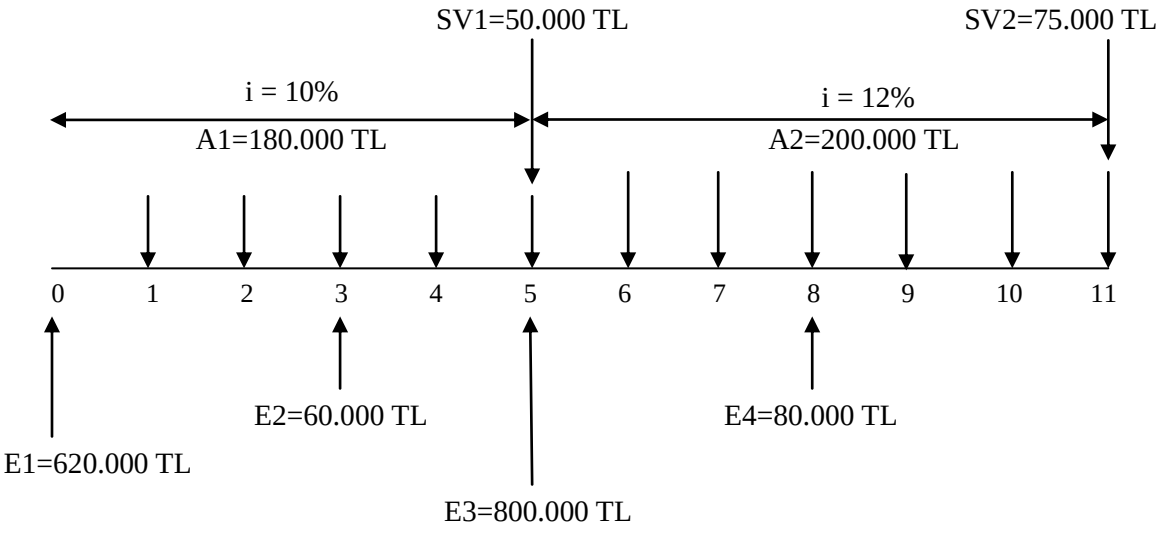
CE 231

ENGINEERING ECONOMY

OVERALL CASH FLOW EXAMPLE

A company wants to start an excavation business which will continue for 11 years. They plan to buy an excavator which will cost **620.000 TL** with a useful life of 5 years and a salvage value of **50.000 TL**. A major repair of **60.000 TL** is estimated for the end of the **3rd year**. They also expect to get an income of **180.000 TL per year**. At the end of the 5 year period, they are planning to buy a new excavator for **800.000 TL** with a useful life of 6 years and a salvage value of **75.000 TL**. The expected income from this excavator is **200.000 TL per year** during its useful life. Maintenance and repair cost for the second excavator is expected to be **80.000 TL** in the **3rd year** of its useful life. Interest rate for the first 5 years is **10%** and for the next 6 years interest rate is expected to be **12%**. Decide whether this is a good investment or not by calculating the present value of all expected expenditures and incomes.

SOLUTION:



Incomes:

P1 = A1 x (P/A, 0.10, 5) = 180.000 x 3.7908 = 682.344 TL

P2 = A2 x (P/A, 0.12, 6) x (P/F, 0.10, 5) = 200.000 x 4.1114 x 0.6209 = 510.554 TL

P3= SV1 x (P/F, 0.10, 5) = 50.000 x 0.6209 = 31.045 TL

P4= SV2 x (P/F, 0.12, 6) x (P/F, 0.10, 5) = 75.000 x 0.5066 x 0.6209 = 23.591 TL

Total present worth of incomes: P_{inc}= 682.344 + 510.554 + 31.045 +23.591 = 1.247.534 TL

Expenditures:

P1=E1= 620.000 TL

P2= E2 x (P/F, 0.10, 3) =60.000 x 0.7513 = 45.078 TL

P3= E3 x (P/F, 0.10, 5) = 800.000 x 0.6209 = 496.720 TL

P4= E4 x (P/F, 0.12, 3) x (P/F, 0.10, 5) = 80.000 x 0.7118 x 0.6209 = 35.357 TL

Total present worth of expenditures: P_{exp}= 620.000 + 496.720 + 35.357 + 45.078 = 1.197.155 TL

As expenditures are smaller than the incomes ($P_{inc} > P_{exp}$), this is a **good investment.**