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What Is A Bond?

A bond is a debt instrument, whereby one party lends money to another party. The lender is called the buyer of the bond and the borrower is called the seller or issuer of the bond. The buyers of bonds therefore lend money to the issuers. This is the key difference between a bond and a stock. A stock represents an ownership in the company issuing the stock whereas a bond is a loan to the company. A bondholder does not take the risks (nor the rewards associated with the risks) of a stockholder in a company. In return for the loan, the issuer promises to pay the bondholder a predetermined rate of interest during the life of the bond and to repay the face or par value of the bond (the principal) when it matures, or comes due.

Who Issues Bonds?

Bonds can be issued by governments to finance public expenditure, and are called "**Government Bonds**". Corporations also issue bonds to finance business expansion, purchase of equipment and build facilities, and are called "**Corporate Bonds**".

Basic Terms of Bonds:

• ***Maturity:***

One of the key investment features of any bond is its maturity. Bond maturity tells you when you should expect to get your principal back and how long you can expect to receive interest payments. Bond maturities range from one year to 30 years. There are three groups of bond maturities:

- Short term notes (bonds)☐ Maturities of 1-4 years
- Medium-term notes/bonds☐ Maturities of 5-10 years
- Long-term bonds☐ Maturities of 10-30 years

• ***Types of Coupons:***

Bonds pay interest that can be "Fixed", "Floating" or "Payable at Maturity". **Fixed Rate Bond** carry an interest rate that stays fixed until maturity and a percentage of face or par value. Interest (coupon) is paid annually or semiannually or quarterly.

Example 1:

- A bond with a par value: L.E 1,000
- Fixed coupon: 8% paid annually
- Maturity: 10 years
- Interest earned each year = L.E 1000 * 8% = L.E80.

Therefore the investor will earn L.E 80 each year until the bond matures.

Floating Rate Bonds have variable interest rates. Coupons are adjusted or reset periodically in line with changes in a base interest rate index such as the interest rate of Treasury bills or LIBOR or discount rate. Such bonds offer protection against increase or decrease in the market interest rates.

Example2:

- A bond with a par value: L.E 1000
- Floating rate coupon: 91 days Treasury bill rate + 0.75% paid quarterly.
- Maturity: 10 years

If the 91 days Treasury Bills earns 8.89%, then the quarterly interest paid will be L.E 1000(8.89%+0.75%)*91/365= L.E 24.3*

Since the 91 days Treasury bill rate change every three months, the value of the coupon also changes every three-months.

Zero Coupon Bonds have no periodic interest payments. Instead, they are sold at a deep discount to face value and are redeemed for the full face value at maturity which is equal to the purchase price plus the total interest earned reinvested semiannually at the original fixed interest rate.

Example 3:

Bonds worth L.E 20,000 that will mature in 20 years can be purchased now at L.E 5,050. At the end of the twenty years period, the investor will receive L.E 20,000. The difference between the L.E 20,000 after twenty years and L.E 5,050 now represents the interest earned, based on an compounded semiannually interest rate of 7% for 20 years.
The formula used to arrive at this result is indicated in the Appendix.

- ***Redemption Features:***

While the maturity period is a good guide as to how long the bond will be outstanding, certain bonds have structures that can substantially change the expected life of the investment.

Some bonds have a "**Call Option**" which gives the issuer the right to redeem (call) the bond and pay the principle amount at a specified date before maturity to the investor.

Bonds are commonly "**called**" when the prevailing interest rates have dropped significantly since the time the bonds were issued. Because the call option puts the investor at a disadvantage, callable bonds carry higher yields than non-callable bonds. As further inducement the issuer often sets the call price (the price investors must be paid if the bonds are called) higher than the principal (face) value of the issue. **In Egypt the call price is set equal to the par or the face value.**

• Some bonds have a "**Put Option**" which gives the investor the option of selling the bond to the issuer at specified time prior to maturity. Investors typically exercise this option when they need cash for some reasons or when interest rates increased compared to when the bonds were issued. Investors can then reinvest the proceeds at a higher interest rate. **This feature is not available in Egypt.**

• ***Seniority:***

To appreciate seniority one must focus on a balance sheet and the three major components thereof, namely, Assets, Liabilities and Net Worth (or Shareholders' Equity). A balance sheet is in balance when Assets = Liabilities + Net Worth. A company's liabilities are defined as funds it owes to other entities it transacts with and the net worth is defined as funds it owes to its shareholders. The concept of seniority arises in the event that the company is in the process of being closed down (for whatever reason). In such an event, and according to the equation above, the value derived from the sale of the company's assets are used to pay the amounts owed to creditors (i.e. lenders to the company) and its shareholders. The creditors are, however, given the preference or **seniority** over the shareholders of the company. As holders of bonds issued by a company are one of a class of creditors of the company, they have **seniority** over the shareholders in the event of liquidation.

• ***Price:***

The price paid for a bond is based on a whole host of variables, including interest rates, supply and demand, credit quality and maturity.

Newly issued bonds normally sell at or close to their face value. Bonds traded in the secondary market, however, fluctuate in price in response to changing interest rates.
When the price of a bond increases above it face value, it is said to be selling at a premium. When a bond sells below face value, it is said to selling at a discount. Finally when the price of a bond is equal to its face value, it is said to be selling at par.

The term clean price used in context of a bond is the price at which a bond can be purchased, in the open market, and is net of the accrued interest. In other words, after initial issuance of a bond, the seller should be paid interest at the coupon rate for the period that the seller has held the bond. If the price does not include the accrued interest, it is called a clean price and implies that the buyer must pay the seller not only the clean price of the bond but the interest accrued. Conventionally, most markets where bonds are traded quote clean prices.

• ***Yield:***

It is the tool used to measure the return of one bond against another. It enables the investor to make an informed decision about which bond to buy. Yield is the return you actually earn on the bond based on the price you pay and the interest you receive.

They are basically two types of bond yields you should be aware of:

1. Current yield: is the annual return (in L.E) on the principle of the bond, and is derived by dividing the interest on the bond by its purchase price.

Example 4:

- A bond with a par value L.E 1000
- An annual fixed coupon 8% of par (L.E 80)
- Purchasing price L.E 1000
- The current yield is 8% (80/1000).

If you bought the same bond at L.E 900 and the interest rate is (8%), the current yield will be 8.89% or (80/900).

2. Yield to maturity: is considered more meaningful, tells you the total return you will receive by holding the bond until it matures. Yield to maturity equals all interest payments you receive from the time you purchase the bond until maturity plus any gain (if you purchased the bond below its par value) or loss (if you purchased the bond above its par value).

Example 5:

- A bond with a par value: L.E 1000
- Annual Coupon 10% (C) = L.E 100
- Maturity 10 years
- Purchase price = L.E 900

The yield to maturity (Y) is calculated to be 11.75%. The formula used to arrive at this result is indicated in the Appendix.

Yield to maturity (Y) is the rate that equates the price of the bond (L.E900) with the sum of all the present value of coupon payments plus the present value of the face value of the bond. Yield to maturity (Y) can be calculated by "**Trial and Error**" technique or by "**Special Calculators**" or by "**Present Value Tables**".

- ***The Relation between The Price of A Bond and Its Yield:***

From the time a bond is originally issued until the day it matures, its price in the market place will fluctuate according to changes in the market conditions and/or credit rating. The constant fluctuation in price is true of individual bonds and true for the entire bond market, with every change in the level of interest rates typically having an immediate and predictable effect on the prices of bonds. There is an inverse relationship between the bond price and the bond yield. The higher the price, the lower the yield and the lower the price, the higher the yield.

• ***The Relation between Interest Rate Paid on A Bond and Its Maturity:***

The longer the maturity of a bond, the greater the risk that its price will fluctuate along the way and investors will expect to be compensated for taking this extra risk. Consequently, the longer the maturity, the higher the yield on the bond. The shorter the maturity, the lower the yield on the bond.

Example 6:

Bond (X) with **8 years** maturity is expected to pay an annual fixed coupon of **11%**, while Bond (Y) with **6 years** maturity is expected to pay an annual fixed coupon of **9.5%**.

The relation between the yield and maturity can best be seen by drawing a line between the yields available on securities of the same credit rating and different maturities, from shortest to longest. Such a line is called a"**yield curve**".

• ***The Yield Curve:***

The yield curve can be drawn for Egyptian Treasury bond issues, which have different maturities and bear the same credit rating (the country rating). By looking at a yield curve, you can gain a sense of where the market perceives interest rates to be heading.

A normal yield curve would show a fairly steep rise in yields between short and intermediate term issues and less pronounced between intermediate and long term issues. That is as it should be, since the longer the investor's money is at risk, the more the investor should expect to earn. If the yield curve is "**steep or upward**", it means that the yields on short-term securities are relatively low compared to long-term issues.

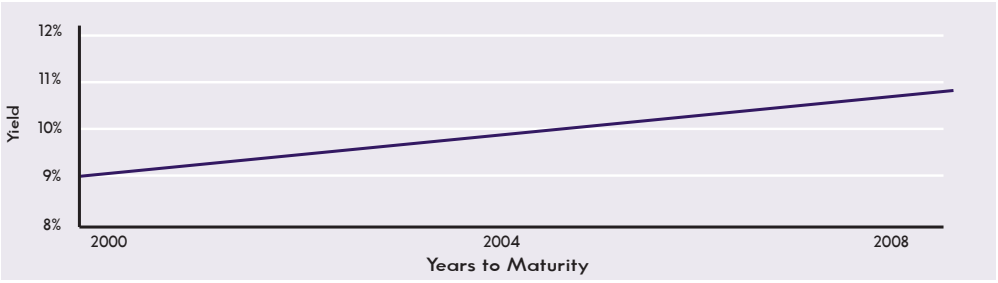

Figure 1

Why Invest in Bonds?

• ***Diversity:***

People like to maintain a diversified investment portfolio consisting of bonds, stocks and cash in varying percentages, depending upon individual circumstances and objectives. With regards to fixed income investments, investors can choose amongst bonds with different maturities, yields and credit ratings. The diversity of fixed income securities provides investors with a wide variety of choices to tailor investment to their individual financial objectives.

• ***Dependable Income:***

Bonds have a predictable stream of income (coupon payments) and repayment of principal. Many people invest in bonds to preserve and increase their capital or to receive a dependable stream of income.

• ***Safe Investment Instrument:***

Bonds are evaluated and assigned a credit rating based on the issuer's credit history and the ability to discharge its financial obligations. The higher the rating, the safer the investment (the lower the risk). Investors normally invest in bonds to preserve the principal paid or par value.

• ***Attractive Yields:***

People may choose to invest in corporate bonds because they may offer a higher yield than comparable government bonds. The high yield is usually accompanied by higher risks because it is assumed that non-governmental entities are not as sound financially as the government that governs them.

Credit Quality

Bond choices range from the highest credit quality i.e. Egyptian Treasury Bonds, which are backed by the full faith and credit of the Egyptian government to bonds that are below investment grade and are considered speculative. Since a bond may not be redeemed, or reach maturity for years, credit quality is an important consideration when you are considering a fixed-income investment. When a bond is issued, the issuer is responsible for providing details as to its financial soundness and creditworthiness. This information is contained in a document known as an "**Offering Document**", prospectus or official statement, which will be provided to the investors. But how can one know whether the company or government entity whose bond is being purchased are buying will be able to make its regularly scheduled interest payments in 5, 10, 20 or 30 years from the day of investment?

Rating agencies assign ratings to many bonds when they are issued and monitor developments during the bond's lifetime. Securities firms and banks also maintain research staff that monitor the ability and willingness of the various issuers to make their interest and principal payments when due. A broker/advisor can supply the investor with current research on the issuer and on the characteristics of the specific bond being considered.

In the Egyptian bond market, any corporate bond must be assigned a credit rating prior to its issuance. Currently, they are six rating agencies authorized to provide ratings for corporate bonds: Standard & Poor's, Moody's, Nile Securities Rating, Fitch IBCA, DCR-FINBI/Duff & Phelps and Thomson Watch Bank.

Each of the above agencies assigns its credit ratings based on an in-depth analysis of the issuer's financial condition and management, economic and debt characteristics, and the specific revenue sources securing the bond. The highest ratings are AAA (S&P, Fitch IBCA, DCR) and Aaa (Moody's). Bonds rated in the BBB category or higher are considered investment-grade; securities with ratings in the BB category and below are considered "high yield" or below investment-grade.

Credit Ratings

Credit Risk	Moody's	Standard & Poor's	Fitch IBCA	DCR
Investment Grade				
Highest Quality	Aaa	AAA	AAA	AAA
High Quality (very strong)	Aa	AA	AA	AA
Upper medium grade (strong)	A	A	A	A
Medium grade	Baa	BBB	BBB	BBB
Non Investment Grade (High Yield Bonds)				
Somewhat speculative	Ba	BB	BB	BB
Speculative	Ba	B	B	B
Highly speculative	Caa	CCC	CCC	CCC
Most speculative	Ca	CC	CC	CC
Imminent default	C	D	D	D
Default	C	D	D	D

Understanding Risk And Return

Every investment choice involves some degree of risk. Thus, the investors' financial health depends on understanding what the risks are and knowing how to balance them against the potential rewards. In theory, there is a direct relationship between risk and return. This means that the higher the risk one takes, the higher the return one should expect. There are some risks that investors

must consider when investing in bonds and must make sure that they are compensated the appropriate return for that risk. Here are the various types of financial risks that the bond investors must consider:

Inflation Risk: The risk that the value of assets or income erodes as inflation reduces the value of the country's currency owing to the non-availability of market prices.

Interest Rate Risk: the risk that fixed-rate debt instruments (eg. bonds) will decline in price (and value) as a result of rising interest rates.

Liquidity Risk: the risk that an investor takes when he/she invests in an instrument that does not allow a timely exit.

Repayment (Credit) Risk: The possibility that a borrower will not repay an obligation as promised.

Reinvestment Risk: The risk that the investor will not be able to reinvest the capital at favorable rates.

How to Select A Fixed Income Investment?

With a better understanding of the bond market and its range of securities, the investor should now feel more comfortable about choosing fixed income investments. By following the step-by-step guidelines, the investor will be able to set up a portfolio plan and pinpoint the kinds of fixed income security appropriate for his/her investment goals.

Step 1: ***Decide What Percentage of The Portfolio Will Be Invested in Fixed Income Securities.*** The first thing that an investor must do is to determine his/her risk profile. This means that the investor must quantify his/her appetite for assuming risk. An investor can be (1) **risk averse** i.e. does not wish to take risks with his/her capital (2) **aggressive** i.e. willing to assume risks with his/her capital and (3) **balanced** i.e. midway between risk averse and aggressive. Once the risk profile is decided, the investor must construct a portfolio to reflect that profile. A risk averse portfolio will have a bias towards cash and fixed income investments which provide income without much fluctuation in price. As an example, the **risk averse** investor would probably have a portfolio consisting of 50% cash equivalent, 30% fixed income and 20% in stocks. Similarly, an **aggressive** investor would probably have 10% in cash equivalents, 20% in bonds and 70% of his/her portfolio in stocks. A **balanced** portfolio could have 40% of the portfolio in cash, 30% in bonds and 30% in stocks (The percentages used here are for illustration only).

Step 2: ***Determine The Specific Investment Objectives for The Fixed Income Portion of The Portfolio.*** Once a decision is made as to how much of the portfolio will be devoted to fixed income investments, the investor is ready to define specific investment objectives within the fixed income family. With a clear idea of what is desired or targeted, the investor will be better able to choose the appropriate type of securities. As a guide, please check the statement(s) below that best applies.

- Interested in receiving **current income** from investments.
- Want an investment that will help **diversify portfolio**, to cushion against sudden swings in the market.
- **Saving to meet a specific future goal** and wish to have a certain specific amount when needed.
- Need a **temporary investment** that is stable, till decision on next major investments.

Step 3: ***Match Investment Objectives to The Appropriate Kind of Securities.*** Using the investments alternative worksheet, identify the fixed income investments that are appropriate.

Investment Alternative Worksheet

	Short Time Horizon (Less Than 3 Years)		Long Time Horizon (over 3 Years)	
Your Investment Objectives	**Appropriate Investment**	**Amount you wish to invest**	**Appropriate Investment**	**Amount you wish to invest**
Current Income	Treasury Bills or Notes	L.E	Corporate Bonds	L.E
	Short Term Bond Funds	L.E	Bonds Funds	L.E
			Treasury Bonds	L.E
			Housing Bonds	L.E
Diversification	Treasury Bills	L.E	Corporate Bonds	L.E
	Short Term Bond Funds	L.E	Bonds Funds	L.E
	Short Term Corporate Bonds	L.E	Treasury Bonds	L.E
			Housing Bonds	L.E
			Zero Coupon Bonds	L.E
Saving to meet a specific goal	Treasury Bills	L.E	Zero Coupon Bonds	L.E
	Zero Coupon Bonds	L.E		
Temporary investment for stability and liquidity	Treasury Bills	L.E		
	Short Term Bond Funds*	L.E		

L.E = Egyptian Pounds

***Bond funds** are operated by invested companies and managed by professional investment advisors. The funds pool money from many individual investors to purchase a variety of bonds. As a fund shareholder, the investor owns a fractional interest in every security held by the fund.
Bond funds are classified by the types of the securities they purchase i.e., (government and corporate bonds). Depending on the investment goal of each of them.

Step 4: ***Allocate Amounts among The Investments Chosen.*** Refer to portfolio plan from step #1, selecting the Egyptian pound amount you have entered in the "Desired allocation" column. Divide this figure among the fixed income investments checked on the investment alternatives worksheet.

Egyptian Bond Market

The Egyptian bond market is composed of government bonds (including treasury, housing, development bonds) and corporate bonds. The bond market is characterized by low activity in comparison with the stock market.

An amendment to the Executive Regulations of the Capital Market Law No. 95/1992 was added in 1998 regarding bond trading in the Egyptian market. The amendment allows 24 hour, off the exchange trading of bonds by specialized bond dealers. The authorized bond dealers must have a minimum issued capital of LE20 million and fully paid capital of LE 10 million. Bond dealers must always maintain a minimum net capital of LE5 million or 15% of total obligations. Bond dealers can purchase bonds for their account or on behalf of their clients. Bond dealers are also obliged to maintain strong internal auditing rules.

Bond dealers must notify the Capital Market Authority (CMA) daily of the total market value of the bonds it holds in its portfolio.

Bond dealers must disclose to their clients, in writing, and before executing any transaction the settlement and clearing instructions, the latest credit rating of the bonds being executed, in addition to the commission the company will charge.

Bond dealers must sign an agreement with their clients, comprising the nature of dealing between them, and specify all rights and obligations of the two parties. The agreement must be written on forms provided by the dealers and should be forwarded to the (CMA). These forms must include the following:

- Determination of the client's investment purposes.
- Name of the client's representative.
- Required information to be provided by the bond dealer to inform the clients, specifically with regard to the credit classification of the bonds.
- Name of the bank or custodian or trustee where each party keeps its funds, property and bonds.
- Methods of communication and correspondence between bond dealers and their clients.

CASE trading system has a bond module that allows calculation accrued interest on bonds & deduct it from the gross price to quote bonds in clean price and in denominations of 100 and as a percent. This will undoubtedly facilitate the comparison of bond prices. Also the trading system will facilitate bond trading by calculating the yield to maturity for each bond, which will help dealers to quote their buy and sell orders either in percentages or yield terms.

In addition, the implementation of the bond module of the trading system will enhance confidentiality of the transactions that are executed, because it allows bond dealers to deal directly through the phone and then execute their deals later on the trading system, which guarantees anonymity.

The new system will therefore help activate the bond market. Both, prospective and current investors, are expected to increase their trading activity, which will in turn increase bond-trading vis a vis equity trading in the Egyptian market.

Appendix

- The computation for Example 3 is as follows:

$$FV = PV(1 + r/n)^{r*n}$$

$$FV = L.E.5{,}050\ \{1+(0.07/2)\}^{20*2}$$

$$FV = L.E.20{,}000$$

FV is the future value, PV is the present value, r is the interest rate, n is the number of periods.

- The computation for Example 5 is as follows:

$$\text{Price} = \frac{C}{(1+Y)} + \frac{C}{(1+Y)^2} + \frac{C}{(1+Y)^3} + \ldots\ldots + \frac{C}{(1+Y)^{10}}$$

$$900 = \frac{100}{(1+Y)} + \frac{100}{(1+Y)^2} + \frac{100}{(1+Y)^3} + \ldots\ldots + \frac{100}{(1+Y)^{10}} + \frac{1000}{(1+Y)^{10}}$$