

FA Module 14: Employee pensions – practice problems

(The attached PDF file has better formatting.)

Actuarial pension work focuses on estimating the pension costs based on assumptions about mortality rates, terminations, retirement ages, and projected wage increases before retirement. This accounting module takes actuarial work as its input and shows the IFRS and GAAP accounting entries for the pension assets and the defined benefit liability.

Exercise 14.1: Defined benefit pension plan

A firm reporting under IFRS has a defined benefit pension plan, with a discount rate of 6%. For 20X1:

!	current service cost	5
!	past service cost	20
!	actuarial gain or loss`	0
!	benefit obligations at beginning of year	3,000
!	benefits paid	150
!	fair value of plan assets at beginning of year	2,500
!	actual return on plan assets	140
!	employer contributions	80

- A. What is the fair value of the plan assets at the end of the year?
- B. What is the remeasurement gain or loss?
- C. What is the total service cost?
- D. What is the interest cost on the benefit obligation?
- E. What is the benefit obligation at the end of the year?
- F. What is the net interest (income) expense?
- G. What is the periodic pension cost?
- H. What is the funded status at the beginning of the year?
- I. What is the funded status at the end of the year?

Part A: The fair value of the plan assets at the end of the year =

$$\begin{aligned} & \text{the fair value of the plan assets at the beginning of the year} \\ + & \text{ the actual return on plan assets} \\ + & \text{ employer contributions} \\ - & \text{ benefits paid} \\ & = 2,500 + 140 + 80 - 150 = 2,570. \end{aligned}$$

Part B: The remeasurement gain or loss (for IFRS) =

$$\begin{aligned} & \text{the actuarial gain or loss} \\ + & \text{ the actual return on plan assets} - (\text{the discount rate} \times \text{plan assets at the beginning of the year}) \\ & = 0 + 140 - 6\% \times 2,500 = (10). \end{aligned}$$

The remeasurement gain or loss is -10 , meaning that actual results are 10 worse than expected, so the net benefit cost is 10 more than expected.

Question: Is the remeasurement gain or loss an addition to or a subtraction from the periodic pension cost?

Answer: Know the logic:

- ! If the actual return on plan assets > (the discount rate × plan assets at the beginning of the year), the net pension liability decreases.
- ! If the actual return on plan assets < (the discount rate × plan assets at the beginning of the year), the net pension liability increases.

Part C: The total service cost = the current service cost + the past service cost = 5 + 20 = 25.

Question: Does financial statement reporting differ for current service cost vs past service cost?

Answer: The reporting differs for IFRS vs U.S. GAAP:

- ! IFRS reports both current service cost and past service cost in the statement of profit or loss.
- ! GAAP reports
 - ! current service cost in the income statement
 - ! past service cost in other comprehensive income
 - ! amortization of past service cost is moved each year from other comprehensive income to the income statement

Illustration: A firm has past service costs of 80 for an employee who has 10 more years of service.

- ! IFRS includes the 80 in the statement of profit or loss.
- ! GAAP includes the 80 in other comprehensive income and moves 8 a year to the income statement.

Part D: The interest cost on the benefit obligation = the discount rate × the benefit obligation at the beginning of the year = 6% × 3,000 = 180.

Part E: The benefit obligation at the end of the year =

$$\begin{aligned}
 & \text{the benefit obligation at the beginning of the year} \\
 + & \text{ the total service cost} \\
 + & \text{ the interest cost} \\
 - & \text{ the benefits paid} \\
 - & \text{ the actuarial gain or loss} \\
 & = 3,000 + 25 + 180 - 150 - 0 = 3,055.
 \end{aligned}$$

Part F: The net interest expense = the discount rate × the net pension liability at the beginning of the year =

$$6\% \times (3,000 - 2,500) = 30.$$

[Similarly, the net interest income = the discount rate × the net pension asset at the beginning of the year.]

The net pension liability at the beginning of the year =

$$\begin{aligned}
 & \text{the present value of the benefit obligation at the beginning of the year} \\
 - & \text{ the fair value of the plan assets at the beginning of the year} \\
 & = 3,000 - 2,500 = 500.
 \end{aligned}$$

Part G: The periodic pension cost =

$$\begin{aligned}
 & \text{the total service cost} \\
 + & \text{ the net interest expense (or - the net interest income)} \\
 - & \text{ the remeasurement gain (or + the remeasurement loss)} \\
 & = 25 + 30 + 10 = 65.
 \end{aligned}$$

Part H: The funded status at the beginning of the year = the net pension asset (or the negative of the net pension liability) = (500).

Part I: The funded status at the end of the year = the net pension asset (or the negative of the net pension liability) =

- the fair value of the plan assets at the end of the year
- the present value of the benefit obligation at the end of the year

$$= 2,570 - 3,055 = (485).$$

Exercise 14.2: Defined benefit pension plan

A defined benefit pension plan has the following entries for 20X1.

!	Employer contributions	80
!	Current service costs	10
!	Past service costs	30
!	Discount rate used to estimate plan liabilities	6%
!	Benefit obligation at beginning of year	5,000
!	Benefit obligation at end of year	4,800
!	Actuarial loss due to increase in plan obligation	50
!	Fair value of plan assets at beginning of year	4,500
!	Actual return on plan assets	280
!	Expected rate of return on plan assets	8%

Compute the following for 20X1:

- What is the total service cost?
- What is the interest cost on the benefit obligation?
- What are the pension benefits paid during the year?
- What is the periodic pension cost?
- What is the fair value of the plan assets at the end of the year?

Part A: The total service cost = the current service cost + the past service cost = $10 + 30 = 40$.

Part B: The interest cost on the benefit obligation = the discount rate \times the present value of the benefit obligation at the beginning of the year = $6\% \times 5,000 = 300$.

Part C: We derive the pension benefits paid during the year from the formula relating the pension obligations at the beginning and end of the year:

The benefit obligation at the end of the year =

- the benefit obligation at the beginning of the year
- + the total service cost
- + the interest cost
- the benefits paid
- the actuarial gain or loss

which implies that the pension benefits paid during the year =

- the benefit obligation at the beginning of the year
 - the benefit obligation at the end of the year
 - + the total service cost
 - + the interest cost
 - the actuarial gain (loss)
- $$= 5,000 - 4,800 + 40 + 300 - (-50) = 590$$

The actuarial *loss* in this exercise is 50, so the actuarial gain is -50 .

Part D: The periodic pension cost =

- the total service costs
- the actuarial gain or loss (or + the actuarial loss)

- + the interest expense on the benefit obligation at the beginning of the year
- the actual return on plan assets

$$= 40 + 50 + 300 - 280 = 110.$$

Question: Do IFRS and GAAP differ in the computation of the periodic pension cost? The textbook says that

- ! IFRS uses the discount rate to compute the interest expense (income) on the net pension asset or liability
- ! GAAP uses the expected return on pension plan assets

Answer: The total periodic pension cost uses the actual return on plan assets. The difference you mention is the part of the periodic pension cost that flows through the income statement (the statement of profit or loss); the rest is included in other comprehensive income.

Part E: The fair value of the plan assets at the end of the year =

- the fair value of the plan assets at the beginning of the year
- + the actual return on plan assets
- + employer contributions
- benefits paid

$$= 4,500 + 280 + 80 - 590 = 4,270.$$