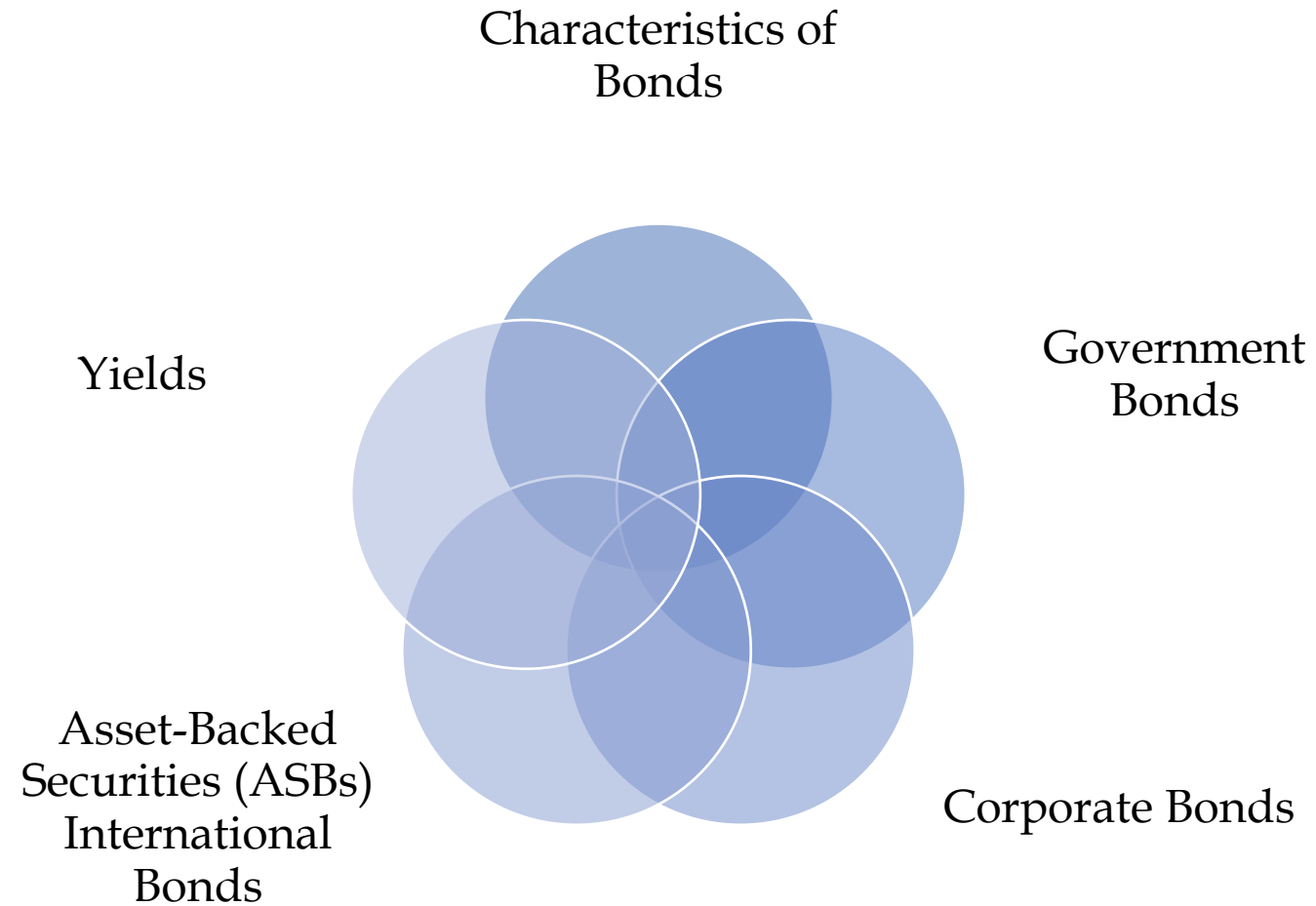




## Chapter 4 – Bonds

7 Questions





# Bond Definition

A bond is a loan – a loan which is tradeable

A fixed interest security can be defined as a *tradeable negotiable instrument*, issued by a *borrower* for a *fixed term*, during which a *regular and predetermined fixed rate of interest* based upon a *nominal value* is paid to the holder until it is *redeemed* and the *principal* is repaid



# Bond Characteristics & Terminology

• <b>Nominal</b>		<b>US\$10,000</b>
• <b>Stock</b>		<b>Treasury bond</b>
• <b>Coupon</b>	<b>7.5%</b>	
• <b>Redemption date</b>	<b>2024</b>	
• <b>Price</b>		<b>US\$146.80</b>
• <b>Value</b>		<b>US\$14,680</b>

**Nominal Value** - Also known as principal, face or par value. The sum of money to be repaid by the borrower at maturity

**Stock** - the name given to identify the stock and the borrower

**Coupon** - The level of income paid to the holder of the bond, stated as a % of the nominal value

**Maturity or Redemption Date** - Date at which the borrower will redeem the bond and repay the capital to the holder

**Price** - Price at which bond can be bought in market (quote per US\$100 nominal of stock)

**Value** - the value of the stock is calculated by multiplying the nominal amount of stock by the current price.



# Advantages and Disadvantages

## Advantages

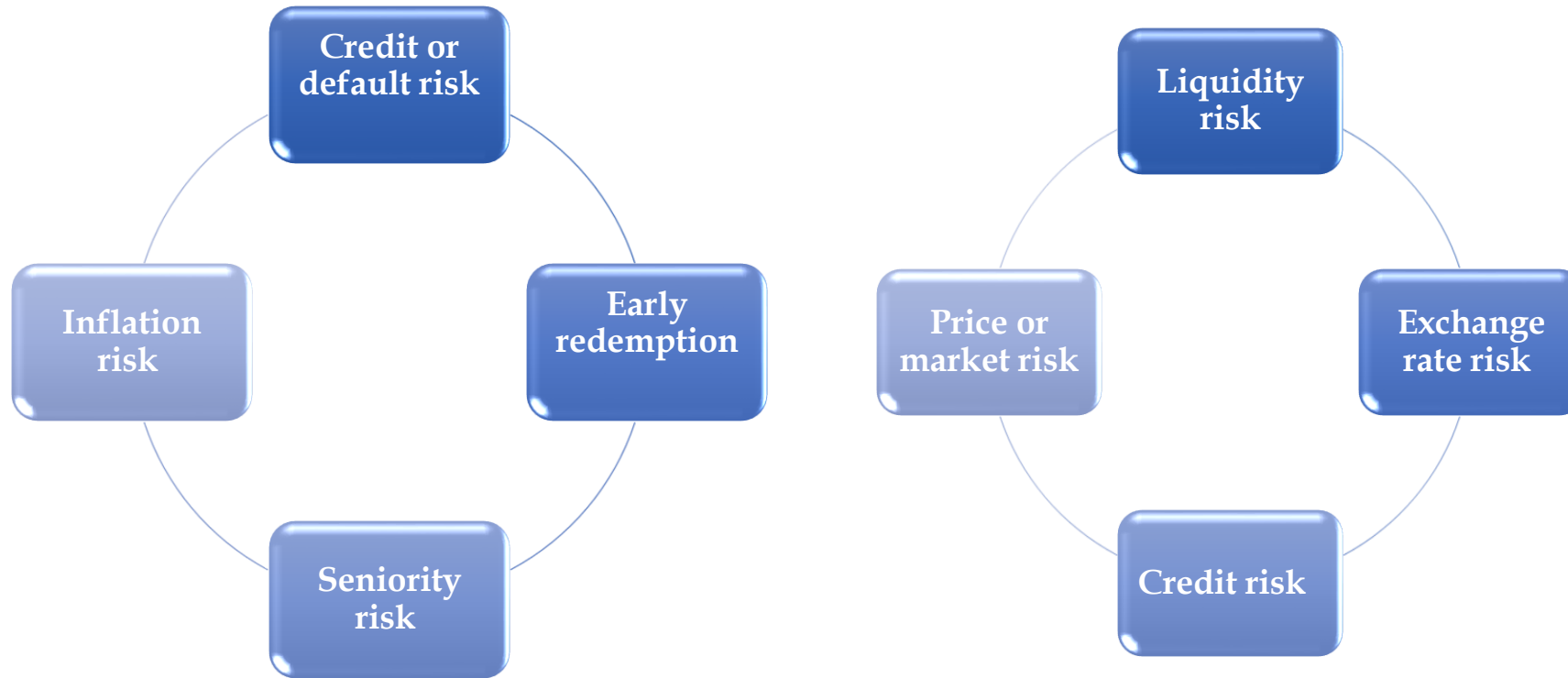
- Income - fixed-interest bonds provide a regular and certain flow of income; floating rate bonds provide a return in line with current rates
- Maturity date - fixed; dual dated or callable
- A range of income yields to suit different investment and tax situations
- Relatively Secure

## Disadvantages

- Real value of the income flow is eroded by the effects of inflation (except in the case of index-linked bonds)
- Default risk, namely that the issuer will not repay the capital at the maturity date



# Risks



# Price Risk – Changes to Interest rates

## **Example**

Interest rates are approximately 5%, and the government issues a bond with a coupon rate of 5% interest. Three months later interest rates have doubled to 10%.

## **What will happen to the value of the bond?**

The value of the bond will fall substantially. Its 5% interest is no longer attractive, so its resale price will fall to compensate, and to make the return it offers more competitive.

## **Example**

Interest rates are approximately 5%, and the government issues a bond with a coupon rate of 5% interest. Interest rates generally fall to 2.5%.

## **What will happen to the value of the bond?**

The value of the bond will rise substantially. Its 5% interest is very attractive, so its resale price will rise to compensate, and make the return it offers fall to more realistic levels.



The **credit risk**, or probability of an issuer defaulting on their payment obligations, and the extent of the resulting loss, can be assessed by reference to the **independent credit ratings** given to most bond issues.





# Credit Rating Agencies

Bond Credit Ratings				
Credit Risk		Moody's	Standard & Poor's	Fitch Ratings
Investment Grade				
Highest Quality		Aaa	AAA	AAA
High Quality	Very Strong	Aa	AA	AA
Upper medium Grade	Strong	A	A	A
Medium Grade		Baa	BBB	BBB
Non-Investment Grade				
Lower medium Grade	Somewhat Speculative	Ba	BB	BB
Low grade	Speculative	B	B	B
Poor quality	May default	Caa	CCC	CCC
Most speculative		C	CC	CC
No interest being paid or bankruptcy petition filed		C	D	C
In default		C	D	D



# US Government Bonds - Treasuries

The US government bond market is the largest and most liquid in the world. 4 Main Types:

- **Treasury bills** - They have maturities of less than a year and are typically issued with maturities of 28, 91 and 182 days. Are zero coupon.
- **Treasury notes** - fixed coupon and redemption date. Maturity 1- 10 yrs. Common 2, 5 & 10 yrs
- **Treasury bonds** - Maturities > 10 yrs. Common 30 yrs.
- **Treasury inflation-protected securities (TIPS)** - index-linked bonds. The principal value of the bond is adjusted regularly, based on movements in the CPI. Unlike the UK version, the coupon remains constant but is paid on the changing principal

**STRIPS (separate trading of registered interest and principal securities):** are stripped elements of Treasury notes, bonds and TIPS. Each bond is broken down into its underlying cash flows - that is, each individual interest payment plus the single redemption payment and traded as a separate ZCB.

- US Treasuries settlement is the next day.
- Interest is paid on a semi-annual basis.
- Federal agencies and municipal authorities also issue bonds e.g. Fannie Mae and Freddie Mac



# UK Government Bonds - GILTS

Carry a fixed coupon and a single repayment date e.g. 5% Treasury Gilt 2018. Represents the majority of government bonds in issue.

Also index-linked bonds where the coupon and the redemption amount are increased by the amount of inflation over the life of the bond

UK government stocks are also classified by how many years remain until redemption:

- 0-3 yrs - ultra short-dated
- 3-7 yrs - short-dated
- 7-15 yrs - medium-dated
- > 15 yrs - long-dated

Gilts are traded for settlement the next day.

Settlement takes place electronically and transfers take place by book entry.

Interest is paid on a semi-annual basis.



# German and French Government Bonds

## German Main Types:

Schatz - 2 yr maturities

Bobls - 5 yr maturities

Bunds 8 and 30 yrs, most common maturity is 10 yrs

- The Bund market is large and liquid and the yield on Bunds sets the benchmark for other European government bonds.
- Domestic trades settle 2 business days after trade date.
- Settlement takes place electronically by book entry.
- Interest on Bunds is paid on an annual basis.

## French Main Types:

- Longer-term instruments known as OATS
- Shorter-dated stocks known as BTANs - maturities up to 5 yrs

Settlement for OATS is T+2

Settlement for BTANs is for T+1 in domestic markets and T+2 for international

- Electronically by book entry.

Interest on OATS is paid on an annual basis.



Is one of the largest in the world - classified into 6 categories:

- Short-term bonds – 6 months to 1 yr. - ZCB
- Medium-term bonds
- Long-term bonds
- Super-long-term bonds – floating interest
- Individual investor bonds – floating interest
- Inflation-indexed bonds.

Inflation-indexed bonds - the principal amount is inflation adjusted, the coupon is fixed but payable on the inflation-adjusted principal amount.



# Primary Market Issuance

Government bonds are usually issued through agencies that are part of that country's Treasury department.

E.g. in the UK - Issue amounts are normally between £0.5 billion and £2 billion. The DMO accepts bids from those prepared to pay the highest price.

Country	Primary Issuance Agency
US	Bureau of the Public Debt
UK	Debt Management Office
Germany	Finanzagentur GmbH
France	Agence France Trésor
Japan	Ministry of Finance



**A corporate bond** is a bond that is issued by a company.

The term is usually applied to longer-term debt instruments with a maturity date of more than 12 months.

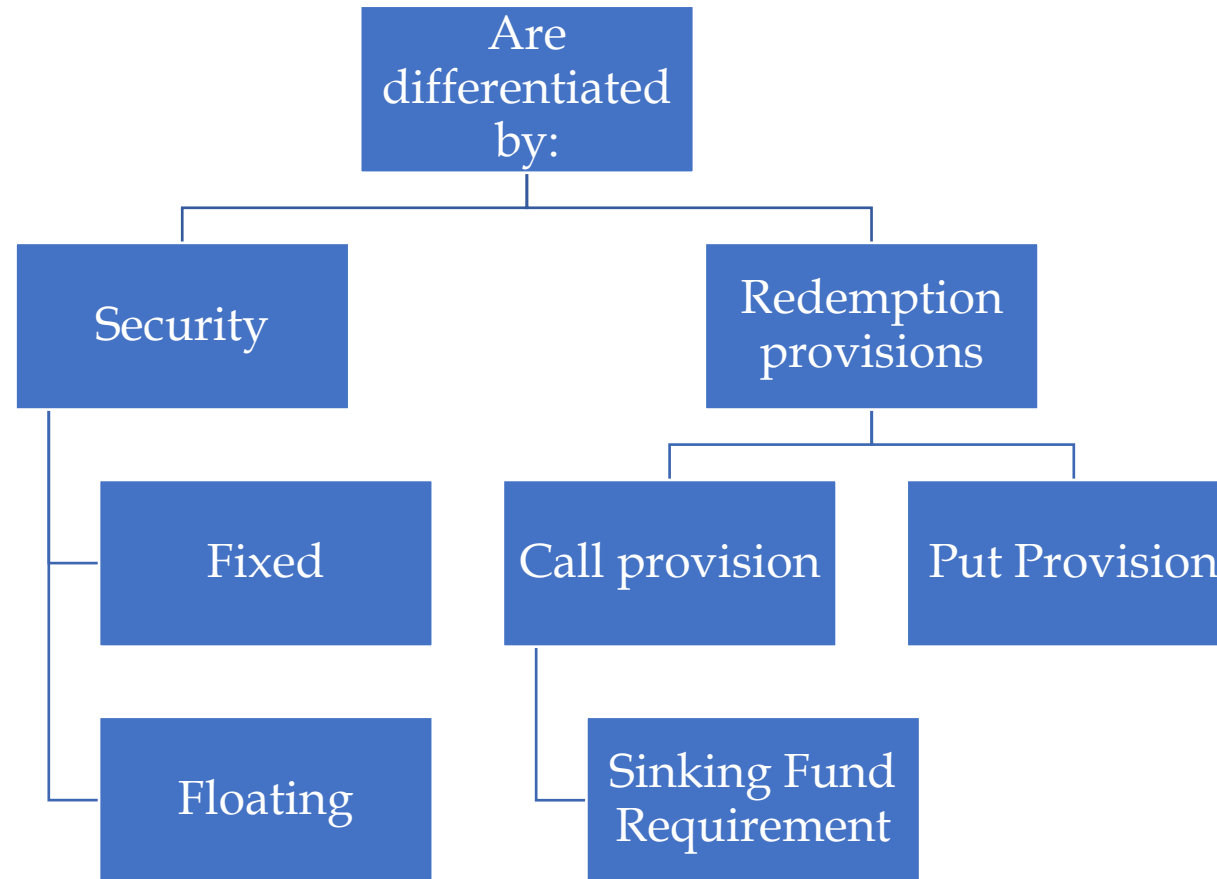
The term commercial paper is used for instruments with a shorter maturity.

Only companies with high credit ratings can issue bonds with a maturity greater than ten years at an acceptable cost.

Most are listed on stock exchanges, but the majority of trading in most developed markets takes place in the OTC market



# Corporate Bonds Features



**The greater the security offered, the lower the cost of borrowing should be.**





# Types of Corporate Debt

## Medium-Term Notes (MTNs)

- Standard corporate bonds with maturities ranging usually from 9 months to 5 yrs
- They are released in different tranches.

## Fixed Rate Bonds

- Fixed coupons which are paid either half-yearly or annually and fixed redemption dates.

## Floating rate notes (FRNs)

- The rate of interest will be linked to a benchmark rate such as the LIBOR.
- Will usually pay interest at LIBOR plus a quoted margin or spread.

## Preferreds

- Share the characteristics of shares and bonds – potential to offer higher yields than holding ordinary shares or bonds
- Usually undated/perpetual and carry callable rights for the issuer (within first 5-10 years of issuance)
- Pays dividends instead of coupon
- Within issuer's capital structure, ranks lower than senior debt but higher than equity.

## Zero coupon bonds (ZCBs)

- Pay no interest
- But issued at a discount to their par value and redeemed at nominal/par value All of the return is provided in the form of capital growth rather than income and as a result, it may be treated differently for tax purposes.



# Convertible bonds

Offers 2 choices to investors:

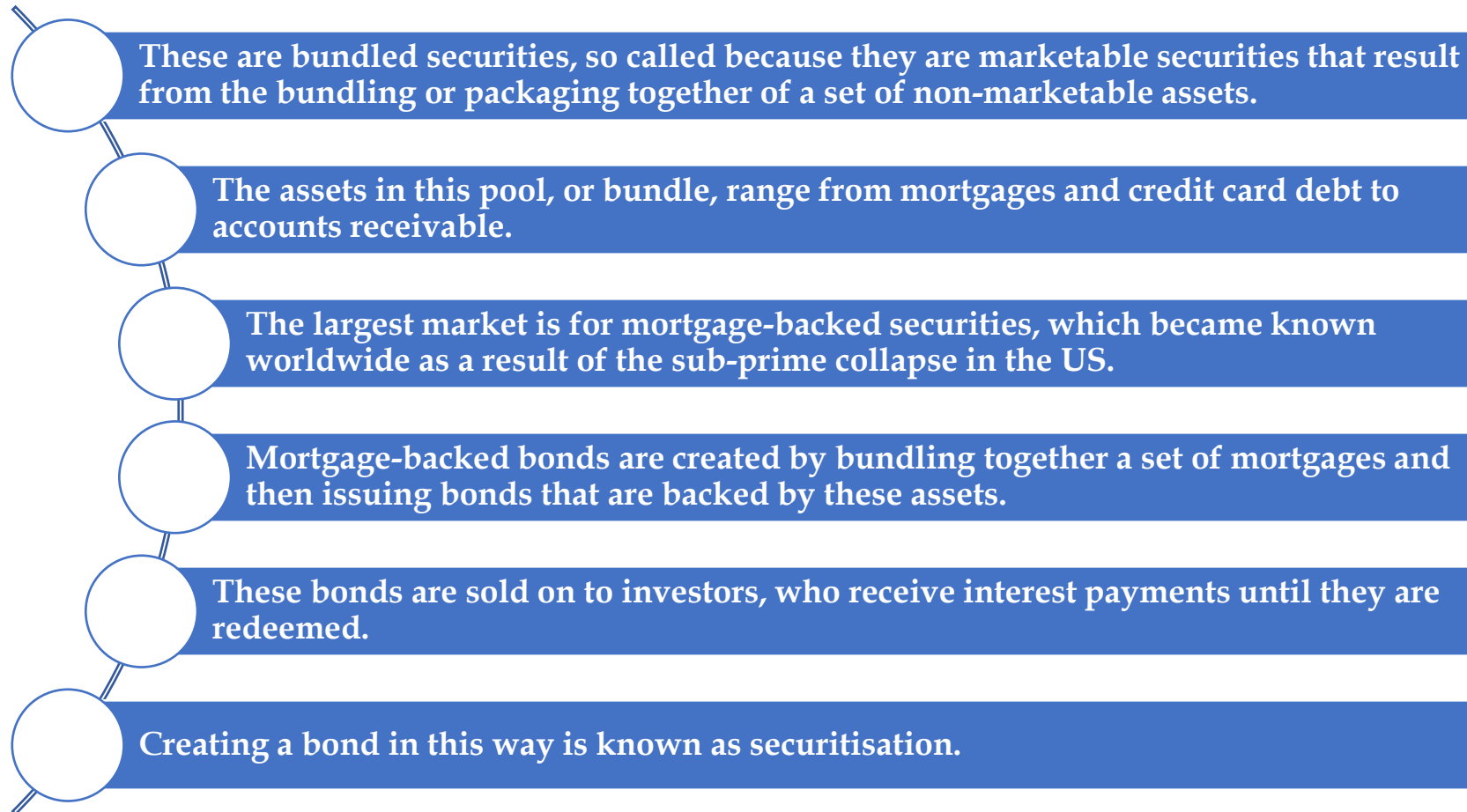
- Collect the interest payments and then the repayment of the bond on maturity
- Convert the bond into a predefined number of ordinary shares in the issuing company, on a set date or dates, or between a range of set dates, prior to the bond's maturity.

What are the attractions to investors?

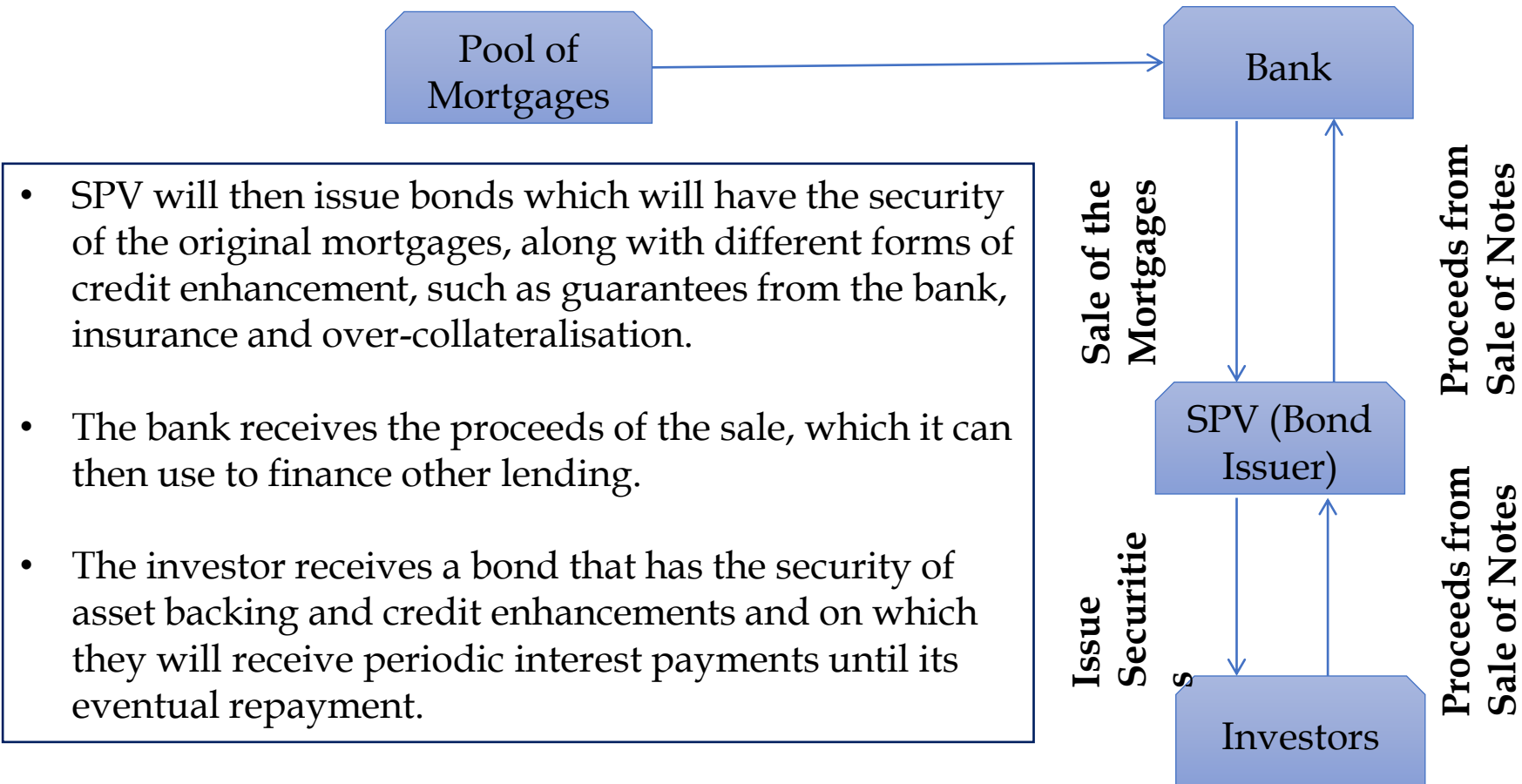
What is the advantage and disadvantage for the company?



# Asset Backed Securities



# Securitisation Example – Mortgage Backed Bonds



# Asset-backed securities

## A significant advantage:

They bring together a pool of financial assets that otherwise could not easily be traded in their existing form.

It converts illiquid assets into instruments that may be offered and sold freely in the capital markets.

## The risk was brought to light in the sub-prime crisis

Poor quality (or sub-prime) mortgages were added to the mortgage pool, which left them exposed to the downturn in the US property market.



# International Bonds and Eurobonds

A **domestic bond** is issued by a domestic issuer into the domestic market e.g. a UK company issuing bonds, denominated in sterling, to UK investors.

**Eurobonds** are large international bond issues often made by governments and multinational companies.

A **foreign bond** is issued by an overseas entity into a domestic market and is denominated in the domestic currency. E.g. a German company issuing a sterling bond to UK investors or a US dollar bond issued in the US by a non-US company.



# International Bonds and Eurobonds

- **Defining characteristic** they are denominated in a currency different from that of the financial centre(s) from which they are issued. E.g. a German company issuing either a euro, a dollar or a sterling bond to Japanese investors.
- Often do not provide any underlying collateral, or security, to the bondholders but are almost always rated by a credit rating agency.
- Company makes a '**negative pledge**' clause. This stops the company making any secured bond issues, or issues which confer greater seniority to the company's assets in the event of its liquidation, unless an equivalent level of security is provided to existing bondholders.



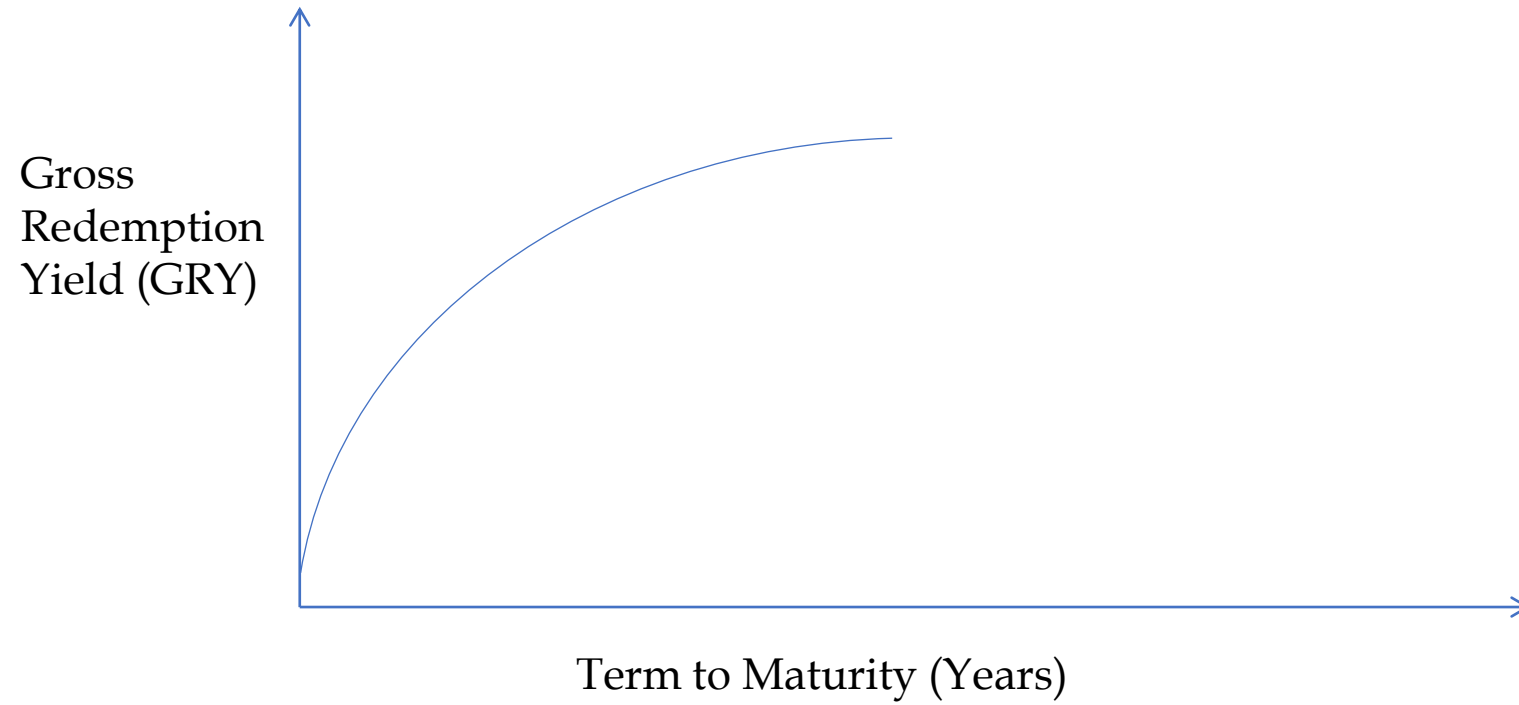
# Eurobond Advantages over Domestic Bond Market

- A choice of innovative products to more precisely meet issuers' needs
- The ability to tap potential lenders internationally, rather than just domestically
- Anonymity to investors as issues are made in bearer form
- Gross interest payments to investors
- Lower funding costs due to the competitive nature and greater liquidity of the market
- The ability to make bond issues at short notice
- Less regulation and disclosure.





# Yield Curve



- **Flat or Running Yield:** Is the interest paid on a bond as a percentage of its market price.

## Example

- US Treasury bond with a 7.5% coupon that is due to be redeemed at par in 2024 Currently priced at US\$146.80

$$\text{Flat yield} = (7.5 \div 146.80) \times 100 = 5.11\%$$

- **Redemption yield** is a measure that incorporates both the income and capital return into one figure (assuming the investor holds the bond until maturity)

