(taxes - 2018.Spring Q14) a-Question

Reading: Odomirok - Chapter 26
Model: 2018.Spring #14
Problem Type: tax-basis income

Given

policy effective date	Jan 1, CY	
loss date	Dec 31, CY	<== *reported & recorded on the same day*
payment date	Dec 31, CY+1	<== *1 year after loss occurred*

policy premium	6,500	= EP *(assume this is on a SAP basis)*
estimate of loss	7,000	= L *(undiscounted)*
investment rate	5.0%	= i
IRS discount rate:	5.0%	= d

assume there is no UEP *(Unearned Premium)*
assume the policy is not renewed

Find tax-basis income for CY and CY+1

Further Notation

TBI	Tax-Basis Income	<== *this is what we want to calculate*
TBEP	Tax-Basis Earned Premium	
InvInc	Investment Income	
PL	Paid Loss *(during year)*	
IL	Incurred Loss *(during year)*	
L^D	Losses after Discounting	

Believe it or not, this is actually an easy problem. You just have to put the right numbers into the formulas. (taxes - 2018.Spring Q14) b-Answer1

TBI	=	TBEP	+	InvInc	-	TBIL

Let's start with the calculations for CY:

TBEP is calculated by applying the 'revenue' offset:

TBEP	=	EP	+	20%	x	chg(UEP)
	=	6,500	+	20%	x	0
	=	6,500				

For InvInc, we assume the EP was invested on the policy effectve date and earns interest for 1 year.

InvInc	=	EP	x	(1 + i)	-	EP
	=	6,500	x	1.05	-	6,500
	=	325				

For IL, use the formula below and discount the loss back 1 full year from payment date:

TBIL	=	PL	+	chg(L^D)		
	=	0	+	L	/	(1 + d)
	=	0	+	7,000	/	1.05
	=	6,667				

Substitute these values into the formula for TBI given at the top:

TBI	=	6,500	+	325	-	6,667
TBI	=	158	*<== final answer for year CY*			

Now let's do the calculations for CY+1:

Following sample answer 1, we'll assume there was no more EP for CY+1: **TBEP = 0**

For InvInc, calculate the **additional** InvInc accrued over year CY+1

InvInc	=	[2 years of compunding]			-	[1 year of compunding]		
	=	[EP	x	$(1 + i)^2$]	-	[EP	x	(1 + i)]
	=	6,500	x	1.1025	-	6,500	x	1.05
	=	341						

For IL, chg(L^D) is calculated differently for CY+1 because the claim was closed and the reserve went to 0:

TBIL	=	PL	+	chg(L^D)		
	=	7,000	+	0	-	6,667
	=	333				

So

TBI	=	7.92	*<== final answer for year CY+1 (if < 0 then it's a loss)*