Bond Markets

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This chapter describes the operation of bond markets. The focus is on some important trends that have impacted the bond market, market participants, the characteristics of bonds according to the type of issuer, the conventions and practices of bond markets, and the role of credit risk in bond markets.

Introduction

In most countries government expenditure exceeds the level of government income received through taxation. This shortfall is met by government borrowing, and bonds are issued to finance the government's debt. The core of any domestic capital market is usually the government bond market, which also forms the benchmark for all other borrowing. (Government agencies also issue bonds, as do local governments or municipalities. Often, but not always, these bonds are virtually as secure as government bonds.) Corporate borrowers issue bonds both to raise finance for major projects and also to cover ongoing and operational expenses. Corporate finance is a mixture of debt and equity, and a specific capital project will often be financed by a mixture of both.

The debt capital markets exist because of the financing requirements of governments and corporations. The source of capital is varied, but the total supply of funds in a market is made up of personal or household savings, business savings and increases in the overall money supply. However, the requirements of savers and borrowers differ significantly, in that savers have a short-term investment horizon while borrowers prefer to take a longer-term view. The 'constitutional weakness' of what would otherwise be un-intermediated financial markets has led, from an early stage, to the development of financial intermediaries.

The Players

A wide range of financial intermediaries are involved in the bond markets. We can group them broadly into borrowers and investors, plus the institutions and individuals who are part of the business of bond trading.
Borrowers access the bond markets as part of their financing requirements, and therefore can include sovereign governments, local authorities, public sector organisations, and corporations. Virtually all businesses operate with a financing structure that is a mixture of debt and equity finance, and debt finance almost invariably contains a form of bond finance.

Intermediaries and Banks

In its simplest form a financial intermediary is a broker or agent. Today we would classify the broker as someone who acts on behalf of the borrower or lender, buying or selling a bond as instructed.

A *retail bank* deals mainly with the personal financial sector and small businesses, and in addition to loans and deposits also provides cash transmission services. A retail bank is required to maintain a minimum cash reserve, to meet potential withdrawals, but the remainder of its deposit base can be used to make loans.

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This does not mean that the total size of its loan book is restricted to what it has taken in deposits: loans can also be funded in the wholesale market.

An *investment bank* will deal with governments, corporates and institutional investors. As part of the bank's corporate finance function, it will provide an agency service for their customers and are the primary vehicle through which a corporate will borrow funds in the bond markets. It will also act as wholesaler in the bond markets, a function known as *market making*. The bond issuing function of an investment bank, by which the bank will issue bonds on behalf of a customer and pass the funds raised to this customer, is known as *origination*. Investment banks will also carry out a range of other functions for institutional customers, including export finance, corporate advisory services and fund management. Other financial intermediaries will trade not on behalf of clients but for their own book. These include arbitrageurs and speculators. Usually such market participants form part of investment banks.

Institutional Investors

We can group the main types of institutional investors according to the time horizon of their investment activity:

- *Short-term institutional investors*. These include banks and building societies, money market fund managers, central banks and the treasury desks of some types of corporations. Such bodies are driven by short-term investment views, often subject to close guidelines. Banks will have an additional requirement to maintain liquidity, often in fulfilment of regulatory authority rules, by holding a proportion of their assets in the form of short-term instruments that are easy to trade.
- *Long-term institutional investors.* Typically these types of investors include pension funds and life assurance companies. Their investment horizon is long-term, reflecting the nature of their liabilities. Often they will seek to match these liabilities by holding long-dated bonds.
- *Mixed horizon institutional investors*. This is possibly the largest category of investors and will include general insurance companies and most corporate bodies. Like banks and financial sector companies, they are also very active in the primary market, issuing bonds to finance their operations.

Market Professionals

These players include the banks and specialist financial intermediaries mentioned above, firms that one would not automatically classify as 'investors' although they will also have an investment objective. Their time horizon will range from one day to the very long term. They include:

- proprietary trading desks of investment banks;
- bond market makers in securities houses and banks providing a service to their customers;
- inter-dealer brokers that provide an anonymous broking facility.

Proprietary traders will actively position themselves in the market in order to gain trading profit, for example in response to their view on where they think interest rate levels are headed. These participants will trade direct with other market professionals and investors, or via brokers.

Market makers or 'traders' (also called 'dealers' in the United States) are wholesalers in the bond markets; they make two-way prices in selected bonds. Firms will not necessarily be active market makers in all types of bonds; smaller firms often specialise in certain sectors. In a two-way quote the *bid price* is the price at which the market maker will buy stock, so it is the price the investor will receive when selling stock. The *offer price* or ask price is the price at which investors can buy stock from the market maker. As one might expect, the bid price is always lower than the offer price, and it is this spread that represents the theoretical profit to the market maker. The bid–offer spread set by the market maker is determined by several factors, including supply and demand, and liquidity considerations for that particular stock, the trader's view on market direction and volatility, as well as that of the stock itself and the presence of any market intelligence. A large bid–offer spread reflects low liquidity in the stock, as well as low demand.

Inter-dealer brokers (IDBs) exist to facilitate a liquid market. They provide an anonymous broking facility so that market makers can trade in size at the keenest prices. Generally IDBs will post prices on their screens that have been provided by market makers on a no-names basis. The screens are available to other market makers (and in some markets to other participants as well). At any time IDB screen prices represent the latest market price and bid–offer spread. IDBs exist in government, agency, corporate and Eurobond markets.

Bonds by Issuers

This section describes the main classes of bonds by type of borrower.

On the public side we distinguish between *sovereign bonds* issued by national governments, *agency bonds* issued by public bodies, and *municipal bonds* issued by local governments.

On the private side we have the *corporate bonds* issued by corporations, and we further distinguish between *domestic* and *foreign bonds*, and *international bonds*, the latter constituting the large class of *Eurobonds*.

Government Bonds

The four major government bond issuers in the world are the euro-area countries, Japan, the United States and, to a lesser extent, the United Kingdom.

In the US case, government securities are issued by the US Department of the Treasury and backed by the full faith and credit of the US government. These are called 'Treasury securities'. The Treasury market is the most active market in the world, thanks to the large volume of total debt and the large size of any single issue. The amount of outstanding marketable US Treasury securities is huge, with a value over $4 trillion as of December 2006. The Treasury market is the most liquid debt market, that is, the one where pricing and trading are most efficient. The bid–offer spread is far lower than in the rest of the bond market. Recently issued Treasury securities are referred to as *on-the-run* securities, as opposed to *off-the-run* securities, which are old issued securities. Special mention must be made of benchmark securities, which are recognized as market indicators. There typically exists one such security on each of the following yield curve points: 2 years, 5 years, 10 years and 30 years. As they are over-liquid they trade richer than all of their direct neighbours.

US Agency Bonds

These are issued by different organizations, seven of which dominate the US market in terms of outstanding debt:

Federal National Mortgage Association (Fannie Mae),
Federal Home Loan Bank System (FHLBS),
Federal Home Loan Mortgage Corporation (Freddie Mac),
Farm Credit System (FCS),
Student Loan Marketing Association (Sallie Mae),
Resolution Funding Corporation (RefCorp) and

Tennessee Valley Authority (TVA).

Agencies have at least two common features:

- *They were created to fulfil a public purpose*. For example in the USA, Fannie Mae and Freddie Mac aim to provide liquidity for the residential mortgage market. The FCS aims to support agricultural and rural lending. RefCorp aims to provide financing to resolve the US Savings Bank ('Thrift') crisis.
- *The debt is not necessarily guaranteed by the government*. Hence it contains a credit premium. In fact in the USA, there are a few federally related institution securities, such as the Government National Mortgage Association (GNMA), and these *are* generally backed by the full faith and credit of the US government. There is no credit risk, but since they are relatively small issues they contain a liquidity premium.

Agencies are differently organised. For instance, Fannie Mae, Freddie Mac and Sallie Mae are owned by private-sector shareholders, the FCS and the FHLBS are cooperatives owned by the members and borrowers. One sizeable agency, the Tennessee Valley Authority, is owned by the US government.

Municipal Bonds

Municipal securities constitute the municipal market, that is, the market where state and local governments – counties, special districts, cities and towns – raise funds in order to finance projects for the public good such as schools, highways, hospitals, bridges and airports. Typically, bonds issued in this sector are exempt from federal income taxes, so this sector is referred to as the *tax-exempt sector*. There are two generic types of municipal bonds: *general obligation bonds* and *revenue bonds*. The former have principal and interest secured by the full faith and credit of the issuer and are usually supported by either the issuer's unlimited or limited taxing power. The latter have principal and interest secured by the revenues generated by the operating projects financed with the proceeds of the bond issue. Many of these bonds are issued by special authorities created for the purpose.

Corporate Bonds

Corporate bonds are issued by entities belonging to the private sector. They represent what market participants call the credit market. In the corporate markets, bond issues usually have a stated term to maturity, although the term is often not fixed because of the addition of call or put features. The convention is for most corporate issues to be medium or long-dated, and rarely to have a term greater than 20 years.

Investors prefer to hold bonds with relatively short maturities because of the greater price volatility experienced in the markets since the 1970s, when high inflation and high interest rates were common. A shorter-dated bond has lower interest-rate risk and price volatility than a longer-dated bond. There is thus a conflict between investors - whose wish is to hold bonds of shorter maturities, and borrowers - who would like to fix their borrowing for as long a period as possible. Although certain institutional investors such as pension fund managers have an interest in holding 30-year bonds, it would be difficult for all but the largest, best-rated companies, to issue debt with a maturity greater than this. Highly rated corporate borrowers are often able to issue bonds without indicating specifically how they will be redeemed. By implication, maturity proceeds will be financed out of the company's general operations or by the issue of another bond. However, borrowers with low ratings may make specific provisions for paying off a bond issue on its maturity date, to make their debt issue more palatable to investors.

Bonds that are secured through a charge on fixed assets such as property or plant often have certain clauses in their offer documents that state that the issuer cannot dispose of the assets without making provision for redemption of the bonds, as this would weaken the collateral backing for the bond. These clauses are known as *release-of-property* and *substitution-of-property* clauses. Under these clauses, if property or plant is disposed, the issuer must use the proceeds (or part of the proceeds) to redeem bonds that are secured by the disposed assets. The price at which the bonds are retired under this provision is usually par, although a special redemption price other than par may be specified in the repayment clause.

A large number of corporate bonds, especially in the US market, have a *call provision*. Borrowers prefer this as it enables them to refinance debt at cheaper rates when market interest rates have fallen significantly below their level at the time of the bond issue. A call provision is a negative feature for investors, as bonds are only paid off if their price has risen above par. Although a call feature indicates an issuer's interest in paying off the bond, because they are not attractive for investors, callable bonds pay a higher yield than non-callable bonds of the same credit quality.

Corporate bonds are traded on exchanges and OTC. The corporate bond market varies in liquidity, depending on the currency and type of issuer of any particular bond. As in the case of sovereign bonds, liquidity is greater for recent issues. But corporate bonds in general are far less liquid than government bonds: they bear higher bid–ask spreads.

One of the most liquid corporate bond types is the Eurobond, which is an international bond issued and traded across national boundaries. This is discussed below.

Eurobonds (International Bonds)

In any market there is a primary distinction between *domestic* bonds and other bonds.

Domestic bonds are issued by borrowers domiciled in the country of issue, and in the currency of the country of issue. Generally they trade only in their original market.

A *Eurobond* is issued across national boundaries and can be in any currency, which is why they are also sometimes called *international* bonds. In fact, it is now more common for Eurobonds to be referred to as international bonds, to avoid confusion with 'euro bonds', which are bonds denominated in *euros*, the currency of most countries of the European Union (EU). As an issue of international bonds is not restricted in terms of currency or country, the borrower is not restricted as to its nationality either.

There are also *foreign* bonds, which are domestic bonds issued by foreign borrowers. An example of a foreign bond is a *Bulldog*, which is a sterling bond issued for trading in the UK market by a foreign borrower. The equivalent foreign bonds in other countries include *Yankee* bonds (USA), *Samurai* bonds (Japan), *Alpine* bonds (Switzerland) and *Matador* bonds (Spain). There are detailed differences between these bonds, for example in the frequency of interest payments that each one makes and the way the interest payment is calculated.

Some bonds, such as domestic bonds, pay their interest *net*, which means net of a withholding tax such as income tax. Other bonds, including Eurobonds, make *gross* interest payments.

The Markets

A distinction is made between financial instruments of up to one year's maturity and instruments of over one year's maturity. Short-term instruments make up the *money market* while all other instruments are deemed to be part of the *capital market*. There is also a distinction made between the *primary market* and the *secondary market*. A new issue of bonds made by an investment bank on behalf of its client is made in the primary market. Such an issue can be a *public offer*, in which anyone can apply to buy the bonds, or a *private offer*, where the customers of the investment bank are offered the stock. The secondary market is the market in which existing bonds are subsequently traded.

Bond markets are regulated as part of the overall financial system. In most countries there is an independent regulator responsible for overseeing both the structure of the market and the bona fides of market participants. For instance, the US market regulator is the Securities and Exchange Commission (SEC). The UK regulator, the Financial Services Authority (FSA), is responsible for regulating both wholesale and retail markets; (it reviews the capital requirements for commercial and investment banks) and it is also responsible for regulating the retail mortgage market. Money markets are usually overseen by the country's central bank – for example, the Federal Reserve manages the daily money supply in the USA, while the Bank of England provides liquidity to the market by means of its daily money market repo operation.

The Government Bond Market

Government bonds are traded on the following four markets:

- The primary market: newly issued securities are first sold through an auction, which is conducted on a competitive bid basis. The auction process happens between the government and primary/non-primary dealers according to regular cycles for securities with specific maturities.[2]
- The secondary market: here a group of government securities dealers offer continuous bid and ask prices on specific outstanding government bonds. This is an OTC market.
- The when-issued market: here securities are traded on a *forward* basis before they are issued by the government.
- The repo market: in this market securities are used as collateral for loans. A distinction must be made between the *general-collateral* repo rate (GC) and the *special* repo rate. The GC repo rate applies to the major part of government securities. Special repo rates are specific repo rates which typically concern on-the-run and cheapest-to-deliver securities, which are very expensive.

The bonds issued by regional governments and certain public sector bodies, such as national power and telecommunications utilities, are usually included as 'government' debt, as they are almost always covered by an explicit or implicit government guarantee. All other categories of borrower are therefore deemed to be 'corporate' borrowers. Generally the term 'corporate markets' is used to cover bonds issued by non-government borrowers.

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[2] The US auction cycles are as follows: two-year notes are auctioned every month and settle on the 15th. Five-year notes are auctioned quarterly, in February, May, August and November of each year, and settle at the end of the month. Ten-year notes are auctioned quarterly, in February, May, August and November of each year, and settle on the 15th of the month. Thirty-year bonds are auctioned semi-annually: in February and August of each year, and settle on the 15th of the month. Auctions are announced by the Treasury one week in advance, the issuing date being set one to five days after the auction.

The Corporate Bond Market

Notwithstanding the recent turmoil in the credit markets, and in the context of historically low level of interest rates linked to a decreasing trend in inflation as well as in budget deficits, the corporate bond market is rapidly developing and growing. These strong tendencies affects both the supply and the demand of funding. While corporate supply is expanding, in relation to bank disintermediation, corporate demand is rising as more and more investors accustomed to dealing with only government bonds are including corporate bonds in their portfolios so as to capture spread and generate performance.

The market by country and sector

Within the four major bond markets in the world, the US dollar (USD) corporate market is the most mature, followed by the sterling (GBP) market and the euro (EUR) market, the growth of the latter being reinforced by the launching of the euro. The Japanese yen (JPY) market differentiates itself from the others, because of the on-going credit situation and economic difficulties it has been facing since the Asian crisis. The USD corporate bond market is the largest and most diversified: it is for instance more than twice as big as the Euro market, and low investment-grade ratings are much more represented (being over 80% of the index).

The corporate bond market can be divided into three main sectors: financial, industrial, and utility. Apart from the USD market, the financial sector is over-represented. It is another proof of the maturity of the USD market, where the industrial sector massively uses the market channel in order to finance investment projects. It is also worth noting that the sector composition in the USD market is far more homogeneous than in the other markets. For example, the banking sector is systematically predominant in the GBP, EUR and JPY financial markets, while the telecommunication sector exceeds one third of the Euro industrial market. As a result, local credit portfolio diversification can be better achieved in the USD market than in the others.

Underwriting a new issue

The issue of corporate debt in the capital markets requires a primary market mechanism. The first requirement is a collection of merchant banks or investment banks that possess the necessary expertise. Investment banks provide advisory services on corporate finance as well as underwriting services, which is a guarantee to place an entire bond issue into the market in return for a fee. As part of the underwriting process the investment bank will either guarantee a minimum price for the bonds, or aim to place the paper at the best price available. The major underwriting institutions in emerging economies are often branch offices of the major integrated global investment banks.

Small size bond issues may be underwritten by a single bank. Larger issues, or issues that are aimed at a cross-border investor base, are usually underwritten by a syndicate of investment banks. This is a group of banks that collectively underwrite a bond issue, with each syndicate member being responsible for placing a proportion of the issue. The bank that originally won the mandate to place the paper invites other banks to join the syndicate. This bank is known as the *lead underwriter*, *lead manager* or *book-runner*. An issue is brought to the market simultaneously by all syndicate members, usually via the *fixed price re-offer* mechanism.[3] This is designed to guard against some syndicate members

[3] In a fixed price re-offer scheme the lead manager will form the syndicate, which will agree on a fixed issue price, a fixed commission and the distribution amongst themselves of the quantity of bonds they will take as part of the syndicate. The banks then re-offer the bonds that they have been allotted to the market, at the agreed price. This technique gives the lead manager greater control over an issue. It sets the price at which other underwriters in the

selling stock at a discount in the *grey market*, to attract investors.[4] This would force the lead manager to buy the bonds back if it wished to support the price. Under the fixed price re-offer method, price undercutting is not possible as all banks are obliged not to sell their bonds below the initial offer price that has been set for the issue. The fixed price usually is in place up to the first settlement date, after which the bond is free to trade in the secondary market.

The Eurobond Market

The key feature of a Eurobond is the way it is issued, internationally across borders and by an international underwriting syndicate. The method of issuing Eurobonds reflects the cross-border nature of the transaction and, unlike government markets where the auction is the primary issue method, Eurobonds are typically issued under a fixed price re-offer method or a *bought deal*.[5]

The range of borrowers in the Euromarkets is very diverse. The majority of borrowing has been by national governments, regional governments and public agencies of developed countries, although the Eurobond market is increasingly a source of finance for developing country governments and corporates.

Governments and institutions access the Euromarkets for a number of reasons. Under certain circumstances it is more advantageous for a borrower to raise funds outside its domestic market, due to the effects of tax or regulatory rules.[6] The international markets are very competitive in terms of using intermediaries, so a borrower may well be able to raise cheaper funds this way.

Other reasons why borrowers access Eurobond markets include:

- a desire to diversify sources of long-term funding. A bond issue is often placed with a wide range of institutional and private investors, rather than the more restricted investor base that may prevail in a domestic market. This gives the borrower access to a wider range of lenders, and for corporate borrowers this also enhances the international profile of the company.
- for both corporates and emerging country governments, the prestige associated with an issue of bonds in the international market.
- the flexibility of a Eurobond issue compared to a domestic bond issue or bank loan, illustrated by the different types of Eurobond instruments available.

Against this are balanced the potential downsides of a Eurobond issue, which include the following:

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syndicate can initially sell the bonds to investors. The fixed price re-offer mechanism is designed to prevent underwriters from selling the bonds back to the lead manager at a discount to the original issue price, that is, 'dumping' the bonds.

[4] The grey market is a term used to describe trading in the bonds before they officially come to the market, mainly market makers selling the bond short to other market players or investors. Activity in the grey market serves as useful market intelligence to the lead manager, who can gauge the level of demand that exists in the market for the issue. A final decision on the offer price is of course not made until the actual issue date.

[5] In a bought deal, a lead manager or a managing group approaches the issuer with a firm bid, specifying issue price, amount, coupon and yield. Only a few hours are allowed for the borrower to accept or reject the terms. If the bid is accepted, the lead manager purchases the entire bond issue from the borrower. The lead manager then has the option of selling part of the issue to other banks for distribution to investors, or doing so itself. In a volatile market the lead manager will probably parcel some of the issue to other banks for placement. However, it is at this time that the risk of banks dumping bonds on the secondary market is highest; in this respect lead managers will usually pre-place the bonds with institutional investors before the bid is made. The bought deal is focused primarily on institutional rather than private investors. As the syndicate process is not used, the bought deal requires a lead manager with sufficient capital and placement power to enable the entire issue to be placed.

[6] There is no formal regulation of the Eurobond market as such, but each market participant will be subject to the regulation of its country regulator.

- for all but the largest and most creditworthy of borrowers, the rigid nature of the issue procedure becomes significant during times of interest-rate and exchange-rate volatility, reducing the funds available for borrowers;
- issuing debt in currencies other than those in which a company holds matching assets, or in which there are no prospects of earnings, exposes the issuer to foreign exchange risk.

Credit Risk

As is the case for government and municipal bonds, the issuer of a corporate bond has the obligation to honour his commitments to the bondholder. A failure to pay back interests or principal according to the terms of the agreement constitutes what is known as *default*. Basically, there are two sources of default. First, the shareholders of a corporation can decide to break the debt contract. This comes from their limited liability status: they are liable for the corporation's losses only up to their investment in it. They do not have to pay back their creditors when it affects their personal wealth. Second, creditors can prompt bankruptcy when specific debt protective clauses, known as covenants, are infringed.

In case of default, there are typically three eventualities:

- First, default can lead to immediate bankruptcy. Depending on the seniority and face value of their debt securities, creditors are fully, partially or not paid back from the sale of the firm's assets. The percentage of the interest and principal they receive, according to seniority, is called the *recovery rate.*
- Second, default can result in a reorganisation of the firm within a formal legal framework. For example, under Chapter 11 of the American law, corporations that are in default may be granted a deadline so as to overcome their financial difficulties. This depends on the country's legislation.
- Third, default can lead to an informal negotiation between shareholders and creditors. This results in an exchange offer through which shareholders propose to creditors the exchange of their old debt securities for a package of cash and newly issued securities.

A corporate debt issue is priced over the same currency government bond yield equivalent curve. A liquid benchmark yield curve therefore is required to facilitate pricing. The extent of a corporate bond's yield spread over the government yield curve is a function of the market's view of the credit risk of the issuer and the perception of the liquidity of the issue. The pricing of corporate bonds is sometimes expressed as a spread over the equivalent maturity government bond, rather than as an explicit stated yield, or sometimes as a spread over another market reference index such as LIBOR.

Corporate bonds are much affected by credit risk. Their yields normally contain a default premium over government bonds, accounting for total default or credit risk, as well as over swaps. Swap spread, that is, the difference between the swap yield and the government yield with same maturity, is regarded as a systematic credit premium. In the four main bond markets swap yields reflect bank risk with rating AA, that is, the first rating grade below AAA, the normal rating for government bonds, accounting for specific default or credit risk.

Formal credit ratings are important in the corporate markets. Investors usually use both a domestic rating agency in conjunction with the established international agency such as Moody's or Standard & Poor's. As formal ratings are viewed as important by investors, it is in the interest of issuing companies to seek a rating from an established agency, especially if it is seeking to issue foreign currency and/or place its debt across national boundaries. Generally Eurobond issuers are investment-grade rated, and only a very small number are not rated at all.

Treasury securities are considered to have no credit risk. The interest rates they bear are the key interest rates in the US as well as in international capital markets. Agency securities' debt is high-quality debt; indeed, all rated agency senior debt issues are triple-A rated by Moody's and Standard & Poor's. This rating most often reflects healthy financial fundamentals and sound management, but also (and above all) the agencies' relationship to the US government. Among the numerous legal characteristics of the government agencies' debt, one can find that:

- agencies' directors are appointed by the President of the United States;
- issuance is only upon approval by the US Treasury;
- securities are issuable and payable through the Federal Reserve System;
- securities are eligible collateral for Federal Reserve Bank advances and discounts; and,
- securities are eligible for open market purchases.

Municipal debt issues, when rated, carry ratings ranging from triple-A, for the best ones, to C or D, for the worst ones. Four basic criteria are used by rating agencies to assess municipal bond ratings:

- the issuer's debt structure;
- the issuer's ability and political discipline for maintaining sound budgetary operations;
- the local tax and intergovernmental revenue sources of the issuer; and,
- the issuer's overall socio-economic environment.

