

Reading: Odomirok.18-IEE
Model: 2015.Spring #13
Problem Type: Pre-tax profit (loss)

(profit-loss - PRACTICE 01) a-Question

Given

		prior CY	current CY
TOTAL net investment earned	Inv	1,600	3,200
TOTAL net realized capital gains	CapG	17,400	20,900
TOTAL policyholders' surplus	S	135,800	165,700
HOMEOWNERS total investment gain	NIG _H	11,700	11,500

		homeowners		TOTAL	
		prior CY	current CY	prior CY	current CY
commission	C	12,000	13,400	25,800	27,400
taxes, licenses, fees	TLF	1,400	1,600	2,500	3,300
other acquisition expenses	Other	2,800	3,800	7,800	8,200
general expenses	Gen	4,600	5,300	9,400	9,100
written premium	WP	67,900	68,300	151,100	132,900
earned premium	EP	50,300	69,000	137,900	150,200
loss & LAE reserves	L + LAE	26,400	24,700	48,100	43,800
unearned premium reserves	UEP	26,300	24,500	57,600	61,700
agents' balances	AB	7,400	8,300	15,200	13,000
net loss & LAE incurred	IL	48,000	45,300	72,600	80,200
finance charges not included in premium	charges	1,700	1,700	3,300	4,300
fine & penalties of regulatory authorities	penalties	600	800	1,400	1,300

Find

Current CY pre-tax profit (loss) as a percentage of policyholders' surplus for homeowners.

Let $m(x)$	=	mean value of (prior CY value of x , current CY value of x)
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Step 1: Calculate: *pre-tax profit (loss) excluding investment gain*

According to the formula provided in Odomirok, these are the components:

(+)	earned premium	69,000			
(-)	dividends to policyholders	not given			
-	incurred loss	45,300			
-	DCC incurred	not given			
-	A&O incurred	not given			
-	C	13,400			
-	TLF	1,600			
-	Other	3,800			
-	Gen	5,300			
(+)	other income less expenses	900	=	1,700	- 800
		500	<== pretax profit (loss) excluding InvGain		

Step 2: Calculate TOTAL profit (loss) by adding the investment gain (*given*)

$$= 500 + 11,500$$

$$= \boxed{12,000}$$

Step 3: Calculate Surplus Ratio (*because we need to allocate surplus to homeowners*)

SR	=	$m(S) / [m(L) + m(LAE) + m(UEP) + NEP_{CY}]$
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where:

$$m(S) = (135,800 + 165,700) / 2 = 150,750$$

$$m(L+LAE) = (48,100 + 43,800) / 2 = 45,950$$

$$m(UEP) = (57,600 + 61,700) / 2 = 59,650$$

$$NEP_{CY} = 150,200$$

then:

$$SR = 150,750 / 255,800 = 58.9\%$$

Step 4: Allocate surplus to homeowners

S_H	=	$SR \times [m(L_H) + m(LAE_H) + m(UEP_H) + NEP_{H(CY)}]$
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where:

$$m(L+LAE) = (26,400 + 24,700) / 2 = 25,550$$

$$m(UEP) = (26,300 + 24,500) / 2 = 25,400$$

$$NEP_{CY} = 69,000$$

then:

$$S_H = 58.9\% \times 119,950 = \boxed{70,690}$$

Step 5: Final Ratio = Step 2 / Step 4 = 17.0% <== final answer

Reading: Odomirok.18-IEE
Model: 2015.Spring #13
Problem Type: Pre-tax profit (loss)

(profit-loss - PRACTICE 02) a-Question

Given

		prior CY	current CY
TOTAL net investment earned	Inv	2,100	3,200
TOTAL net realized capital gains	CapG	16,700	15,400
TOTAL policyholders' surplus	S	114,800	174,100
HOMEOWNERS total investment gain	NIG _H	10,100	10,900

		homeowners		TOTAL	
		prior CY	current CY	prior CY	current CY
commission	C	15,500	16,300	22,400	32,000
taxes, licenses, fees	TLF	1,400	1,400	2,600	2,600
other acquisition expenses	Other	3,100	4,200	7,300	6,800
general expenses	Gen	5,600	6,600	11,600	9,500
written premium	WP	64,500	75,900	108,900	159,900
earned premium	EP	57,100	80,800	153,200	156,000
loss & LAE reserves	L + LAE	26,900	26,000	47,700	56,200
unearned premium reserves	UEP	33,800	29,900	52,000	47,200
agents' balances	AB	7,200	7,300	12,000	13,900
net loss & LAE incurred	IL	33,900	47,000	72,100	96,500
finance charges not included in premium	charges	1,800	2,000	3,300	3,800
fine & penalties of regulatory authorities	penalties	500	700	1,300	1,400

Find

Current CY pre-tax profit (loss) as a percentage of policyholders' surplus for homeowners.

Let $m(x)$	=	mean value of (prior CY value of x , current CY value of x)
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Step 1: Calculate: *pre-tax profit (loss) excluding investment gain*

According to the formula provided in Odomirok, these are the components:

(+)	earned premium	80,800			
(-)	dividends to policyholders	not given			
-	incurred loss	47,000			
-	DCC incurred	not given			
-	A&O incurred	not given			
-	C	16,300			
-	TLF	1,400			
-	Other	4,200			
-	Gen	6,600			
(+)	other income less expenses	1,300	=	2,000	- 700
		6,600	<== pretax profit (loss) excluding InvGain		

Step 2: Calculate TOTAL profit (loss) by adding the investment gain (*given*)

$$= 6,600 + 10,900$$

$$= \boxed{17,500}$$

Step 3: Calculate Surplus Ratio (*because we need to allocate surplus to homeowners*)

SR	=	$m(S) / [m(L) + m(LAE) + m(UEP) + NEP_{CY}]$
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where:

$$m(S) = (114,800 + 174,100) / 2 = 144,450$$

$$m(L+LAE) = (47,700 + 56,200) / 2 = 51,950$$

$$m(UEP) = (52,000 + 47,200) / 2 = 49,600$$

$$NEP_{CY} = 156,000$$

then:

$$SR = 144,450 / 257,550 = 56.1\%$$

Step 4: Allocate surplus to homeowners

S_H	=	$SR \times [m(L_H) + m(LAE_H) + m(UEP_H) + NEP_{H(CY)}]$
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where:

$$m(L+LAE) = (26,900 + 26,000) / 2 = 26,450$$

$$m(UEP) = (33,800 + 29,900) / 2 = 31,850$$

$$NEP_{CY} = 80,800$$

then:

$$S_H = 56.1\% \times 139,100 = \boxed{78,016}$$

Step 5: Final Ratio = Step 2 / Step 4 = 22.4% **<== final answer**

Reading: Odomirok.18-IEE
Model: 2015.Spring #13
Problem Type: Pre-tax profit (loss)

(profit-loss - PRACTICE 03) a-Question

Given

		prior CY	current CY
TOTAL net investment earned	Inv	2,000	2,400
TOTAL net realized capital gains	CapG	15,200	20,600
TOTAL policyholders' surplus	S	150,700	151,800
HOMEOWNERS total investment gain	NIG _H	8,400	12,400

		homeowners		TOTAL	
		prior CY	current CY	prior CY	current CY
commission	C	11,700	11,700	22,500	33,500
taxes, licenses, fees	TLF	1,200	1,700	2,500	2,500
other acquisition expenses	Other	3,000	3,700	7,500	6,800
general expenses	Gen	4,000	6,400	11,100	10,100
written premium	WP	68,600	66,500	119,600	154,500
earned premium	EP	55,300	75,300	126,600	141,900
loss & LAE reserves	L + LAE	26,400	31,300	61,300	60,300
unearned premium reserves	UEP	25,600	32,400	46,000	60,000
agents' balances	AB	5,800	7,800	13,900	13,100
net loss & LAE incurred	IL	41,300	40,700	79,400	73,900
finance charges not included in premium	charges	2,200	2,000	3,700	4,400
fine & penalties of regulatory authorities	penalties	500	600	1,500	1,500

Find

Current CY pre-tax profit (loss) as a percentage of policyholders' surplus for homeowners.

Let $m(x)$	=	mean value of (prior CY value of x , current CY value of x)
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Step 1: Calculate: *pre-tax profit (loss) excluding investment gain*

According to the formula provided in Odomirok, these are the components:

(+)	earned premium	75,300			
(-)	dividends to policyholders	not given			
-	incurred loss	40,700			
-	DCC incurred	not given			
-	A&O incurred	not given			
-	C	11,700			
-	TLF	1,700			
-	Other	3,700			
-	Gen	6,400			
(+)	other income less expenses	1,400	=	2,000	- 600
		12,500	<== pretax profit (loss) excluding InvGain		

Step 2: Calculate TOTAL profit (loss) by adding the investment gain (*given*)

$$= 12,500 + 12,400$$

$$= \boxed{24,900}$$

Step 3: Calculate Surplus Ratio (*because we need to allocate surplus to homeowners*)

SR	=	$m(S) / [m(L) + m(LAE) + m(UEP) + NEP_{CY}]$
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where:

$$m(S) = (150,700 + 151,800) / 2 = 151,250$$

$$m(L+LAE) = (61,300 + 60,300) / 2 = 60,800$$

$$m(UEP) = (46,000 + 60,000) / 2 = 53,000$$

$$NEP_{CY} = 141,900$$

then:

$$SR = 151,250 / 255,700 = 59.2\%$$

Step 4: Allocate surplus to homeowners

S_H	=	$SR \times [m(L_H) + m(LAE_H) + m(UEP_H) + NEP_{H(CY)}]$
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where:

$$m(L+LAE) = (26,400 + 31,300) / 2 = 28,850$$

$$m(UEP) = (25,600 + 32,400) / 2 = 29,000$$

$$NEP_{CY} = 75,300$$

then:

$$S_H = 59.2\% \times 133,150 = \boxed{78,760}$$

Step 5: Final Ratio = Step 2 / Step 4 = 31.6% **<== final answer**

Reading: Odomirok.18-IEE
Model: 2015.Spring #13
Problem Type: Pre-tax profit (loss)

(profit-loss - PRACTICE 04) a-Question

Given

		prior CY	current CY
TOTAL net investment earned	Inv	2,000	3,200
TOTAL net realized capital gains	CapG	13,100	17,600
TOTAL policyholders' surplus	S	120,900	162,900
HOMEOWNERS total investment gain	NIG _H	9,000	10,100

		homeowners		TOTAL	
		prior CY	current CY	prior CY	current CY
commission	C	15,800	13,300	25,700	29,600
taxes, licenses, fees	TLF	1,200	1,500	2,500	3,400
other acquisition expenses	Other	2,800	3,200	7,700	7,000
general expenses	Gen	4,000	4,900	10,100	10,300
written premium	WP	60,500	73,200	127,600	135,100
earned premium	EP	69,900	77,500	118,000	111,500
loss & LAE reserves	L + LAE	25,700	25,900	45,900	63,600
unearned premium reserves	UEP	31,300	29,800	58,900	68,600
agents' balances	AB	5,900	6,800	12,100	15,700
net loss & LAE incurred	IL	35,100	48,300	78,000	77,000
finance charges not included in premium	charges	2,100	2,000	3,800	3,600
fine & penalties of regulatory authorities	penalties	600	800	1,200	1,500

Find

Current CY pre-tax profit (loss) as a percentage of policyholders' surplus for homeowners.

Let $m(x)$	=	mean value of (prior CY value of x , current CY value of x)
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Step 1: Calculate: *pre-tax profit (loss) excluding investment gain*

According to the formula provided in Odomirok, these are the components:

(+)	earned premium	77,500							
(-)	dividends to policyholders	not given							
-	incurred loss	48,300							
-	DCC incurred	not given							
-	A&O incurred	not given							
-	C	13,300							
-	TLF	1,500							
-	Other	3,200							
-	Gen	4,900							
(+)	other income less expenses	1,200							
		7,500	=	2,000	-	800			
									<== pretax profit (loss) excluding InvGain

Step 2: Calculate TOTAL profit (loss) by adding the investment gain (*given*)

$$= 7,500 + 10,100$$

$$= \boxed{17,600}$$

Step 3: Calculate Surplus Ratio (*because we need to allocate surplus to homeowners*)

SR	=	$m(S) / [m(L) + m(LAE) + m(UEP) + NEP_{CY}]$
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where:

$$m(S) = (120,900 + 162,900) / 2 = 141,900$$

$$m(L+LAE) = (45,900 + 63,600) / 2 = 54,750$$

$$m(UEP) = (58,900 + 68,600) / 2 = 63,750$$

$$NEP_{CY} = 111,500$$

then:

$$SR = 141,900 / 230,000 = 61.7\%$$

Step 4: Allocate surplus to homeowners

S_H	=	$SR \times [m(L_H) + m(LAE_H) + m(UEP_H) + NEP_{H(CY)}]$
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where:

$$m(L+LAE) = (25,700 + 25,900) / 2 = 25,800$$

$$m(UEP) = (31,300 + 29,800) / 2 = 30,550$$

$$NEP_{CY} = 77,500$$

then:

$$S_H = 61.7\% \times 133,850 = \boxed{82,580}$$

Step 5: Final Ratio = Step 2 / Step 4 = 21.3% **<== final answer**