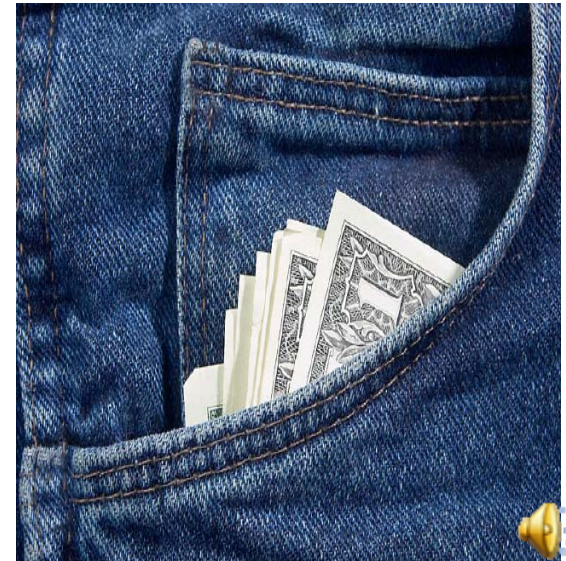


Module 6 - Measuring Long-term Liabilities

- Value of a liability is the cash that would be required to pay the liability in full today
- Money has time value
 - So most people willing to accept less today than they would if a liability were paid in the future
 - Thus liabilities to be paid in the future usually involve interest



Calculating Present value factors – Present value of a lump sum

1. Financial calculator
2. PV tables (see appendix in online Wiley text)
3. PV factor equations – personal favorite



$$\text{PV factor for lump sum} = \frac{1}{(1 + i)^N}$$

Where “i” equals interest rate and “N” equals periods



Present Value and Future Value

- Present value of \$1

- The value today of \$1 to be received or paid at some future date, given a specified interest rate



Present Value

\$90.91

Future Value

\$100

One year @ 10%



Present Value and Future Value

Future value.....\$10,000

PV factor of \$1

where $n=4$

where $i=10\%$X 0.6830

PV of payment \$ 6,830



Present Value and Future Value

Present Value in Savings.....\$ 6.830

FV factor of a \$1

where $n=4$

where $i=10\%$ $\times 1.4641$

Future Value.....\$10,000



Problem – calculating present value of a lump sum



■ Computing PV of a single Sum

1. \$15,000 due in 5 years at 8% compounded annually
1. \$25,000 due in 8 ½ years at 10% compounded semi-annually
2. \$9,500 due in 4 years at 12% compounded quarterly
3. \$20,000 due in 20 years at 8% compounded semi-annually



Problem – calculating future value of a lump sum

- Computing the FV of a single sum
 1. \$10,209 invested to earn interest 8% compounded annually for 5 years
 2. \$10,907 invested to earn interest 10% compounded semi-annually 8 ½ years
 3. \$5,920 invested to earn interest 12% compounded quarterly for 4 years
 4. \$4,166 invested to earn interest 8% compounded semi-annually for 20 yrs



Calculating Present value factors – Present value of an annuity

PV factor for an annuity or a stream of equal cash flows

This part of the expression is essentially the present value factor of a lump sum



$$\text{PV factor for an annuity} = \frac{1 - \frac{1}{(1+i)^N}}{i}$$

Where “i” equals interest rate and “N” equals periods



Present Value of an Annuity

Amount of the annual payment...\$10,000

PV factor of an annuity

where $n = 10$ payments

where $i = 12\%$

X5.6502

Present Value

\$56,502



Problem – calculating present value of an annuity

- What is the present value (rounded to the nearest dollar) of an annuity of \$8,000 per year for five year if the interest rate is:
 1. 8% compounded annually
 2. 10% compounded annually

