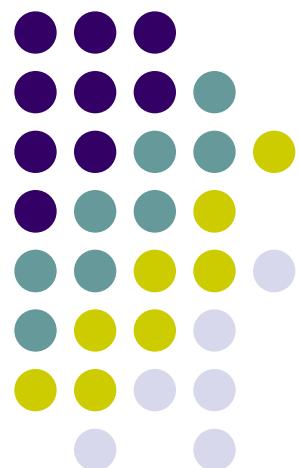


# Unit E: Understanding the Use of Money and Obtaining Credit

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Lesson 1: Understanding the Value of Time and Money





# Terms

- Compound interest
- Compounding
- Discounting
- Loan
- Interest rate
- Simple interest
- Time value of money



# Time Value of Money

- I. The ***time value of money*** means that the value of an Afghani at one point in time is higher than the value of the same Afghani at a different point in time.
  - A. An ***interest rate*** serves as the mechanism for comparing the time value of money.
    - 1. Interest rate is the exchange price between the current and future value of the Afghani.
    - 2. Interest rates represent risk and inflation.



# Time Value of Money

3. Interest is paid in return for using money.
  - a. Interest is paid on *loans*. A loan is when money is borrowed by a business or individual from an institution or another individual. When money is borrowed from a bank, non-governmental organization (NGO) or other institution interested is paid by the borrower to the institution.
  - b. When money is placed into savings at a bank or other institution, interest is paid by the institution to the person who placed it in savings.



# Time Value of Money

- B. Another way to view the time value of money is that 1000 Afghani may purchase more or less items at different points in time.
- Give Examples



# Compounding

II. ***Compounding*** calculates the future value of money by considering its present value.

- A. ***Compound interest*** refers to interest being added to the principal. As the principal increases, so do the interest payments.  
Compounding is the process of describing the calculation of compound interest.
- B. ***Simple interest*** means that only the original principal earns interest over the life of the transaction.



# Compounding

1. To determine the amount of money earned through simple interest, use the following equation:  $FV = PV + n(PV \times i)$ , where  $FV$  = future value,  $PV$  = present value,  $n$  = number of conversion periods, and  $i$  = interest rate.



# Compounding

2. As an example, if an institution gave a 5-year loan for 10000 AFS and the institution charged 3% simple interest on the loan, how much money would they receive upon full payment of the loan including interest?

a. Answer:

$$\begin{aligned} FV &= PV + n(PV \times i) \\ &= 10000 + 5(200 \times 0.03) \\ &= 10000 + 5(6) \\ &= 10000 + 30 \\ &= 10030 \text{ AFS} \end{aligned}$$



# Compounding

- C. ***Compound interest*** is means that the sum of the original principal and any previous interest earned earns interest over the life of the transaction.
1. To determine the amount of money earned through compound interest, use the following equation:  $FV = PV \times (1 + i)^n$ , where  $FV$  = future value,  $PV$  = present value,  $n$  = number of conversion periods, and  $i$  = interest rate.



# Compounding

2. An example is if an institution gave a 5-year loan for 10000 AFS and the institution charged 3% compound interest on the loan, how much money would they receive upon full payment of the loan including interest?

a. Answer:

$$\begin{aligned} FV &= PV \times (1 + i)^n \\ &= 10000 \times (1 + 0.03)^5 \\ &= 10000(1.03)^5 \\ &= 10000(1.159) \\ &= 11590 \text{ AFS} \end{aligned}$$



# Discounting

III. ***Discounting*** compares the present value of money that is received in the future.

- A. The discount is a result of the investor waiting to receive the future payment rather than receiving it now and investing it in an alternative way.
  - 1. To determine the present value of money earned in the future use the following equation:  
 $PV = FV(1 + i)^{-n}$ .

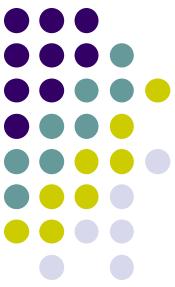


# Discounting

2. As an example, if farmland near Helmand has been selling for 10000 AFS per hectare, and has been increasing at the rate of 5% per year, what was its price 6 years ago?

a. Answer:

$$\begin{aligned} PV &= FV(1 + i)^{-n} \\ &= 10000(1 + .05)^{-6} \\ &= 10000(1.05)^{-6} \\ &= 10000(0.746) \\ &= 7460 \text{ AFS per hectare} \end{aligned}$$



# Review

- What is the time value of money?
- What is compounding?
- What is discounting?