

investing in

BONDS

*a guide to
investing in bonds*



PROMOTING *Smart* INVESTMENT

CMDA

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introduction

It used to be that investing meant putting your money in the bank or buying some property. Today, investors are faced with a growing range of products to choose from. You can now invest in shares, units in a unit trust, fixed income securities and other products.

In this booklet, we will cover bonds, which are a type of fixed income security. They are also called debt securities. We will look at:

- What bonds are and how they work
- Why bonds may be a good investment for you
- The risks of investing in bonds
- How are bonds priced
- How to go about investing in bonds

What are Fixed Income Securities?

These are investments where the investor lends money to a borrower (typically government statutory authorities or companies) for an agreed interest rate and period. Interest is usually paid in regular instalments. Bonds are a common type of fixed income security. In fact, the two terms are often used interchangeably.

what are bonds?

A bond is a type of investment where the investor (the *bondholder*) lends money to a borrower e.g. government, statutory authorities or a company¹ (the *issuer*) which issues the bond.

As proof that the issuer owes money to the bondholder, the bondholder gets a bond certificate from the issuer. This bond can be sold to another investor much like shares.

In some ways, a bond is similar to a bank loan. The issuer pays the bondholder an agreed interest rate. Usually interest is paid in equal amounts (called *coupons*) throughout the life of the bond. The bond is for an agreed term (*time period*) which is always more than one year. At the end of the term, the issuer pays the amount borrowed back to the bondholder.

Why Does a Company Borrow?

Companies need to raise money from time to time to expand their business or to finance their day-to-day operations. Issuing bonds is one way to do this. Other options include borrowing from a bank or raising capital by issuing new shares to investors.

Bond Example

To help you understand the basic terms, a diagram of a bond which shows the different cash outflows and inflows for the bondholder is presented here.

In this example, the price of the bond is \$100. The bondholder is lending \$100 to the issuer. The bond has a term of 5 years. This is the life of the bond.

The face value is \$100. This is the amount the investor receives at the end of 5 years.

The coupon rate is 6% paid each year. This is the interest rate. The bondholder receives a \$6 coupon at the end of each year.



Identifying Bonds

Bonds are normally identified by three features: (i) the issuer (ii) the coupon rate and (iii) the maturity. For example a 7% coupon bond issued by the Fiji Electricity Authority maturing on 23 September, 2010 would be identified as a "FEA, 7%, 23/09/10."

A "FDL, 6%, 12/03/05" bond is a bond issued by Government (FDL stands for "Fiji Development Loan") which has a maturity of 12 March 2005 and a coupon rate of 6%.

¹ For simplicity, we refer mainly to companies as issuers of bonds. However, the predominant issuers of bonds in Fiji include the Government and statutory authorities. Recent examples of issuers in Fiji are the Government, Fijian Holdings Ltd, Fiji Pine Ltd, the Housing Authority of Fiji and the Fiji Development Bank.

key features of bonds

Let's take a look at some of the key features of bonds.

Issuer	The borrower that issues a bond. The issuer borrows money from investors (called bondholders). Recent issuers in Fiji include Government, statutory authorities and companies such as Fijian Holdings Ltd, Fiji Electricity Authority and Fiji Development Bank.
Bondholder	An investor in bonds. A bondholder may be an individual person, a company or an institution. By investing or buying bonds, you are lending money to the issuer and will receive a regular interest payment.
Purchase Price	<p>The amount a bondholder pays for a bond. In our example, the price is \$100. The purchase price (also known as the <i>gross price</i> or <i>dirty price</i>) is the total amount an investor pays for a bond. It comprises the number of bonds that an investor buys times the price paid for the bond.</p> <p>The purchase price includes 2 components:</p> <p>Capital price which is the price of the bond based on a number of variables including interest rates, maturity date, ranking and credit quality.</p> <p>Accrued interest on the bond which is the amount of interest accumulated on the bond since the last coupon payment. Because interest is paid at regular intervals the bond price increases daily by the amount of interest accruing.</p>

Face Value	<p>The amount paid to the bondholder at the end of the period (also <i>par value</i>). Bonds can be issued at different face values. In our example, the face value is \$100, which is the same as bonds recently issued in Fiji.</p> <p>Note that the face value and the price a bondholder pays for a bond can be different. We will discuss why this could be the case in the section "Understanding Bond Pricing".</p>
Coupon and Coupon Rate	<p>The coupon rate is the rate of interest paid on a bond. For the typical bond, interest is paid in equal amounts at regular intervals (e.g. every six months). These are called coupons. In our example, the coupon rate is 6% payable annually. This means that each year the bondholder receives a \$6 coupon (6% x \$100 face value).</p> <p>The coupon rate is set by the issuer. The issuer tries to choose a rate that will be attractive to investors.</p> <p>Coupon rates may be <i>fixed</i> or <i>floating</i>. Fixed rates do not change during the life of the bond². Floating rates allow periodic adjustments which take into account prevailing market conditions. Fixed rate bonds generally have six-monthly coupon payments while floating rate bonds often pay interest quarterly.</p>

Floating Rate Example

A bond's coupons are linked to the bank bill rate, the interest rate paid by banks on bills of exchange. If the coupon rate is set at "3% + the bank bill rate" and the bank bill rate is 2%, the coupon rate will be adjusted to 5%.

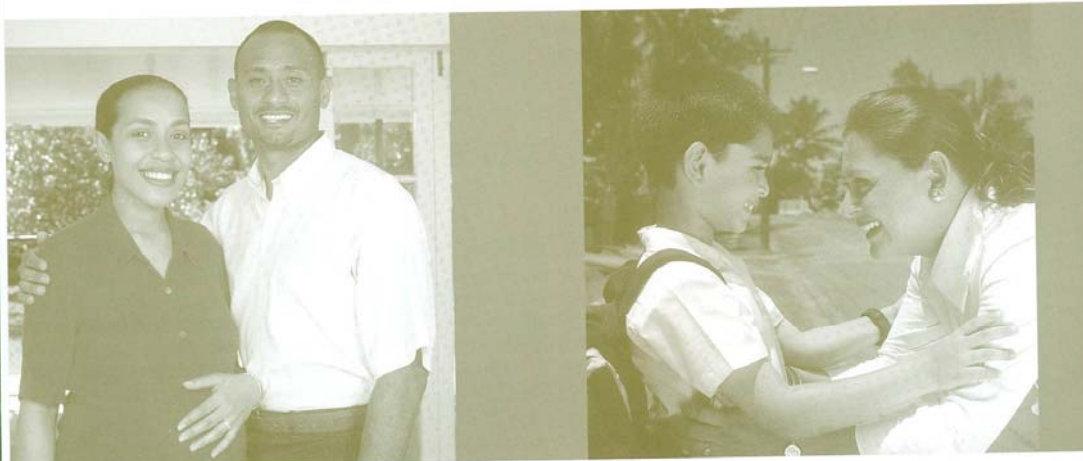
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Term or Maturity	This is the life of a bond. At the end of the term, the last coupon and the face value of the bond is paid to the bondholder. The bond is said to have matured. The term for bonds in Fiji generally ranges from 1 year to around 15 years.
Embedded Options	Some bonds give either the issuer and/or the bondholder the option to take some action against the other party under certain circumstances. These are called embedded options. Examples include call features and conversion rights.
Yield	This is a measure of the return that a bondholder makes on a bond. The most common yield measure is <i>yield to maturity</i> ³ which measures the rate of return on a bond assuming it is held to maturity. The term "yield" in this booklet refers to "yield to maturity". It is the most useful indicator of value because it enables comparisons between different securities and other interest rate products. The higher the yield, the higher the rate of return.
Security	An issuer may "secure" the bond on some of its assets, like property or shares it owns. Thus if the issuer defaulted, bondholders will have the rights to the proceeds from the sale of the assets. Security for a bond reduces the risk to the bondholders and therefore makes the bond more attractive to investors.

Examples of Embedded Options

- **Call option** – This allows the issuer to pay back ("call") the bond early. For example, a bond may mature on 31 December 2005 but allow the issuer to "call" the bond at any time after 31 December 2003. Generally the issuer must advise investors and gazette the call date three months in advance. Call options are an advantage for the issuer because when interest rates fall, the issuer can call the bonds and refinance by issuing new bonds at a lower interest rate (i.e. coupon rate).
- **Conversion rights** – This gives a bondholder the option of converting their bondholding into shares of the issuer. The time at which conversion can take place depends on the terms of the particular bond. For example, say you own \$2,000 worth of bonds issued by Company X and the terms of conversion say you can convert to ordinary shares at \$2 a share. You can either convert your \$2,000 into 1,000 ordinary shares of Company X or withdraw your \$2,000 when the bond matures. Conversion rights are an advantage to the bondholder. In our example, the bondholder can choose to convert to ordinary shares at \$2 if they think the shares are really worth say \$2.10.

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why invest in bonds?

Bonds can be a good investment for several reasons. Let's take a look at some of the benefits.

- **Regular income** – The coupons provide a steady and regular income stream. This is useful for investors who rely on their investments to help pay their day-to-day expenses.
- **Potential for profit returns** – If a bond increases in value, the bondholder could make a profit by selling the bond. A bond's value could increase for various reasons. For example, if interest rates in Fiji decreased in general, a bond with a fixed coupon rate would become more attractive. The price other investors are prepared to pay for the bond is likely to increase.
- **Relatively low risk** – Bonds are basically a debt which the issuer has a legal obligation to repay. This means that bondholders generally rank ahead of shareholders in priority. For example, if the issuer became insolvent and went into receivership, bondholders and other people owed debts would be repaid first before ordinary shareholders.
- **Diversify your investments** – Adding bonds to your other investments can reduce your total investment risk. This is called diversification which can be described as "not putting all your eggs in one basket". By spreading your money over several investments, you reduce the impact if one of your investments ran into trouble.
- **Ease of buying and selling** – Buying and selling bonds can be conveniently done if the bonds are actively traded on the stock exchange by licensed brokers and dealers. The CMDA can give you their names. You can choose to sell only part of your total bond holding.
- **Preserve the value of your capital** – while you wait for new investment opportunities.
- **Improve the return** – on your capital typically held as cash.

BENEFITS

Regular Income
Potential growth
Lower risk
Diversification
Easy to trade

RISKS

Interest rate risk
Call risk
Credit risk
Liquidity risk
Reinvestment risk
Political/economic risk

are bonds suitable for you?



Bonds can be a good investment but they won't suit everyone. This section gives some general points to help you decide if bond investment suit you.

As bonds pay regular coupons, they can be a good option for investors who want to receive regular income.

Since in the short-term, interest rate changes can cause bond prices to fluctuate, bonds are generally more suited to longer-term investors. By holding bonds until they mature, the returns are more certain because the coupons and face value are known. Compare this with selling prior to maturity - the risk here is that you could make a loss (for example, the bond's price could be less than what you originally paid).

Ultimately any investment must match your risk-return preferences and particular circumstances. Carefully consider relevant information on the bonds. This may include:

- The prospectus for the original bond issue;
- Historic South Pacific Stock Exchange (SPSE) and Reserve Bank of Fiji (RBF) bond trading information. Check with the SPSE, RBF, CMDA or your broker; and
- Information on the issuer itself such as its profitability record, quality of its products and services, quality of its staff and management and future plans for growth. This can be found in the company's annual report. Remember that a strong company or institution is less likely to default in paying you back.

Please consult your broker or investment adviser if you are unsure.



What is Risk?

Risk can be defined as the likelihood that investment returns will vary over time. The greater the chance that returns will be higher or lower than expected, the higher the risk. Investments with greater risk must promise higher returns if investors are to be attracted to them.

the risks of investing in bonds

Like any investment, bonds are not free of risk. Good investors consider and understand the risks of prospective investments before they make investment decisions. Let's take a look at some of the risks that apply to bonds.

- **Interest rate risk** – Interest rates and bond prices move opposite to each other. Take the case of a bondholder who sells a bond during periods of rising interest rates. An increase in interest rates means the bond's fixed coupon rate is less attractive. In other words, a buyer will expect to pay less for a bond with a not-so-attractive coupon rate. As a result the bondholder could end up selling the bond at a lower price and incur a loss.

Some bonds have even lower risk due to the resources of the issuer. For example Government bonds are regarded as very low risk because Government's ability to repay its debts is backed by its vast resources and ability to raise money through taxes.

- **Call risk** – Because bonds with a call option can be repaid before maturity, bondholders cannot be certain of the timing of the cashflow and this can make the pricing bond tricky.
- **Credit risk** – This is the risk that the issuer may be unable to pay bondholders. It depends on the quality of the issuer. A large, profitable and well-managed

company is less likely to run into financial problems and default on its payments than a company with a history of losses or poor management.

- **Liquidity risk** – This is the risk that a bond cannot be easily sold at, or close to, its market value. High liquidity risk means a bondholder needing money may have problems cashing in their bonds. This can be measured by the difference (spread) between the prices at which investors want to buy and sell. Bonds with smaller spreads tend to have lower liquidity risk.
- **Re-investment risk** – A bondholder can invest coupons to obtain more income. However during times of falling interest rates, coupons could end up being invested at lower and lower interest rates. This is re-investment risk.

Call Options - Reinvestment Risk!

Because an issuer will normally repay callable bonds when interest rates are down (so it can re-borrow at a lower interest rate), bondholders may find that the amount repaid can only be re-invested at a lower interest rate.

- **Political or regulatory risk** – This is the risk that unexpected events adversely affect the value of a bond. For example, natural disasters, political unrest and changes to tax laws can affect the issuer's profitability and hence the value of its bonds.

understanding bond pricing

If you want to start investing in bonds you must have a basic understanding of how bonds are priced and what factors affect bond prices. Pricing a bond may seem daunting at first but it isn't too difficult in reality.

Time Value of Money

We begin this section by introducing an important investing concept called the "time value of money". This is a basic concept in the analysis of any bond.

- Why do you buy a car? For most people, it is because you get the benefit of having your own means of transport. Similarly, you invest in a bond because of what you will get out of it, namely income from the coupons and the repayment of the par value on maturity.
- It follows that the price of a bond should reflect the value of these income streams, namely the coupon payments and the par value on maturity. (see our graphic example earlier).

However, the price of a bond is not simply the sum of all future coupon income and principal value. Not really because you need to take into account what is called the "time value of money".

Consider the following: Which would you rather have: \$100 today or \$100 in a year's time?

The logical choice is \$100 today - because you can invest this to earn interest so that in a year's time, your initial investment will be worth more than \$100.

For example, if you could invest to yield 10% for the year, a \$100 investment today would be worth \$110 after one year. Reversing this process, \$110 in a year's time would be worth \$100 today. To use the technical jargon, using an interest rate or yield of 10%, the future value of \$110 is equal to a present value of \$100.

This concept has some important implications for bond value:

- Because you can invest at some interest rate, \$100 today should be worth more than \$100 in one year's time (this is true of any amount and interest rate for that matter). Similarly, \$100 in one year's time should be worth less than \$100 today.
- The higher the interest rate or yield, the greater the difference between the present value and the future value. Say you invest for a year at a 20% interest rate. A present value of \$100 would be equal to a future value of \$120 and vice versa.

Calculating A Bond's Price

So how is the price of a bond determined?

It is basically the present value of the future cash flows (coupons and par value) that the bondholder will receive where the interest rate or yield used to compute the present value depends on the yield offered by comparable securities in the market. A bond price formula is used to calculate the price. This is shown in the Appendix.

The following are the key steps in pricing a bond:

Step 1: Determine the bond's cash flows, which usually comprises of the periodic coupon interest payments to the maturity date and the par (or maturity) value on maturity.

Step 2: Determine your required yield on the bond. This is the return that you want from investing in the bond. The required yield can be determined by seeing what yields are being offered on comparable bonds in the market. This means using bonds that have the same credit quality and maturity.

Step 3: When you have the cash flows of a bond and the required yield, you can calculate a bond's price by using the bond price formula shown in the Appendix to calculate the bond's price. Remember the price of a bond is equal to the present value of the coupon payments plus the present value of the par or maturity value.

A detailed example of the calculation of a bond price is provided in the Appendix.

The key point to note about bond prices is that bond prices move in the opposite direction to yields. If the yield rises, the bond price falls and vice versa. If a bond's price is below its par value it is said to be at "a discount". If it is higher than the par value, it is said to be at "a premium".

Using Bond Price Calculators

Investors and market professionals typically use a "bond price calculator" to calculate a bond's price or, alternatively, the yield on a bond at a given price.

To make it easy for you to calculate a bond price, the CMDA has developed the Personal Wealth Calculator® which is available on a CD Rom and has a bond price calculator in it to make pricing bonds easy for you.

Your investment adviser, broker or the Reserve Bank of Fiji can also provide you with the prices of bonds based on your required yield.

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Published Bond Prices

Investors can refer to published bond price lists for information on bond prices.

The Reserve Bank of Fiji regularly publishes information on yields and prices for government and non-government bonds. This information reflects recent bond issues and therefore provides an indication of the current value of government and non government bonds.

Corporate and other non-government bonds are riskier than government bonds so should really be giving you a higher yield than that of a similar government bonds.

The yield can be estimated by adding a premium on the equivalent government bond yield to reflect the extra risk. The resulting yield can then be used to calculate the bond's price.

Estimating the amount of premium to add is not straightforward and is best left to your investment adviser or broker. This premium will vary from issuer to issuer. The higher the overall risk of a bond compared to a similar government bond, the larger this premium.

How are Bond Prices Quoted?

By convention, bonds are quoted on a yield basis. This can be used to calculate the price. In our example the bond's yield is the same as its coupon rate of 6%. The yield can be higher (lower) than 6%, which means that the price will be lower (higher) than the face value of \$100.

understanding bond yields

In the previous section we looked at calculating bond prices using a given yield. In this section we want to briefly discuss how yield (or return) can be measured for a given bond price.

Conventional Yield Measures

An investor who buys a bond can expect to receive a return from three sources:

- The coupon interest payments made by the issuer;
- The capital gains (or capital losses) when the bond matures or is sold and
- Income from the reinvestment of the coupon interest payments.

There are three commonly used methods to measure the potential return from a bond – current yield, yield-to-maturity and yield-to-call.

- **Current yield** simply relates the annual coupon interest to the market price and is calculated by dividing the annual dollar coupon interest by the current price.
- **Yield-to-maturity** measures the return after including the coupon interest payments and the capital gain or loss on the investment. As it is computed using a trial and error procedure, it is usually calculated using a bond

calculator or computer. The calculation assumes that the investor can reinvest the coupon payments at an interest rate equal to the yield-to-maturity.

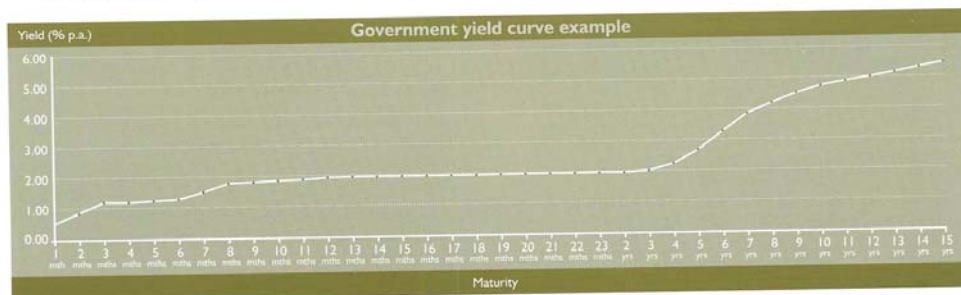
- **Yield-to-call** measures the return after including the coupon interest payments and the capital gain or loss on the investment up to the assumed call date of the bond.

Yield Curves

The yields on bonds with different maturities but with the same credit quality are often plotted on a graph to form a yield curve. The yield curve serves as a benchmark against which the prices and yields of other bonds can be set.

The Reserve Bank of Fiji publishes the government and statutory authority bond yield curve regularly. This is the benchmark yield curve because the minimum return an investor will demand for investing in a non-government security is the yield on a liquid government security with the same maturity.

You can use the government yield curve to price a non-government bond by determining the yield on the government bond with the same maturity and adding an appropriate risk premium to that rate. Insert this yield and other details into the bond price formula or calculator and you can calculate the bond price.



causes of changes in bond prices

Lets take a quick look at some of the causes of changes in bond prices generally.

A change in the level of interest rates in the economy

The price of a bond may be higher or lower than its face value depending on how it's coupon rate compares with current interest rates available on other investments in the market. Other things being equal, generally when market interest rates fall, bond prices rise and vice versa. Thus interest rates and bond prices move in opposite directions. The extent to which bond prices move, in one direction or another, will depend on how much the interest rate moves. The changes in a bond's price (i.e. its price volatility) will also vary depending on its coupon and maturity.

Lets look at an example. Take a bond with a fixed coupon rate of 6%. The coupon rate never changes even though market interest rates may. Let's say when the bond was first issued, similar bonds and other investments were also paying 6%. Therefore the bond's coupon rate is in line with the market and its price will be equal to its face value. This bond is said to be trading at par.

What happens if the market interest rate dropped to 4%? Now the bond is still paying a 6% coupon so it is more attractive than other investments paying only 4%. Investors will be willing to pay more for this bond. This is why a bond's price can be higher than its face value. This bond is said to be trading at a premium.

What happens if market interest rates increased to 8%? The bond is still paying 6% so is now less attractive than other investments paying 8%. Investors will want to pay less for this bond. This is why a bond's price can be lower than its face value. This bond is said to be trading at a discount.

To summarise, a bond's value (i.e. its price) and the interest rates in the market are like a seesaw. As one goes up, the other goes down.



What is the relevant interest rate for analyzing a bond? Basically this should be the interest rate available on other investments that are similar to the bond (this is referred to as the market yield). Why is this so? Because if you don't choose the bond, you can get this yield (interest rate) from similar investments anyway.

Therefore the market yield is like the benchmark to measure a bond against. If the bond's coupon rate isn't as high as the market yield, investors will pay less than the face value. If the coupon rate is above the market yield, the bond is more attractive and investors will be prepared to pay more than the face value.

The prices of bonds with longer terms to maturity are likely to fluctuate more with rising interest rates than ones with shorter terms to maturity and vice versa.

The example above illustrates that during the life of a bond, its capital value can change at any time in line with changes in the overall level of market interest rates. However, investors who hold the bonds to maturity are guaranteed that they will be repaid the par value of the bonds at maturity.

How are Interest Rates Decided?

The Reserve Bank of Fiji conducts monetary policy to influence the general level of interest rates in the economy. By regulating the volume of bank reserves through open market operations, the Reserve Bank influences interest rates – the level of which causes changes in the behavior of businesses and consumers. A more comprehensive explanation of the tools used by the Reserve Bank to influence interest rates so as to achieve economic growth, full employment and low inflation in the country is beyond the scope of this booklet.

Bonds trading at a premium or at a discount

Over time a discount bond's price rises in value if yields do not change; a premium bond's price declines over time if yields do not change.

A change in the perceived quality of the issuer

Assuming market interest rates do not change, bond prices will increase (decrease) if the perceived credit quality of the non-government bond improves (deteriorates).

key factors influencing interest rates

There is an inverse relationship between bond prices and market interest rates. Bond prices rise when interest rates fall and vice versa. Therefore, if you want to be a bond investor you should have a basic understanding of the factors that influence interest rates and how interest rates are set.

Inflation and economic growth

For every investor, keeping tabs on inflation is very important. Suppose an investor holds a Government bond that yields 8%. If the economy grows rapidly, inflation will eventually begin to climb. Inflation can be measured by changes in the consumer price index and is a general measure of how quickly the cost of goods and services is rising over time.

Faced with the prospect of higher inflation, investors will typically demand an inflation premium since their fixed coupon will be worth less in real terms, so will the principal repaid on maturity. In our example, bond yields might rise to 10% in which case the 8% bond becomes less attractive and its price will decline, as investors would prefer to own the new 10% bond.

Thus any market forces that cause the economy to grow more rapidly, or causes the inflation rate to rise, increases the likelihood that the Reserve Bank will raise interest rates and decrease prices of bonds.

This process also works in reverse. Any market force that causes economic activity to decline, or the inflation rate to drop, increases the likelihood that the Reserve Bank will lower interest rates and bond prices will rise.

Bond investors must therefore be aware of developments in the economy, the pace of inflation and implications for Reserve Bank of Fiji interest rate policy.

Balance of payments

The balance of payments records Fiji's trade with the rest of the world. If Fiji imports more than it exports it may have a deficit balance of payments. Overtime this situation puts pressure on interest rates to rise. There would be less pressure to increase interest rates if Fiji's balance of payments position was improving or the deficit was shrinking.

Some other factors that could influence the level of interests and therefore bond prices include the demand relative to the supply of money and the level of overseas interest rates and foreign exchange rates.

Demand for and supply of credit

Interest rates represent the price paid for the use of money and represents the interaction between demand for and supply of credit in Fiji. When demand for credit (or borrowing) exceeds the supply of funds available for lending, interest rates tend to rise and vice versa.

International interest rates

Interest rate differentials between countries influences where investors are going to place their funds. If interest rates in Australia rise, Australian dollar investments become more attractive than Fiji dollar investments. Fiji interest rates may then rise to attract offshore investment funds.

Foreign exchange rates

Exchange rates affect the prices of goods being imported and exported. If the Fiji dollar is strong, this will make Fiji exports more expensive and reduce the cost of imports. This can have a negative effect on our balance of payments and put upward pressure on interest rates and vice versa.

buying bonds in the primary market

When bonds are first issued, this is done in the primary market. Sometimes bonds are issued only to a select group of investors such as large institutions and companies. Or they may be offered to the public.

Where bonds are offered to the public, various laws apply, including the Capital Markets Development Authority Act and associated rules and regulations.

One of the most important requirements is that the issuer must prepare and make available to investors a document called a "prospectus". The prospectus sets out detailed information on the issuer, including its history, operations, resources, financial performance, how the funds being raised will be used, how to apply for bonds and whether there is any minimum amount that must be applied for. The prospectuses must be approved by the CMDA and registered with the Companies Office.

Primary Market vs Secondary Market

The market for bonds can be viewed as two markets:

Primary market - Created when a issuer first offers bonds to the public. A company seeking to raise funds by issuing bonds must publish a prospectus offering investors the opportunity to buy. Investors would first evaluate the prospectus before subscribing for bonds.

Secondary market - Where existing bonds are traded. Bonds in Fiji may be traded in the secondary market directly between bondholders or through an intermediary, called a broker. Brokers must be licensed by the CMDA.

The prospectus is a very important document. It will help you make informed investment decisions. Always read and understand the prospectus thoroughly before you buy bonds.

Most issuers will advertise their primary bond offerings in the daily newspapers. However, if you want to buy a bond that has already been issued, you will need to place an order with a licensed broker or dealer.

Applying for Bonds

The prospectus will have attached the application form and instructions for completing and submitting your application. Sometimes the issuer appoints an administrator to coordinate the bond issue and maintain records. For example, the Reserve Bank of Fiji carries out this function for Government bond issues.

Generally, bonds are issued through an auction. Let's look at some of the more common methods of issuing bonds.

1. **Non-competitive auction** - Under this method, the yield of the bonds is fixed. Investors only apply for the number of bonds they want to purchase.
2. **Competitive auction** - Under this method, investors apply for both the yield and quantity they want to purchase.
3. **Dual auction** - Here both competitive (yield and quantity) and non-competitive (quantity only at the predetermined yield) bids are allowed.

Having an auction process provides a number of advantages. For example, the bond issue more accurately reflects market demand and is more transparent.

Bond Allocation

Successful bidders are chosen using set criteria. Common approaches include the following:

- **Single price ("Dutch auction")** - The bonds are allocated to bids starting with the lowest yield. The yield for the last bid accepted (the "stop yield") is the yield that all successful bidders get.
- **Multiple price** - Here successful competitive bids receive the tendered yield while non-competitive bids receive a weighted average of competitive yields accepted.

If you are successful, the company or issuer issues a bond certificate(s) to you as proof of ownership.

trading bonds in the secondary market

Bonds can be bought and sold in the secondary market either directly between buyer and seller or using a broker as a "go-between". In this section, we look at how to trade bonds through a broker on a stock exchange or with a licensed dealer.

Placing Your Order Through a Broker

Under the Capital Markets Development Authority Act, investors can use a broker, or dealer licensed by the CMDA when buying or selling bonds.

Just like for shares, when you instruct your broker to buy or sell on your behalf, you must complete an order form which specifies the following:

- The bonds you want to trade (e.g. FEA bonds, FHL bonds)
- Quantity to be traded
- Price, or range of prices, you want to trade at
- The length of time for which your order is valid

Your broker must carry out your instructions strictly. Your broker takes your order to the call market sessions at the SPSE, which are currently held on Mondays to Friday, and places it on the trading board. If your order matches another order on the board (i.e. your buy/sell order matches another investor's sell/buy order), the two orders are transacted.

Settlement

At the SPSE, trades are currently settled within 3 days. After settlement, the buyer receives the bond certificate(s) and the seller receives payment. Remember to keep your bond certificate in a safe place.

Fees and Charges

In return for its services, your broker may charge a small fee which includes the broker's commission, SPSE trading fees and CMDA levies. Dealers should not charge you any fees.

Licensed dealers can trade bonds directly with you. They are sometimes referred to as "market makers" because they are prepared to buy or sell bonds at the bid and offer prices they quote. They provide liquidity to the bond market.



How do Bonds differ from Shares?

- Bonds provide investors with a regular income. Returns from shares depend on the company's profitability.
- Shareholders own the business. Bondholders are creditors of the company.
- Bonds are generally lower risk than shares. If the company was wound up, bondholders, like other lenders, have a prior claim over the company's assets compared to shareholders. Bondholders expect to receive a lower return.
- Because shares are generally higher risk than bonds, their returns are generally higher.
- Bonds have a fixed term - the face value is repaid on the maturity date. Shares have no fixed term. When shareholders decide they no longer want to be an investor, they have to sell their shares.
- Bonds may be taxed differently because coupons are regarded as interest income, not dividends. Consult your tax adviser for specific tax advice.

regulating the markets

The capital markets are very important in developing the economy of a nation. The markets assist in the creation and expansion of businesses by channelling surplus funds from savers to business, which require funds for investment. This in turn increases employment opportunities and creates wealth.

One of the primary components of capital markets is the bond market and its participants. Because investors' confidence in the integrity of the market is the cornerstone of its success in raising capital, numerous rules and regulations governing market activities are in place to ensure a fair and orderly market in which bonds can be traded.

Some of the more substantial rules require that brokers maintain all customer monies in a separate trust bank account and comply with financial responsibility rules to ensure the financial ability to serve their customers.

There are also rules and regulations prohibiting certain practices that are deemed unfair such as:

- Buying and selling bonds based on information not available to the public ("insider trading");
- Inducing people to invest using false or misleading or deceptive statements, claims or forecasts;
- Engaging in fictitious transactions to create the appearance of trading activity;

These are just a few of the many regulations market participants must observe. The CMDA conducts routine and special inspections of the market "intermediaries", such as brokers, dealers, investment advisers and their representatives to review compliance with the rules and regulations and enforce the provisions of the CMDA Act. By enforcing these provisions, the CMDA helps to protect investors, encourage market confidence and integrity and to ensure an orderly market.

An Investor Compensation Fund has been established to grant compensation to any investor who suffers pecuniary loss resulting from the malfeasance, defalcation or fraud on the part of a licensed broker or dealer.

Would you like to know more?

We've told you something about bonds and what you must do to become a bondholder in the growing Fiji Islands market. But don't just rely on the information contained here. We repeat that you should take advice from a licensed financial adviser. More background information is available at our office.

time value of money

Understanding that money has a time value because of the opportunities for investing money at some interest rate is one of the basic concepts in analyzing financial instruments. We explain below some of the fundamental concepts involved in understanding the time value of money: **future value**, **present value** and **yield**.

Future Value (FV)

this is the value which an amount today will grow to if it earns interest.

= Present Value $\times (1+r)^n$, where n = number of periods in which interest is earned.

FUTURE VALUE EXAMPLE

Calculate FV of \$300 invested for 10 years if it earns 8% a year.

$$FV = 300 \times (1 + 0.08)^{10} = \$647.68$$

Present Value (PV)

this is the value today of a future amount assuming an interest rate. PV is the reverse of FV.

= Future Value $\div (1+r)^n$ where n = number of periods in which interest is earned.

PRESENT VALUE EXAMPLE

Calculate PV of \$1000 to be received in 5 years assuming a discount rate (interest rate) of 9%

$$PV = 1000 \div (1 + 0.09)^5 = \$649.93$$

Net Present Value (NPV)

NPV is the value today of all current and future cashflows. It reflects the time value of money using the basic PV formula above. Obviously, a dollar today has a present value of \$1. However, future cashflows are discounted by a market interest rate (or what is often called a discount factor or yield) to take into account the fact that future amounts are worth less today. The formula for calculating a stream of cashflows is:

$$NPV = -C_0 + \frac{C_1}{(1+r)^1} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_n}{(1+r)^n}$$

Where:

C_0 = cashflow in year 0 (now)

C_1 = cashflow in year 1

C_2 = cashflow in year 2

C_n = cashflow in year n

r = market interest rate

n = last year of cashflow stream

NPV EXAMPLE

Consider the following cashflows from an investment:

Year 0 = -\$100 (i.e. invest \$100); Year 1 = \$10; Year 2 = \$10; Year 3 = \$110

What is the Net Present Value if the market interest rate is 5%?

$$\begin{aligned} NPV &= -100 + \frac{10}{(1+0.05)^1} + \frac{10}{(1+0.05)^2} + \frac{110}{(1+0.05)^3} \\ &= -100 + \frac{10}{1.05} + \frac{10}{1.1025} + \frac{110}{1.157636} \\ &= -100 + 9.5238 + 9.0703 + 95.0217 \\ &= \$13.62 \end{aligned}$$

calculating the price of a bond

Valuing a Bond

Conceptually, the price of a bond is the net present value of its cashflows:

$$P = \frac{C_1}{(1+r)^1} + \frac{C_2}{(1+r)^2} + \dots + \frac{P+C_n}{(1+r)^n}$$

Where:

C_1 = Annual coupon in year 1

C_2 = Annual coupon in year 2

C_n = Annual coupon in year n

P = Principal repaid in year n

r = market interest rate for bond with term of n years

In reality pricing a bond is a little more complicated because of several special factors. For example, accrued interest means that the basic bond price will fluctuate over time.

The pricing formula used by the Reserve Bank of Fiji (RBF) for valuing bonds is as follows:

$$P = C/2 \times A + FV^{-(n+k)}$$

Where:

P = price per \$100 face value

C = coupon (assumes coupons are paid semi-annually)

$$A = \frac{1 - (1+i/2)^{-n+k}}{i/2}$$

F = face value

$$V = (1+i/2)$$

n = number of whole half years to maturity

$k = f/d$ where: f = actual number of days from settlement date to next coupon date

d = actual number of days in that half year coupon period

i = current yield to maturity or rate of return.

A BOND VALUATION EXAMPLE

A Bondholder wishes to sell the following bond in the secondary market:

Coupon	= 9% = \$9 (paid in semi-annual amounts of \$4.50)
Face value	= \$100.00
Maturity date	= 14 February 2006
Settlement date	= 30 September 2003
Last coupon date	= 14 August 2003
Next coupon date	= 14 February 2004
i	= 6.75%
n	= 4
f	= 30/09/03 to 14/02/04 = 137 days
d	= 14/08/03 to 14/02/04 = 184 days
Price	= $9/2 \times \frac{1 - (1 + 0.0675/2)^{-(4 + 0.74457)}}{0.0675/2} + 100 \times (1 + 0.0675/2)^{-(4 + 0.74457)}$ = $4.5 \times 0.14571/0.033750 + 100 (0.85429)$ = $4.5 \times 4.31737 + 85.42900$ = \$104.86

Please consult your investment adviser or broker for specific advice on valuing a bond.

Clean vs Dirty Price

The RBF formula given above does not take into account the interest accrued on the bond since the last coupon payment date. For example, say you have a semi-annual coupon bond and the last coupon payment was three months ago. If you sold the bond today you should be entitled to half of the next coupon (3 months out of 6 months). Where the price includes this accrued interest, it is called the dirty price.

Normally bonds are quoted without accrued interest. This is called the clean price. To calculate the dirty price, the accrued interest is added to the clean price. The formula for accrued interest (AI) is:

$$AI = \frac{\text{number of days from last coupon payment date to settlement date}}{\text{number of days in coupon period}}$$

DIRTY PRICE

Continuing with our bond example, the calculation of the clean price is as follows:

$$\begin{aligned} \text{AI period} &= 47 \text{ days} / 184 \text{ days} = 0.25543 \\ \text{AI} &= 0.25543 \times \$4.50 = \$1.15 \\ \text{Dirty price} &= \text{Clean price} + \text{AI} \\ &= \$104.86 + \$1.15 \\ &= \$106.01 \end{aligned}$$

HOW INTEREST RATES AFFECT BOND PRICES – EXAMPLES

Say you buy a \$1,000 bond when it is issued in the primary market. The bond has a coupon rate of 10% and a maturity of 10 years. Therefore, each year for the next ten years, you will receive an annual coupon of \$100 (i.e. 10% x \$1,000). At the end of 10 years, the \$1,000 you lent is repaid to you.

To see how interest rates affect the price of bonds, say you decide to sell the bonds after 4 years. Let's look at two scenarios: (1) interest rates have fallen and (2) interest rates have risen.

Scenario 1 - Interest rates rise

Interest rates have risen and investors are now looking for a 12% coupon rate on similar bonds.

This means the market value of your bonds must be at a level where a buyer earns at least 12%. The bond will continue to pay \$100 annual coupons. But since the buyer requires a return of 12%, he will pay you less than the par value of \$1,000.

Using the bond price formula, the price of the bond is \$917. The buyer will receive \$100 coupons each year plus a principal repayment of \$1,000 in the sixth year when the bond matures. The \$100 per year plus the gain of \$83 (1,000 face value - 917) equals a 12% per annum yield on the initial \$917 invested by the new investor.

As the original bondholder, you will incur a capital loss on your investment.

Scenario 2 - Interest rates fall

Now assume that interest rates have fallen and investors are now seeking a coupon rate of 8% on similar bonds.

You would require the buyer to pay a price that yields a return equal to the current market rate of 8%. Because the bond pays an annual coupon of 10% (higher than the current market rate of 8%), the bond price should be higher than the original price you paid.

Using the bond formula, the buyer will have to pay you \$1,092 for the bond, which would yield him a return of 8%. This is equivalent to the current market rate. You therefore make a capital gain of \$92.

The examples illustrate that during the life of a bond, its capital value can change at any time in line with changes in the overall level of market interest rates. This is the risk that investors trading in the secondary market face. In contrast, investors who hold the bonds to maturity are guaranteed that they will be repaid the par value of the bonds when the bond matures.

Auction	Usual method of issuing bonds where investors submit bids.
Bondholder	An investor in bonds.
Call option	Type of embedded option which allows the issuer to pay back the bond early.
Call provision	Some bonds notably perpetual securities have a call provision attached. This gives the issuer the right, but not the obligation, to buy back the bonds from investors at a particular point in time at a certain price.
Competitive auction	Auction method where investors apply for both the yield and quantity they want to purchase.
Competitive bid	A bid submitted under auction specifying both yield and quantity.
Conversion rights	Type of embedded option which gives a bondholder the option of converting his/her bondholding into shares of the issuer.
Coupon	Regular interest payments made to the bondholder.
Coupon rate	Percentage rate of interest paid on a bond.
Clean price	Price that does not include interest accrued since the last coupon payment.
Credit risk	Risk that the issuer may be unable to pay bondholders.
Dirty price	Price that includes interest accrued since the last coupon payment.
Diversification	Spreading your money over different investments to reduce overall risk.
Dual auction	Combination of competitive and non-competitive auction methods.
Embedded option	Option given to the issuer and/or the bondholder to take some action against the other party under certain circumstances.
Face value	Amount paid to the bondholder at the end of the lending period.
Fixed coupon rate	Coupon rate which does not change over the life of the bond.
Fixed income	Class of investments which includes bonds issued by the government, statutory authorities security and companies.
Floating coupon	Coupon rate that may be periodically adjusted to take into account prevailing market rate conditions.
Future value	Value which an amount today will grow to in future if it earns interest.
Growth return	Bondholder's return from selling a bond at a profit.
Income return	A bondholder's return from receiving regular coupons.
Interest rate risk	Risk that rising interest rates cause bond prices to fall.
Issuer	Company or institution that issues a bond. The issuer borrows money from bondholders.

Glossary

CMDA

Liquidity risk	Risk that a bond cannot be easily sold at or close to its market value.
Maturity	See "Term"
Multiple price	Method of allocating bonds where successful competitive bids receive the tendered yield Allocation while non-competitive bids receive a weighted average of competitive yields accepted.
Net present value	Value today of all current and future cashflows.
Non-competitive	Auction method where the yield of the bonds is fixed and investors only apply for the number auction of bonds they want to purchase.
Non-competitive bid	A bid submitted under auction specifying only the quantity.
Par value	See "Face Value".
Political risk	Risk that unexpected events adversely affect the value of a bond.
Present value	Value today of a future amount assuming an interest rate.
Price	Amount a bondholder pays for a bond.
Primary market	Where an issuer first offers bonds to the public.
Principal	See "Face value"
Prospectus	Document required by law which sets out detailed information on the issuer and the bonds being issued.
Re-investment risk	Risk that if interest rates fall, coupons would have to be re-invested at a lower interest rate.
Secondary market	Trading in bonds that have already been issued.
Security	Assets of the issuer that are may be sold to reimburse bondholders if the issuer fails to meet its obligations.
Single price ("dutch auction")	Method of allocating bonds where all bonds are issued at the highest accepted yield Allocation tendered by investors.
Term	The life of a bond.
Yield	Measure of the percentage return that a bondholder makes on a bond.
Yield to maturity	Type of "yield" which measures the rate of return on a bond assuming it is held to maturity.

PROMOTING *smart* INVESTMENT

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