**Bonds:**

Most bonds do not have a compound coupon. (no interest on interest)

Here, you want to obtain the fair price of the bond.

Coupon rate = annual rate paid on the FV –> Coupon Payment = Coupon rate \* FV

Face value (aka FV) = standardised to be $100

YTM (it is expressed as an annualized rate)= the IRR of the bond = the rate for which the NPV of a bond equals 0 (why we use it = to compare bonds of different attribute values)

PV = All those cash flows discounted – the price you paid for the bond

**The market price of a bond is set by the supply and demand for it.**

Supply = number of bonds issuers are selling to raise funds (say 100 bonds with FV of $100 –> want to raise $10000)

The supply is crystal clear, known, and set by the issuers.

Demand = number of investors willing to lend the money/buy the bonds

Suppose the issuer received all the money it needed (happens on the primary market).

In the secondary market, a buyer will care about:

1. Expected inflation over the holding period. Super high expected inflation means I want a better deal (i.e., a lower price, i.e., a higher yield, aka YTM).
2. Expected interest rate. A super high expected interest rate means I want a better deal from you because all the new deals coming up will be better than what you could offer me yesterday. (lower price -> higher YTM) Use number 6 to quantify how much I want you to cut your price by.
3. Credit risk. High credit risk means I might not get my money back, so I want a sweet deal to compensate for my risk. Lower price -> higher YTM
4. Liquidity. Low liquidity means I might not be able to get out of the deal without incurring high slippage (high uncertainty in the execution of the trade), so I want a better deal to compensate for this. Lower price -> higher YTM
5. FX risk for bonds where you have to exchange your currency (mainly care about the second exchange) (imagine initially 1:1 and after 5 years it is 1:1.5)
6. Sensitivity to interest rate changes (modified duration, aka first order derivative of price with respect to a 1% change in the interest rate). How will a 1% increase in the interest rate change the bond’s price? (again, interest rate and price). Well, it depends on how many future cash flows are impacted. If none, then the bond is not sensitive to the interest rate. One messed up thing is that when I say interest rate, I am not referring to any government-like return. I am referring to an investor’s minimum required return in order for him to invest. High sensitivity means I need a better deal, so please lower the price.

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1. Convexity. The second-order derivative of the bond price with respect to a 1% change in the interest rate. Low convexity means the bond’s price will change more sharply when a 1% change in the interest rate occurs, and for that, I need a sweeter deal, so please give me a lower price.  
   A mathematical equation with numbers and symbols

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CF, at times, T includes the FV.



This is how you calculate the price you demand, given the change in the interest rate. Think the simple P in the convexity is P0.

You select the risk-free gov bond that corresponds to the maturity of the bond in question to know what risk-free rate you are looking at.

*“My goal is to arrive at a range for the risk premium that I am ok with accepting, given the bond details and everything else in the world that might affect the trade I want to make.”*

**Simple explanation of how money flows**

The government gets money through taxes (Income Tax, National Insurance, VAT, Excise Duties, Corporation Tax, Business Rates, Council Tax, Stamp Duty, Capital Gains Tax, Inheritance Tax) and borrowing. When it wants to borrow, it issues gilts. It borrows because it wants to spend more then what it earns.

The BoE base rate is the minimum interest rate at which the Bank of England lends to commercial banks overnight. **Benchmark** for the cost of borrowing in the economy. **The lowest** rate you can get for safe, short-term lending **to the central bank**. That plus the supply and demand for filts influences the yield that the government pays on what it borrowed.

It can tweak the taxes as it wants. It also colludes with the BoE, so the BoE does QE on purpose just cause the gov needs the money asap. That then leads to inflation.

In short, in 23-24, these are the numbers:

£400 billion – Income Tax

£150-200 billion – Borrowing (to cover the budget deficit)

£180 billion – National Insurance

£140 billion – VAT (Value Added Tax)

£60 billion – Corporation Tax

£50 billion – Excise Duties (Fuel, alcohol, tobacco)

£14 billion – Stamp Duty

£10 billion – Capital Gains Tax

£40 billion – Other Taxes (Council Tax, business rates, etc.)

£5-10 billion – Profits from state-owned enterprises

£2-3 billion – Fines and penalties

£5 billion – Interest on government assets and loans

Now, in 23-24, this is the money outflow, so how the gov spends the money:

£300 billion – Social Protection (Welfare, pensions, unemployment benefits)

£180 billion – Healthcare (NHS)

£150 billion – Public Services (Transport, housing, local councils, etc.)

£110 billion – Debt Interest (on government borrowing)

£100 billion – Education

£60 billion – Defence and Security

£30 billion – Foreign Aid and International Spending

£15 billion – Research and Development

£5 billion – Environmental Programs

The deficit looks like this:

£92.06 billion (2013-2014)

£77.99 billion (2014-2015)

£62.93 billion (2015-2016)

£50.00 billion (2016-2017)

£21.76 billion (2017-2018)

£14.53 billion (2018-2019)

-£0.66 billion (Surplus) (2019-2020)

£242.76 billion (2020-2021)

£72.24 billion (2021-2022)

£82.34 billion (2022-2023)

This is the interest paid on the deficit:

2013-2014: Approximately £50 billion.​

2014-2015: Approximately £50 billion.​

2015-2016: Approximately £50 billion.​

2016-2017: Approximately £50 billion.​

2017-2018: Approximately £45 billion.​

2018-2019: Approximately £45 billion.​

2019-2020: Approximately £45 billion.​

2020-2021: Approximately £40 billion.​

2021-2022: Approximately £50 billion.​

2022-2023: Approximately £110 billion.

So if the gov is damn near unable to pay the interest it can cut spending, increase taxes AND print money. Printing money will lead to inflation. And u as an investor are being fucked by inflation. So why give money to them if this gon happen? That’s when things get scary cause ppl are now saying yo u accumulated a lot of debt. U bound to print money to pay it in the future. So fuck u either u give me a crazy good offer or I’mma lend my money somewhere else.

**Why care bout foreign investemnt if it don’t reach the gov’s pockets?**

Foreign investment **boosts businesses, jobs, and GDP**, which leads to **higher tax collections**

Foreign investors bring **capital into the UK**, increasing demand for GBP. A stronger pound **reduces inflation**

A UK with strong **foreign investment inflows** signals **economic stability**, making gilts more attractive. This **lowers yields**, **reducing the government’s cost of borrowing**.

**Why care bout trade balance if it don’t reach the gov’s pockets?**

A **trade surplus** (exports > imports) means more demand for GBP and reduces inflation (cause imports become cheaper given a stronger GBP).

A **trade deficit** (imports > exports) weakens GBP, risks inflation, and could make borrowing more expensive.

**Corporate debt of UK public listed companies (PLCs) and household debt:**

So high debt means low spending and as a result low taxes from spending.

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Demographics & Aging Population: