.10	1.09	
avg: wtd	2.50	1.60	1.25	1.10	1.09	
median	2.50	1.60	1.25	1.10	1.09	
avg: x-HL	2.50	1.60	1.25			
avg: 3	2.50	1.60	1.25			
select	2.50	1.60	1.25	1.10	1.09	
age => ult (CDF)	6.00	2.40	1.50	1.20	1.09	1.00
ultimate	5,040	5,040	4,680	4,680	4,320	4,320
AY ==>	6	5	4	3	2	1

Scenario 4	
Loss Ratio:	**increases across AYs**
Case Strength:	**increased at CY 4**
RESULT	
Paid Devlpt:	**100% accurate**
Rptd Devlpt:	**over-estimates (for AY=4,5,6)**

avg	1.32	1.25	1.09	1.09	0.98	
avg: wtd	1.32	1.25	1.09	1.09	0.98	
median	1.33	1.24	1.08	1.09	0.98	
avg: x-HL	1.31	1.24	1.08			
avg: 3	1.31	1.25	1.09			
	selections are too high for AY=4,5,6					
select	1.32	1.25	1.09	1.09	0.98	
age => ult (CDF)	1.93	1.46	1.17	1.07	0.98	1.00
ultimate	5,504	5,276	4,742	4,680	4,320	4,320
AY ==>	6	5	4	3	2	1