The background of the page is a dark blue gradient. It is filled with a complex network of thin, white, jagged lines that resemble a data visualization or a stylized city skyline. Interspersed among these lines are numerous small, glowing dots in various colors, including yellow, orange, red, and light blue. The overall effect is a sense of dynamic, interconnected data.

A Guide to Corporate Bonds traded on the PNGX DinauMaket Debt Market



| | |
|--|----|
| Introduction..... | 2 |
| Who is PNGX? | 2 |
| What is a corporate bond?..... | 2 |
| Who can invest in corporate bonds? | 3 |
| Why is a bond market important to PNG?..... | 4 |
| Corporate bonds traded on PNGX | 5 |
| Why invest in corporate bonds? | 6 |
| Using corporate bonds to diversify your investment portfolio | 7 |
| Understanding the risk versus return trade-off | 8 |
| Types and categories of bonds..... | 10 |
| Fixed Interest bond categories based on type of borrower..... | 10 |
| Fixed rate bonds | 11 |
| Comparing the returns on different bonds..... | 12 |
| Comparing bonds to other investments | 14 |
| Understanding bonds..... | 14 |
| Comparing corporate bonds, term deposits and ordinary shares | 14 |
| Some of the risks associated with corporate bonds traded on PNGX | 17 |
| Interest rate risk | 17 |
| Credit risk | 18 |
| Liquidity or marketability risk..... | 18 |
| Who can buy and sell bonds on PNGX? | 19 |
| Buying and selling bonds on PNGX..... | 20 |
| Accrued Interest | 20 |
| How bonds trade on PNGX..... | 20 |
| PNGX Codes..... | 21 |



| | |
|---|----|
| International Securities Identification Number..... | 21 |
| PNGX security descriptions | 21 |
| Settlement..... | 22 |
| Price information..... | 22 |
| | |
| An example of assessing bonds..... | 23 |
| | |
| Glossary..... | 25 |



© Copyright PNGX Markets Limited 2022. All rights reserved 2022.



Introduction

Papua New Guinean investors looking to receive a steady stream of income have often only considered bank at-call or term deposits. Corporate bonds traded on PNGX can present an attractive alternative.

This booklet deals with the corporate bonds traded on PNGX and is designed to help you understand the risks associated with them and how they may be used within your investment portfolio. The corporate bonds traded on PNGXC are generally the simplest form of bonds.

The information in this booklet is necessarily general in nature, and you should take care to inform yourself about the specific characteristics of a particular corporate bond before making a decision to invest in it. PNGX recommends discussing your investment objectives and needs with a stockbroker or qualified financial adviser.

Who is PNGX?

PNGX (formerly called Port Moresby Stock Exchange) is Papua New Guinea's national stock exchange. Financial products including shares and bonds can be traded on PNGX. This provides investors the opportunity to access a number of asset classes with which to invest or manage their risks.

Further details about PNGX can be obtained from www.pngx.com.pg.

What is a corporate bond?

Corporate bonds are a type of debt security issued by a company. The company may be listed on PNGX, it may be privately owned or it may be a State Owned Enterprise ("SOE")

Corporate bonds are effectively an IOU between a borrower (the company issuing the bond) and a lender (the investor who purchases the bond). They can be thought of as like a bank term deposit, which is effectively an IOU between the bank (as borrower) and the depositor (as lender).

When a company needs to raise money one option is for them to borrow money from investors by issuing bonds to them.

The amount the investor lends to the borrower is called the "principal" amount or the "face value". The date that the borrower will repay the lender (investor) the principal amount is called the "maturity date". The lender (investor) is due to receive the principal amount on the maturity date.

The borrower will pay a fee to the lender to compensate the lender for the use of their money until the maturity date. This is called the "interest rate".

Interest is generally calculated on the bond's face value. The interest rate and is usually expressed as a percentage of the face value (for example, 5%). The amount the borrower pays to the investor as the cost of borrowing is called the "interest payment" or "coupon payment".



Investors who purchase a bond from a borrower are essentially lending money (the “principal” amount) to the borrower for a fixed period of time (the maturity date) at a defined rate of return (the interest rate).

In summary, in return for lending their money, investors receive a bond promising that they will receive interest payments at certain intervals and also have their principal amount returned on the maturity date.

The bond is a legal commitment to make these payments, created in a form that makes them easy to buy and sell between investors on the stock exchange without having to involve the issuer or renegotiate the terms of the loan. This means that the person who made the initial loan to the company does not have to wait until the maturity date to get their money back but can sell the bond to someone else beforehand. The issuer will pay the interest and principal to whomever holds the bond on the relevant record dates. The record date is the date specified in the terms of the bond to determine who holds the bonds on that date and hence who receives the interest payment.

Where the bond is traded on PNGX, the investor can convert their investment to cash before the maturity date by selling that bond to another investor at the current market price. Similarly, an investor can buy a bond from another investor on PNGX.

Who can invest in corporate bonds?

At present, bonds traded on PNGX are limited to wholesale corporate bonds only. Retail investors can not invest in wholesale corporate bonds.



Why is a bond market important to PNG?

There are generally 2 types of bonds – government bonds and corporate bonds.

Government bonds are issued by the PNG government (that is, investors are lending money to the government) and are managed and traded through the Bank of PNG.

Corporate bonds are issued by companies or SOEs (that is, investors are lending money to companies or SOEs) and are traded on PNGX. The PNGX bond market primarily currently includes only corporate debt securities.

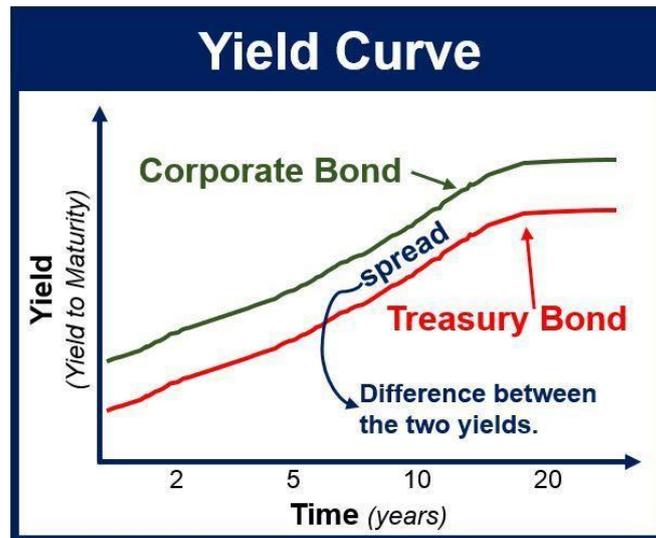
Bond markets facilitate the transfer of capital from investors to issuers (borrowers) which are organizations requiring capital for government projects, business expansions and ongoing operations.

A healthy bond market brings a number of benefits to PNG. It provides an alternative funding source for government and companies and reduced dependence on banks and secured loans. It improves company access to fixed-price, longer-term credit which allows companies to fund projects which have solid potential for growth and job creation, but which may find it hard to find bank funding. The ability to readily issue longer term bonds also allows banks to offer longer-term loans and mortgages. From an investor's perspective, investors are able to diversify their investments to reduce both the capital risks and the volatility of returns.

The PNGX bond market is not just a place where issuers and investors are brought together to allocate capital from savers to borrowers. The PNGX bond market also serves a critical role to set interest rates and create credit in the whole PNG economy. This directly affects the housing market, car sales, personal consumption and spending, and a company's capital spending which would ultimately impact PNG's economic outlook. Rising interest rates tend to weaken the PNG economy as the cost of borrowing increases. Falling interest rates tend to boost the PNG economy as it encourages borrowers to take up additional credit and increases spending.

In general, when bond prices go up, market interest rates come down and when bond prices come down, market interest rates go up.

A number of financial instruments are linked to the bond market because it serves as a reference point or a benchmark indicating expected future interest rates in relation to different maturities. This is known as the yield curve. The yield curve indicates the market's expectations of future PNG interest rates. A government bond yield curve is built through the development of a liquid bond market consisting of a variety of PNG government bonds in order to price other debt securities.



Corporate bonds traded on PNGX

Just as you would instruct your stockbroker to buy or sell shares in a company traded on PNGX, you can instruct your broker to buy or sell corporate bonds traded on PNGX.

There are a variety of types of corporate bonds which can be bought or sold on PNGX. As the bond market is a new market in Papua New Guinea, not all types may be traded and available to investors at a particular point in time.

Bonds traded on PNGX can also be characterised as retail bonds or wholesale bonds. Wholesale bonds are only available to experienced individual investors (such as individuals investing at least PGK250,000) and large professional investors (such as superannuation funds, insurance companies, banks, land groups and church groups). Retail bonds are available to all investors.

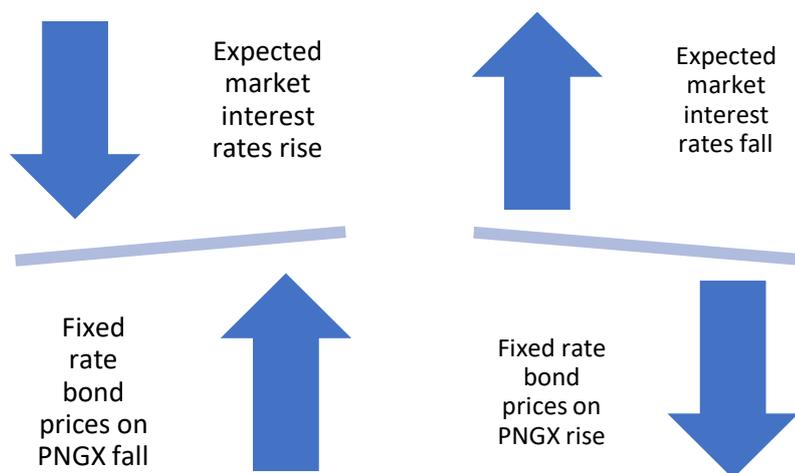
Different types of bonds have different names and different acronyms. For example, bonds issued by the Papua New Guinean Government or Bank of PNG are often referred to as Government Inscribed Stock (GIS) or Treasury Bills (TBills). However, names and acronyms are not always used consistently in the bond market. The meanings of some of the more common terms used in the bond market are included throughout this document.

At present, bonds traded on PNGX are limited to wholesale corporate bonds only. Retail investors can not invest in wholesale corporate bonds.

Why invest in corporate bonds?

The investment return on a fixed interest bond reflects its interest payments and any capital appreciation or depreciation (rise or fall) in its price from general interest rate movements. As a general rule, the potential for capital gains or capital losses on bonds tends to be lower compared with other riskier investments.

It is important to understand that the price of corporate bonds on PNGX can rise and fall, just as the price of shares can rise and fall. However, investors must understand that there is an opposite relationship between a change in the price of a fixed interest bond on PNGX and a change in expected interest rates in the market generally – the price on PNGX will go up if it is expected that market interest rates will fall and will go down if it is expected that market interest rates will rise. Rises and falls in the price of bonds can provide an opportunity to profit from anticipated movements in interest rates, but it can also provide an opportunity for losses.



Unlike shares, bonds generally provide greater certainty of their income stream and return of principal (or capital). For investors who need a predictable source of income, a fixed interest bond's regular interest income and principal repayments at maturity provide a reassuring level of security (subject to the creditworthiness of the borrower).

Government bonds may, or may not, provide a higher interest rate than bank deposits. Government bonds can provide a higher level of security and higher liquidity than corporate bonds.

Corporate bonds can provide a better return than some other bonds – for example, income from corporate bonds is typically (but not always) higher than the interest paid on bank deposits or Government bonds. However, corporate bonds can provide a higher level of risk than bank deposits or



Government bonds. In general, the higher the interest rate on a government or corporate bond, the higher is the risk that the borrower will not be able to pay back the principal or interest amounts (that is, they will default on the payments)

Using corporate bonds to diversify your investment portfolio

Your investment portfolio is the combination of all your invested funds, whether in bank deposits, shares, real estate or bonds.

Corporate bonds provide an opportunity for investment diversification, which can either reduce risk or improve an investment portfolio's overall rate of return. With corporate bonds as the base of an investment portfolio, an investor may feel more comfortable taking on greater risk by adding other assets to their bond investment portfolio such as shares.

Diversifying your investment portfolio with a variety of PNGX traded products can help reduce risk and protect returns over the longer term.

Diversifying your investment portfolio can involve spreading your investments across different types of assets such as shares and bonds. It can also involve investing in different sectors within a type of asset such as a range of bonds of different types and with different borrowers, interest rates and maturity dates. Or it could include diversifying in a range of shares within different sectors such as mining, banking, transport and retail. Or it could involve spreading your investments across assets that have low correlation with each other, recognising that the value of investments in different types of asset can vary through different economic cycles. Low correlation of investments means that your investments don't all rise or fall in value together at the same time. A mix of investments that rise when others fall, or fall when others rise, means that your investment portfolio is better protected against large losses.

Corporate bonds are a good way to introduce diversification into an investment portfolio because their regular interest payments generally provide more stable returns with lower risk than shares.

Understanding the risk versus return trade-off

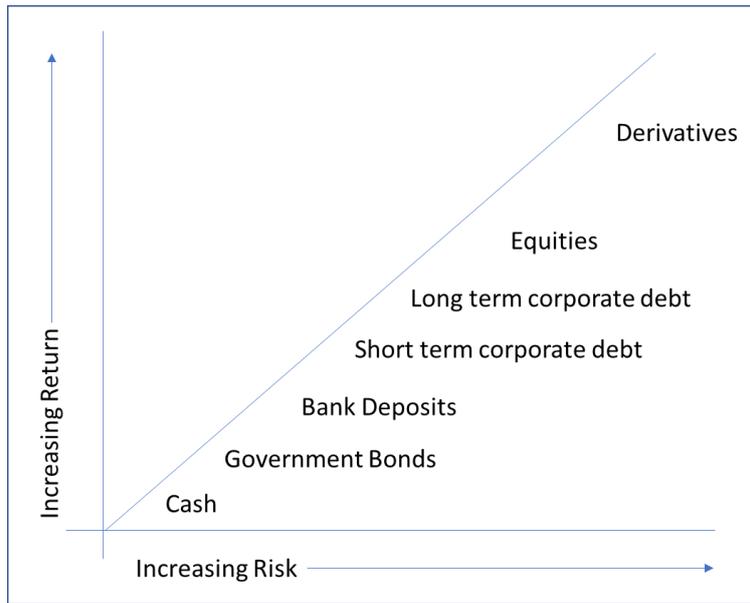
As an investor, it is important to understand how much risk you are prepared to take with your investments (called your “risk tolerance”) and hence what types of risky investments you are prepared to make. It is important to understand the degree of risk associated with different types of investments and how that affects their expected return.



Generally speaking there is a trade-off between risk and return. Assets with a higher level of risk will generally have a higher rate of return. Assets with a lower level of risk will generally have a lower rate of return. That is why most bonds pay lower returns than shares and other riskier investments and why so-called ‘junk bonds’ pay much higher interest rates than safer, more secure bonds.

In general (but not always), government bonds will have a lower risk and hence a lower return than corporate bonds. Similarly, the corporate bonds of a large and substantial listed company will have a lower risk and lower return than the corporate bonds of a small unlisted company. The risk of a borrower not being able to pay the interest or principal amount when it is due for payment is generally referred to as their “creditworthiness”. The event of a borrower not actually paying the interest or principal amount when it is due for payment is generally referred to as a “default”.

The diagram below illustrates how the various types of investment reflect their risk and return.



Based upon an understanding of risk and return, it can be shown that an investment portfolio that includes a balance of shares and bonds can have a lower risk profile and more stable (or consistent) returns than a portfolio of shares only. This may suit investors with a desire for greater certainty of income rather than potential increase in value of the portfolio.

PNGX recommends discussing your risk tolerance with a stockbroker or qualified financial adviser.



Types and categories of bonds

Bonds can be broadly classified based on the type of borrower (government or corporate).

Fixed Interest bond categories based on type of borrower

Government bonds

Government bonds are generally (but not always) considered to have a lower credit risk than corporate bonds and therefore may be suitable for investors seeking stable and highly secure cashflows.

However, because of their lower risk, they also tend to have a lower yield to maturity.

There are various types of PNG Government Bonds:

- Central Bank Bills (CBB) are issued by the Bank of PNG and are denominated in PGK. They are a short-term discounted bond with fixed maturities of 28, 63, 91 and 182 days, redeemable at par on maturity. Investing in CBBs in the primary market is restricted to only Commercial banks and other deposit-taking institutions.
- Treasury Bills (TBills) are issued by the Government of PNG and are denominated in PGK. Treasury bills are redeemable at par on maturity and with fixed maturities of 28, 63, 91, 182 and 364 days. Interest is only paid on maturity. Investing in TBills in the primary market is open to anyone;
- Inscribed Stock (IS) is issued by the Government of PNG and is denominated in PGK. IS has longer-dated maturities of 3, 6, 11, 13 or 17 years. Interest is paid semi-annually (every 6 months) from the time of purchase. Investing in IS in the primary market is currently restricted to Registered Bidders only; and
- Sovereign Bonds (SB) which are issued by the Government of PNG to international investors and may be denominated in a range of currencies (for example, USD). The terms of each SB differs from bond to bond.

The terms of issue of Government Bonds (other than Sovereign Bonds) are generally always the same and are usually quite straightforward. You can find the full terms of CBBs, TBills and IS on the Bank of PNG website (www.bpng.gov.pg).

The Bank of PNG may act as a market maker to provide bid and offer prices for all CBBs, TBills and IS are traded on BPNG providing investors with a level of liquidity should they wish to buy or sell their bonds.

Corporate bonds

There are a variety of corporate bonds which may be traded on PNGX. The terms of corporate bonds can vary substantially. It is very important that you read the prospectus or term sheet for an individual bond to understand its terms. It is also very important that you assess the creditworthiness (and hence the risk) of the borrower of the bond as that will vary substantially between borrowers.



In practice, there may be less trading (liquidity) in the corporate bond market than for bonds issued by governments. As a general rule, safer bonds with better creditworthiness have lower returns to maturity than other corporate bonds with similar maturities. ‘Junk bonds’, also known as ‘high-yield bonds’, are speculative bonds which typically will have a low creditworthiness and therefore pay higher returns (interest rates) to maturity than other corporate bonds with similar maturities.

The important rule to remember is the higher the borrower’s perceived credit risk, the higher the bond’s return needs to be to compensate you for that risk.

Fixed rate bonds

Fixed rate bonds pay a fixed rate of interest (the “interest rate” or “coupon rate”) for the life of the bond until the maturity date.

Because fixed rate bonds pay interest at a fixed rate, they carry interest rate risk as well as credit quality risk. If market interest rates rise or the financial health (creditworthiness) of the borrower deteriorates, investors will demand a greater return on their money and the price of the bond will fall.

Governments mostly tend to issue fixed rate bonds.

Corporate bonds traded on PNGX can be either:

- fixed rate. For example, 4.0% for the life of the bond: or
- floating rate annual reset notes where the “floating rate” is determined by reference to a publicly available and reputable reference rate (such as the consumer price index (“CPI”)) and the rate is reset no more frequently than annually. For example, a floating rate annual reset note may pay interest at the rate of CPI plus 1.0% so that if the CPI last year was 4.0%, the floating rate annual reset note would have paid 5% interest last year and if the CPI fell to 3.5% this year, there floating rate annual reset note would pay 4.5% this year.



Comparing the returns on different bonds

As an investor it is important to understand and evaluate the return you will make on a bond.

Three of the measures of rates of return that can be used to evaluate bonds are:

- Nominal yield, which measures the return on a bond based on its annual coupon payments as a percentage of its face value. This is effectively the same as the coupon rate (interest rate) of the bond. For a fixed rate bond, this does not change throughout the life of the bond. For a floating rate bond, it will change as the reference rate of interest changes.
- Running yield, which measures the return on a bond based on its annual coupon payments as a percentage of its current market price. It is a simple measure of the return the holder can expect if they bought the bond at current market prices. The running yield will change with changes to the current market price of the bond.
- Yield to maturity, which is the average annual return an investor can expect to receive if they buy a bond for its market value today and hold it to its maturity date. The calculation factors in future coupon payments, the time to the maturity date, the amount due on the maturity date, and the capital gain or loss that will be made on maturity. It also assumes that the coupon payments are reinvested in the bond. The yield to maturity for an investor is locked in when they buy a bond and will not change as market prices or yields change.

Yield to maturity is usually considered the most helpful indicator for comparing the return on bonds, as it factors in more of the variables that go to valuing the bond. Comparing bonds on the basis of nominal yield only works if they all have the same time to maturity and the same amount due at maturity and you pay the same price to buy them, but if any of these things are different, a simple comparison of nominal yield will not necessarily be representative of their difference in value.

The calculation of yield to maturity is not as simple as the calculation of nominal yield or running yield. Your stockbroker can help you work out the yield to maturity based on the bond's maturity, market price and coupon rate. PNGX recommends discussing your required returns with a stockbroker or qualified financial adviser.

When comparing bonds, it is important to remember that return is not the only factor that you need to take into account. As mentioned previously, bonds can have very different terms and conditions and you must take account of those differences when assessing the relative values of two different bonds.

Also, remember the trade-off between risk and return. The fact that one bond appears to have a higher rate of return than another does not necessarily mean that it is a better investment – it could be that it is a riskier investment. Another factor which an investor should research and take into account is the credit worthiness (or credit risk) of different bond issuers. The time to maturity will also impact upon any investment decision as, generally, longer dated bonds will



have a higher risk than shorter dated bonds, all other factors being equal. A number of other factors to take into account when comparing bonds include the size of the bond issue as a smaller bond issue will generally have a higher liquidity risk, the regularity of coupon payments (whether monthly, quarterly, six monthly or annually), the risk of concentrating investment in only one (or a small number) of issuers and the currency of the bond.





Comparing bonds to other investments

Understanding bonds

Bonds include a very broad array of different products that have very different terms and conditions. They range from corporate bonds to some very complex bonds. For this reason it is very important for investors to read the prospectus or term sheet for a bond to understand the particular terms and conditions that apply to that bond. If you have any doubts, you should discuss the terms and conditions with your stockbroker or qualified financial adviser.

This document only covers the corporate bonds traded on PNGX.

Comparing corporate bonds, term deposits and ordinary shares

The table below compares corporate bonds with term deposits and ordinary shares.

| FEATURE | TERM DEPOSITS | CORPORATE BONDS | ORDINARY SHARES |
|---------------------------------|--|--|---|
| Character | Debt | Debt | Equity |
| Nature of income | Interest | Interest | Dividend |
| Relationship to investor | Lender | Lender | Part owner |
| Coupon or dividend rate | Usually fixed | Fixed | Variable Dividends depend upon the profitability of the company. |
| Payment frequency | May be at maturity, annually, semi-annually, quarterly or monthly. Payment does not depend upon the profitability of the borrower | Usually annually, semi-annually or quarterly. Payment does not depend upon the profitability of the borrower. | Usually semi-annually or annually. Whether or not a dividend is paid at all depends upon the profitability of the company. |
| Transferable | No | Yes | Yes |



| FEATURE | TERM DEPOSITS | CORPORATE BONDS | ORDINARY SHARES |
|--------------------------------|---|---|---|
| Interest rate return | Typically, lower than corporate bonds. May be higher or lower than government bonds | Depending on creditworthiness of borrower but, in the case of corporate bonds, typically higher than term deposits. | N/A |
| Costs | Can be subject to bank fees and other charges (especially if the investment is accessed prior to the end of the term) | Brokerage is charged on transactions by the stockbroker | Brokerage is charged on transactions by the stockbroker |
| Term (maturities) | Typically, from 1 month to 3 years. | Wide range of terms – from 28 days to 20 or more years | N/A |
| Ability to access funds | Typically, funds are locked in for the term of the deposit or else a fee is charged for early access | Able to sell investment any time the PNGX market is open | Able to sell investment any time the PNGX market is open |
| Key risks | Illiquid | Credit risk Liquidity risk Market risk | Variable return depends on profitability of issuer Liquidity risk Ranks behind all other securities on liquidation Market risk |

Again, when comparing bonds to other forms of investment, remember that bonds can have markedly different terms and conditions and that you must read the prospectus or term sheet for a bond to understand the particular features of that bond. If you have any doubt about a



bond's terms and conditions and/or whether it is the right investment for you, you should consult your stockbroker or qualified financial adviser.

Some of the risks associated with corporate bonds traded on PNGX

Any investment carries with it some risk. This applies as much to corporate bonds as it does to other investment types. Usually the greater the perceived risk, the higher the expected return required to compensate investors for that risk. So, bonds that are perceived to be higher risk will generally attract a higher coupon rate, while bonds that are perceived to be lower risk (such as government bonds) will generally attract a lower coupon rate.

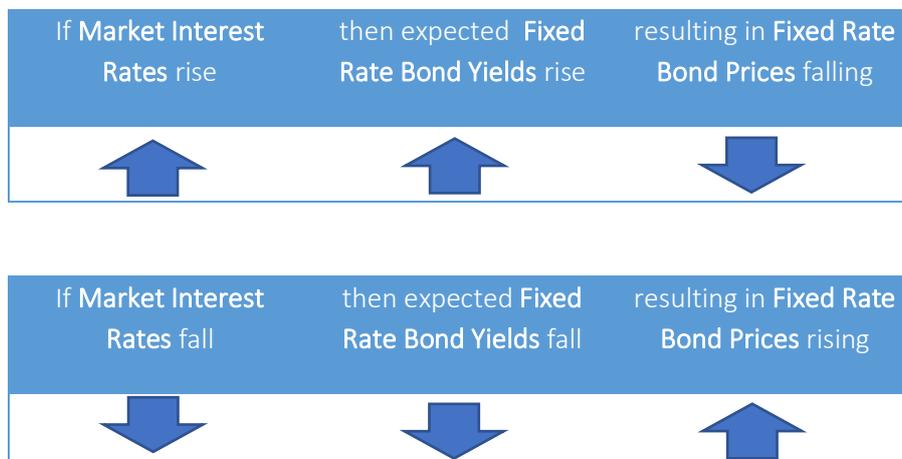


Some key risks to consider when investing in bonds are interest rate risk, credit risk and liquidity risk.

Interest rate risk

Interest rate risk is the effect of changing market interest rates on returns and prices.

When the coupon rate of a bond is fixed, the return on the bond can only keep pace with changing market interest rates if the price of the bond changes.





There is an inverse relationship between the capital price of a fixed rate bond and expected market returns. That is, the capital price will go up if expected market returns fall and will go down if expected market returns rise.

Credit risk

Credit risk is related to the financial strength (creditworthiness) of the borrower. Generally, the higher the creditworthiness of the borrower, the lower the risk associated with the bond and therefore the lower the return required by investors. Conversely, the lower the creditworthiness of the borrower, the higher the risk associated with the bond and therefore the higher the return required by investors to compensate for the increased risk.

For this reason, government bonds typically (but not always) pay a lower interest rate than corporate bonds because the credit risk of the government not paying the interest and principal (defaulting) is lower. Similarly, secured corporate bonds (that is, bonds which are secured over assets of the borrower entitling the lenders to sell the borrower's assets to pay lenders if the borrower does not pay the interest and principal (defaults)) typically pay a lower interest rate than unsecured corporate bonds (that is, bonds which do not entitle the lenders to sell the borrower's assets to pay lenders if the borrower defaults), because the credit risk is lower. However, this does not mean that your investment is risk-free.

Liquidity or marketability risk

Liquidity is the ease with which a bond can be readily converted into cash. The higher the amount of trading there is on PNGX in a bond, the higher the level of liquidity and the easier it is to sell the bond to convert it into cash.

Liquidity risk is the risk of not being able to sell your investment quickly and easily on the PNGX market if you need to.

For some corporate bonds, particularly those with small amounts on issue, there may be low liquidity. On the other hand, government bonds may be more highly liquid.

However, as the bond market is a new market in Papua New Guinea, liquidity on PNGX may be low for the first few years until the market develops.



Who can buy and sell bonds on PNGX?

There is little experience of corporate bond investment in Papua New Guinea, even among institutional investors. For this reason, for the first 12 months of operation, the market for corporate bonds will be restricted to wholesale investors. Retail investors will not be permitted to hold quoted corporate bonds.

Example of wholesale investors include:

- a. Regulated financial institutions (banks, brokers, insurance companies, etc) and foreign equivalents;
- b. Regulated institutional investors (superannuation funds, investment funds, etc) and foreign equivalents;
- c. Another company that has net assets of PNK 10 million or which is a church or a land group, and have had investment advice from a regulated firm; and
- d. An individual if they are to purchase at least PNK250,000 of the bond and have had investment advice from a regulated firm.

PNGX will review the limitation of the market to wholesale investors after the first 12 months of operation having regard to, amongst other factors, market experience of issuance, the level of interest in the market by both wholesale investors and retail investors and the views of the Securities Commission.



Buying and selling bonds on PNGX

There are two main ways in which you can invest in bonds. They are on the:

- primary market; or
- secondary market.

When the borrower first borrows the money and issues the bonds directly to the investor, the investor is buying the bond on the “primary market”. An example of this is when the government borrows money and the Bank of PNG conducts a tender auction to determine the price at which the bonds will be issued.

If a corporate bond is tradeable on PNGX, once the primary market period has finished, the bond will start trading on PNGX (the “secondary market”).

If you buy a bond on PNGX, you are buying it from another investor and not from the borrower. As the buyer, the borrower now owes you, not the original investor, the principal amount.

In order to buy or sell bonds on PNGX you will need to use a stockbroker. The PNGX website (www.pngx.com.pg) can help you to locate a broker that may be able to assist.

Accrued Interest

Unlike shares, bonds accrue interest on a daily basis. Accrued interest is the amount of interest that has become payable on a bond from the bond’s original issuance date, or the last coupon date, until the date when the bond is bought or sold on PNGX.

For example, a bond with a 100 kina face value and a 6.5% coupon accrues interest at 6.50 kina per year, or 1.7808 toea per day. If interest is paid half yearly (that is, after 182 days) and if you sell a bond and the trade settles on the 60th day after the last interest payment, you will receive 106.85 toea (60 x 1.7808) of accrued interest from the buyer. This is because the buyer will later receive the interest for the full 182 days but will only have held the bond for 122 days.

How bonds trade on PNGX

Bonds are traded on the PNGX Debt Market. PNGX operates the PNGX Debt Market in accordance with the *Capital Market Act 2015*.

Bonds are traded on PNGX on the basis of price. From the price, you can calculate the yield. We have provided an example of how this works at the end of this document.

On the PNGX trading system, your stockbroker will be able to see what is called the “clean price”. The clean price is the price of a bond without factoring out any accrued interest. Clean price is also referred to as the capital price of a bond. However, because the seller is entitled to any accrued interest since the last coupon date, the price the buyer actually pays on settlement of a trade is the “dirty price”. The dirty price is the price of a bond that includes the interest that has accrued and is due for payment on the next coupon payment.



Dirty price is also known as the gross price of a bond. Once a trade is executed, your stockbroker will be notified of the amount of accrued interest and the settlement price.

The price which PNGX publishes each evening is the clean price.

PNGX Codes

Bonds trade on PNGX using security codes in the same way as shares. Each bond is identified by a PNGX security code that is five or six alpha-numeric characters long.

For example, a corporate bond issued by ABC Services Limited may have “ABC” as the first 3 characters. If fixed interest sovereign bonds issued by the Government of PNG were to be traded on PNGX they would commence with PNG as the first 3 characters.

The fourth and fifth characters are numeric and indicate the maturity year (e.g. 2024 = 24).

The sixth character is alpha-numeric and indicates the series number for that year commencing at 1 through to 9 then “A” through to “Z”. This means there can be a maximum of 35 series for any one year of maturity.

For example, the security code ABC252 represents the second ABC Limited fixed interest bond maturing in 2025. The security code ABC25A also represents an ABC Limited fixed interest bond maturing in 2025 but ABC252 and ABC25A may have different interest rates or maturity dates within the year.

International Securities Identification Number

Bonds are also allocated an International Securities Identification Number (“ISIN”) to make it easier for international investors to buy bonds on PNGX.

The ISIN is determined in accordance with International Standard ISO 6166.

PNGX security descriptions

In addition to its unique PNGX code, PNGX allocates each bond three different security descriptions:

- Long form description: A maximum of 35 characters which is the Financial Instrument Short Name (FISN) determined in accordance with International Standard ISO 18774. Bonds can have a wide variety of features and characteristics. The long form description provides some more information about these features, which are not discernible from the PNGX code.
- Abbreviated description: A maximum of 18 characters
- Short description: A maximum of 8 characters

For example:



| | | |
|---------------------------------|---|--|
| Issuer: | Bank of PNG | ABC Limited |
| Bond characteristics | 7.3% Treasury Bill maturing 30 September 2028 | 7.3% Debenture maturing 30 April 2028 Subordinated |
| PNGX Code: | BPN284 | ABC28S |
| Long form description: | BPNG/7.3 TBill 20280930 | ABC/7.3 Deb 20280430 Sub |
| Abbreviated description: | BPN/7.3 20280930 | ABC/7.3 20280430 |
| Short description: | BPN7.328 | ABC7.328 |

Owing to limitations with the number of characters which may be used some features may not be able to be included in a bond's description. It is important that you always review the borrower's prospectus, information memorandum or term sheet and consult your stockbroker or qualified financial adviser to ensure you understand all of a security's features and terms.

Settlement

Settlement of bonds bought or sold on PNGX occurs on a T+3 basis and the settlement price of bonds reflect this.

Price information

Each evening PNGX publishes the clean price of each bond.

You can get information about current trading prices of bonds through a number of channels including:

- the PNGX website (www.pngx.com.pg); or
- Your stockbroker who should be able to provide the current market price for any PNGX traded bond.



An example of assessing bonds

On 13 June 2019, you purchase 1,000 ABC Limited Bonds for 100 kina each with the following characteristics:

| | |
|--------------------------------|---|
| Coupon | 2.75% fixed |
| Coupon frequency | Semi-annual: 21 November and 21 May |
| Maturity date | 21 November 2027 |
| Facevalue | PGK 100 |
| Purchase price per bond | PGK 111.34 (excluding brokerage and fees) |
| Total purchase price | PGK 111.34 (excluding brokerage and fees) |

Whilst you purchased the 1,000 bonds on 13 June 2019, the settlement date for the purchase will be T+3 days later on 18 June 2019.

If you hold the bonds to maturity, the return on your investment will be as follows.

Income stream

The coupon is 6% per annum. The coupon is paid semi-annually so the amount you are due to receive twice a year will be:

$$\begin{aligned}(\text{number of bonds} \times \text{face value}) \times (\text{coupon rate} / \text{coupon frequency}) &= (1,000 \times \text{PGK } 100) \times (0.0275/2) \\ &= \text{PGK } 1,375\end{aligned}$$

You will receive this amount, twice yearly, starting on 21 November 2019, being the first interest payment date after the bonds were purchased on 13 June 2009 until 21 May 2027, being the second last interest payment date before the bonds are due to mature.

Payment at maturity

The maturity date is 21 November 2027, at which point you are due to receive the face value of the bonds as well as the final coupon. The payment due at maturity will be:

$$\begin{aligned}(\text{number of bonds} \times \text{face value}) &= (1,000 \times \text{PGK } 100) \\ &= \text{PGK } 100,000\end{aligned}$$

PLUS

$$\begin{aligned}[(\text{number of bonds} \times \text{face value}) \times (\text{coupon rate} / \text{coupon frequency})] &= [(1,000 \times \text{PGK } 100) \times (0.0275/2)] \\ &= \text{PGK } 1,375\end{aligned}$$

$$\text{TOTAL RECEIVABLE} = \text{PGK } 101,375$$

You will receive the amount of PGK 101,375 on 21 November 2027.



Nominal Yield

The nominal yield of the bonds is equal to their coupon rate of 2.75%. The nominal yield will remain at 2.75% throughout the life of the bonds, because the coupon rate is fixed.

Yield to maturity

To calculate your true yield to maturity, you need to take account of the premium you paid for the bonds over and above their face value, as well as the accrued interest at the time of purchase.

You bought the bonds on 13 June 2019. This is 23 days after the last coupon was paid on 21 May 2019 and so there is accrued interest incorporated into the price of the bonds, calculated as follows:

$$\begin{aligned} (\text{face value}) \times (\text{coupon rate}) \times (\text{number of days since coupon payment})/365 &= \text{PGK}100 \times 0.0275 \times 23/365 \\ &= \text{PGK}0.173 \end{aligned}$$

Of the total purchase price of PGK 111.34 you paid for each bond, PGK 0.173 represents accumulated interest and the real capital price you have paid for each bond is PGK 111.167, not PGK 111.34.

The formula for calculating yield to maturity is quite complex but taking account of the interest payments you will receive by way of income stream and the face value at maturity, the real yield to maturity on your investment in the bonds is 1.347%.

Note that the yield to maturity (1.347%) is lower than the coupon (2.75%). This is because the real capital price you paid per bond (PGK 111.167) was higher than its face value (PGK 100).

Please note that this example uses illustrative rates and figures to demonstrate one particular scenario. In order to assess the merits of any particular transaction, rates and figures applicable at the time need to be used. This case study does not take into account any losses or gains on the value of a government bond as a result of changing market conditions or interest rates.

PNGX recommends you discuss the yield of a particular bond with a stockbroker or qualified financial adviser.

Glossary

| | | | |
|-------------------------|---|--------------------------------|--|
| Accrued interest | The amount of interest that has accrued on a bond from the bond's original issuance date or the last coupon date, to the date when the bond is bought or sold. | Central Bank Bill (CBB) | credit quality of the borrower changes. Central Bank Bill – a type of short-term Government Bond. |
| Annual coupon | A coupon that is paid once a year. | Clean price | The price of a bond after factoring out any accrued interest. Clean price is also referred to as the capital price of a bond. See also 'dirty price'. |
| Basis point | One hundredth of a percentage point (0.01%). 100 basis points equals 1%. If a bond's yield has gone up by 50 basis points, it has gone up by 0.50% (eg from 4.00% to 4.50%). | Corporate bonds | Bonds issued by a company. |
| Bid price | The price a buyer is offering. | Coupon | The interest amount paid on the specified date to an investor in a bond. |
| Borrower | The entity (or borrower) that issues a bond to raise money from investors. | Coupon date | The date on which the coupon interest is paid to the holder of a bond. |
| BPNG | Bank of Papua New Guinea. The Bank of Papua New Guinea is the central bank for Papua New Guinea. | Coupon frequency | The frequency with which coupon (interest) payments are made throughout the life of a bond. Usually this will be quarterly, semi-annually or annually. |
| Capital price | Gross price less accrued interest. This is the underlying value of a bond ascribed by the market. It is based on a number of variables, including current market interest rates relative to the coupon rate, time to maturity, ranking and credit quality. This value will usually remain relatively stable from one day to the next, unless general market interest rates move or the | Coupon rate | The nominal interest rate a bond pays. It is commonly expressed as a percentage rate. |
| | | Credit risk | The risk that a borrower may be unable to meet the interest or capital repayments on a bond when they fall due. Generally, the higher the credit risk of the borrower, the higher the interest rate that investors will expect in order to risk providing funds to the borrower. |



| | | | |
|-------------------------|--|-----------------------------|--|
| Default | When a borrower cannot meet its payment obligations on a bond. | Inscribed Stock (IS) | Inscribed Stock – a type of medium to long-term Government Bond. |
| Dirty price | The price of a bond that includes the interest that has accrued and is due for payment on the next coupon payment. Dirty price is also known as the gross price of a bond. See also ‘clean price’. | Liquidity | The ease with which a bond can be readily converted into cash. |
| Discounted price | When the clean price or capital price of a bond is less than its face value. | Maturity date | The date on which a bond matures. This is the date on which the final coupon and the face value of a bond are paid to investors. A bond effectively expires once these payments are made. |
| Ex interest date | The date at which an exchange traded bond starts trading without (“ex”) the entitlement to receive the current interest payment. The ex interest date is shortly before the record date of the next interest distribution. | Nominal value | The face value of a bond. |
| Face value | The amount that an investor is due to receive at maturity and on which interest is calculated over the life of a bond. This is also referred to as the par value or nominal value. | Nominal yield | A measure of the return on a bond based on the annual coupon payments expressed as a percentage of the face value of the bond. It takes no account of the current market price of the bond or any future capital gain or loss on the bond. For a fixed rate bond, the nominal yield is equal to the coupon rate. |
| Fixed rate | A bond that pays a fixed rate of interest over the life of the bond. | Offer price | The price a seller is asking. |
| Government bonds | Bonds issued by a government. | POMSoX | PNGX |
| Gross price | The price an investor pays to buy a bond, which is made up of its ‘capital price’ plus ‘accrued interest’. Gross price is also known as the dirty price of a bond. See also ‘clean price’. | Premium price | When the clean price or capital price of a bond exceeds its face value. |
| | | Principal | The face value of a bond on which interest is calculated. |
| | | Purchase price | The dollar amount paid to purchase a bond. |
| | | Quarterly coupon | A coupon that is paid four times a year. |
| | | Record date | The date at which an investor needs to be |

| | | | |
|---------------------------|---|------------------------------|---|
| | registered as the holder of a bond in order to receive the current coupon payment. | Term | The period from the issue date of a bond to its maturity date. |
| Running yield | A measure of the return on a bond based on the annual coupon payments expressed as a percentage of its current market price. It takes no account of any future capital gain or loss on the bond. | Time to maturity | The number of days until a bond matures. |
| | | Treasury bill (TBill) | Treasury bill – a type of short-term Government Bond. |
| | | Unsecured bond | A bond that is not backed by a charge over an asset. |
| Secured bond | A bond backed by a charge over an asset of the borrower. | Yield | The annual return on a bond expressed as a percentage. |
| Semi-annual coupon | A coupon that is paid twice a year. | Yield curve | A graph showing the relationship between yield to maturity and time to maturity. |
| Senior debt | A class of corporate debt whose rights with respect to payment of interest and repayment of principal rank ahead of (are senior to) other classes of debt and over all classes of equity by the same borrower. Senior debt is typically backed by a charge over various assets of the debtor. | Yield to maturity | The average annual return an investor can expect to receive if they buy a bond for its current market value and hold the bond to maturity. The calculation factors in coupon payments, the time to and amount due at maturity, and the capital gain or loss that will be made on maturity. It also assumes that the coupon payments are reinvested in the bond. |
| Settlement price | The price of a bond to be paid upon settlement of a trade on PNGX. It includes the interest that has accrued up until the date of the trade (the dirty price) plus interest which accrues until settlement on T+3. | | |
| Subordinated debt | A class of corporate debt whose rights with respect to payment of interest and repayment of principal rank behind (are subordinated to) another class or classes of debts. Subordinated debt will still rank ahead of equity. | | |