<u>Introduction: Significance of Bond Yields in Economic analysis</u>

- Bond yields are critical indicator in economic and financial analysis as they reflect the cost of borrowing for government , corporations , risk appetite of investors and also the overall health of the economy.

- Goverment bond yields such as 10-year G-sector yield serves as a benchmark for pricing other fixed income securities and are closely tied to macroeconomic conditions.

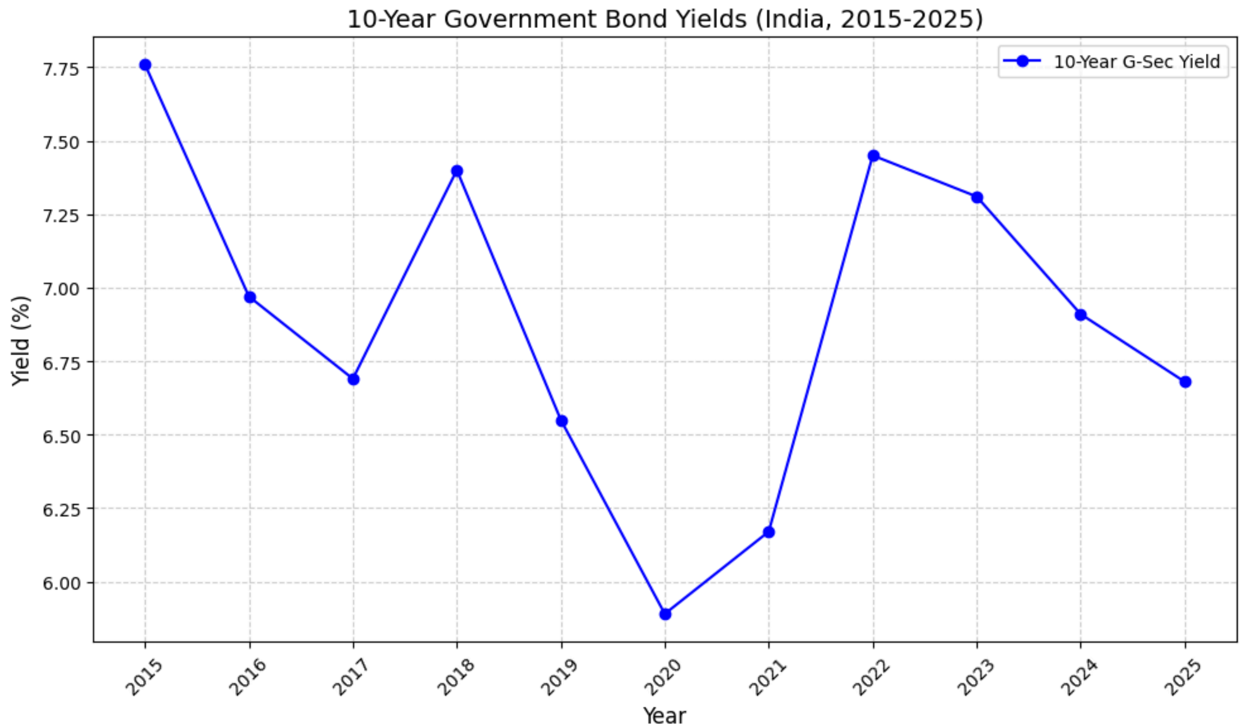
- Key Roles of Bond Yileds in Economic Analysis:-

    1. **Indicator of Economic Stability**:
        - ❖ Bond yields respond to changes in inflation , interest rates and GDP growth.
        - ❖ A rising yield typically signals higher inflation rates or tighter monetary policy while declining yield signals economic downturn .
    2. **Benchmark for Financial Markets**:
        - ❖ Government Bond yields are used as reference for corporate bond pricing and loan rates.
        - ❖ They also influence borrowing costs for businesses and consumers which thereby impacts investment and consumption decisions.
    3. **Measure of Investor Sentiment**:
        - ❖ The yield curve reflects investor expectations about future economic growth and monetary policy.
        - ❖ For example , an inverted yield curve is often seen as a sign of recession.

4. **Risk Assesment**:
    - ❖ The dispersion on spread between yields of different bonds (eg, AAA- rated vs Below- AA bonds) provides insights into credit risk and market liquidity .
    - ❖ Wider spreads typically indicate heightened risk aversion or financial stress.
5. **Policy Implications**:
    - ❖ Central Banks and policy makers monitor bond yields to assess the effectiveness of monitory policy measures and financial sustainability.
    - ❖ For example , rising government bond yields could signal concerns about fiscal deficits or debt sustainability.

DATA TABLE : 10-Year Government Bond Yields

Year	Bond Yield	Key Events influencing
2015	7.76%	Post- Global Finacial Crisis Recovery
2016	6.97%	Demonetisation Announcement
2017	6.69%	GST implemetation
2018	7.40%	Rising Crude oil prices, fiscal deficit concerns
2019	6.55%	RBI rate cuts , economic slowdown
2020	5.89%	COVID-19 pandemic, aggressive RBI rate cuts
2021	6.17%	Economic Recovery, inflation concerns
2022	7.45%	Russia - Ukraine War , global inflation surge
2023	7.31%	Monetary tightening to combat inflation
2024	6.91%	RBI liquidity management , global economic uncertainties
2025	6.68%*	Projected; assuming neutral monetary policy stance



Key Obesrvations from Graph

1. Downward trend in early years
   - ❖ Between 2015 and 2017 , yields declined due to stable inflation and monetary easing by RBI.
   - ❖ The lowest point during the period was in 2017, reflecting impact of demonetisation and GST implementation.

2. Spike in Yields (2018)
   - ❖ Yields rose to 7.4% due to rising crude oil prices and fiscal deficit concerns.

3. Pandemic Impact (2020)
   - ❖ COVID-19 pandemic caused yields to drop to their lowest point i.e 5.89% as RBI aggressively cut repo rates and infused liquidity in the market

4. Post- Pandemic Recovery(2021-2022)
    - ❖ Economic recovery led to rising yields peaking 7.45% in 2022 , mainly due to global inflationary pressures from Russia-Ukriane war.

5. Stablisation in Recent years
    - ❖ Yields have stabilised around 6.91% in 2024 , supported by RBI's liquidity measures and India's inclusion in global bond indices.

6. Projected Yield for 2025
    - ❖ The yield is expected to decline to 6.88%, assuming neutral monetary policy stance and stable economic conditions.

Insights from the Graph

1. The graph clearly illustrates the cyclical nature of bond yields influencing both domestic politics and external factors.

2. The steep decline during pandemic highlights the effectiveness of RBI's interventions in stabilising financial markets.

3. The recent stabilisation reflects improved investor confidence due to India's inclusion in global bond indices and fiscal discipline.

Macroeconomic indicators:

1. Analysis of GDP Growth Rate

DATA TABLE : India's GDP Growth Rates (Annual%)

Year	GDP Growth	Key Events Influencing
2015	8.0%	Make in India initiative , falling oil prices
2016	8.2%	Demonetisation announcement, FDI policy reforms
2017	7.0%	GST implementation; lingering effects of demonetisation
2018	6.1%	Rising oil prices ; US-China trade tensions
2019	4.2%	NBFC crisis; rural demand slowdown
2020	-6.6%	COVID-19 Pandemic; Nation wide lockdown
2021	8.7%	Post pandemic recovery; fiscal and monetary stimulus
2022	7.2%	Russia-Ukraine War; global supply chain disruptions
2023	7.2%	Resilient domestic demand; government capital expenditure
2024	6.3%*	Global economic slowdown ; monetary tightening
2025	6.5%*	Projected recovery; infrastructure push

Key Obesrvations from Graph

1. Pre-Pandemic Growth (2015-2019)
    - India experienced robust growth, peaking 8.2% in 2016.
    - Major reforms like GST implementation in 2017 caused short term disruptions but aimed at long-term benefits.
    - Growth started decelarting from 2018 due to global factors and domestic challenges.

2. Pandemic Impact (2020)
    - The economy contracted by 6.6% due to COVID-19 pandemic lockdowns and global economic disruptions.
    - This marked the first GDP contraction in over four decades.

3. Post Pandemic Recovery(2021-2023)
    - ❖ Strong rebound of 8.7% in 2021, driven by pent-up demand and government stimulus.
    - ❖ Growth stabilized around 7.2% in 2022 and 2023, showing resilience amid global challenges.

4. Recent Trends and Projections(2024-2025)
    - ❖ Slight moderation expected in 2024(6.3%) due to global economic headwinds.
    - ❖ Projected upstick to 6.5% in 2025 , supported by domestic demand and infrastructure investments.

Factors Influencing Growth Trends

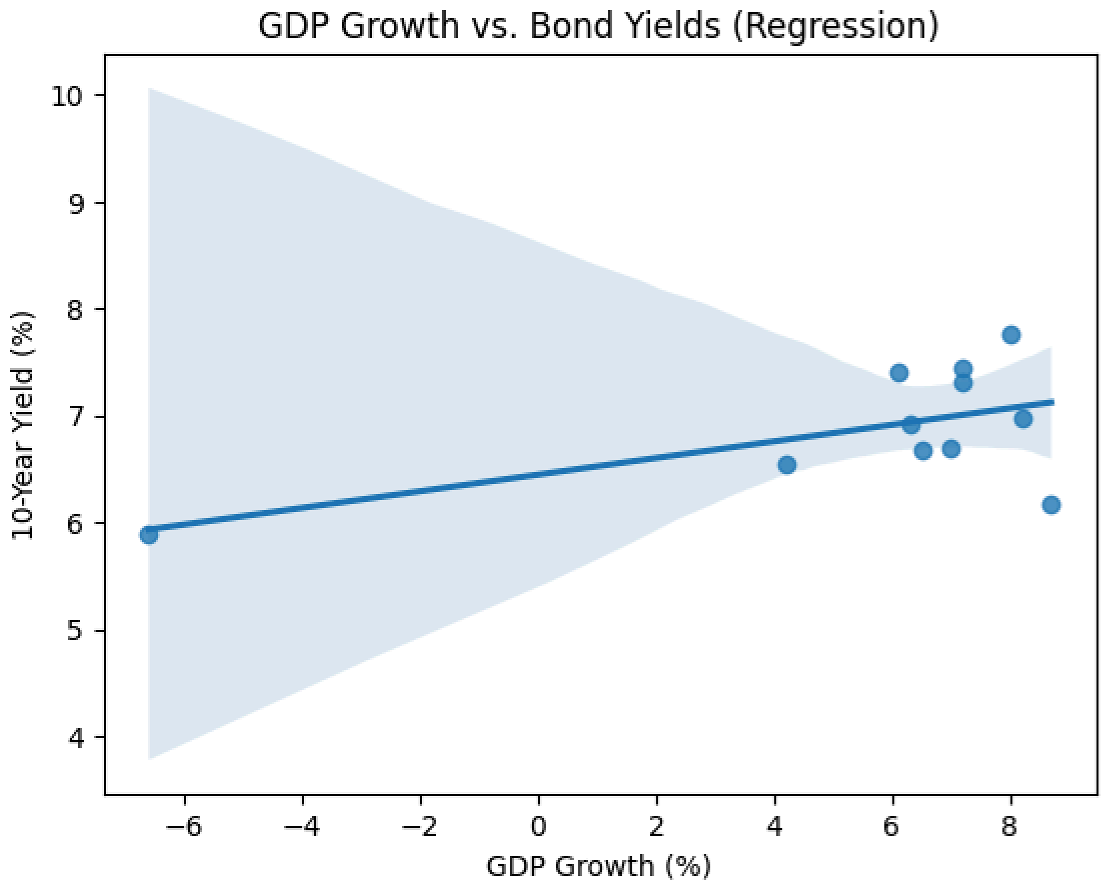
1. Policy Reforms
    - ❖ Initiatives like GST, Make in India, and FDI reforms aimed to boost long term growth potential.

2. Global Economic Conditions
    - ❖ Oil price fluctuations, trade tensions and pandemic significantly impacted the growth.

3. Domestic Challenges
    - ❖ NBFC crisis , rural demand slowdown and demonetisation effects temporary dampened growth.

4. Government Response
    - ❖ Fiscal stimulus and infrastructure spending have been key in supporting post-pandemic recovery.

5. Monetary Policy
    - ❖ RBI’s accomodative stance during pandemic and subsequent tightening have influenced growth patterns.



Notable Observations from Graph

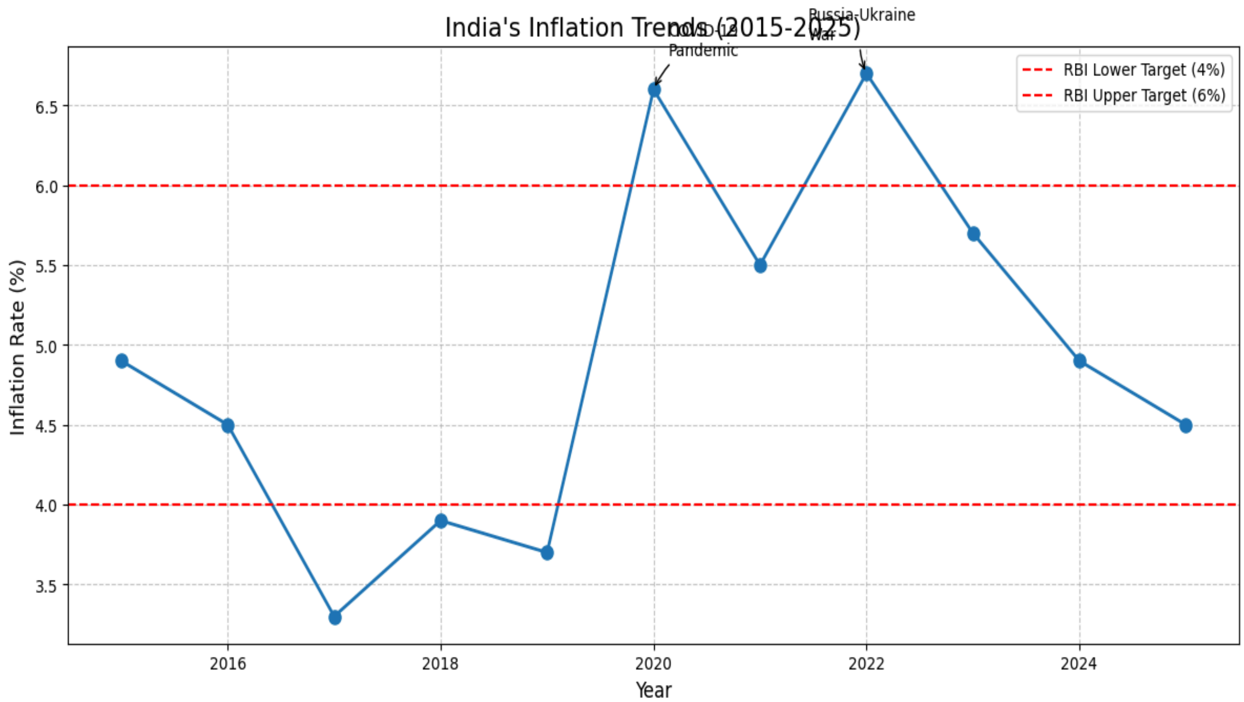
1. Positive Correlation
   - ❖ The upward sloping regression line indicates a weak positive correlation between GDP growth and bond yields as GDP growth increases, bond yield tend to rise slightly.

2. Confidence Interval
   - ❖ The wider confidence interval at the extremes indicates greater uncertainty in relationship duing unusual economic conditions.
   - ❖ Narrower confidence interval in 4-8% GDP growth range suggests more predictable yield behaviour during normal growth periods.

2. Analysis of Inflation Rate

DATA TABLE : India’s Inflation Rates (Annual%)

Year	Inflation Rate	Key Events
2015	4.9%	RBI’s inflation targeting framework introduced
2016	4.5%	Stable food prices
2017	3.3%	Low crude oil prices
2018	3.9%	Rising crude oil prices
2019	3.7%	Weak demand; stable inflation
2020	6.6%	Pandemic-induced;supply chain disruptions
2021	5.1%	High fuel and food prices
2022	6.7%	Global inflationary pressures from Russia-Ukraine war
2023	5.7%	Moderation due to monetary tightening
2024	4.9%	Decline driven by easing food inflation
2025	4.5%*	Targeted moderation through monetary policy interventions



Key Observations from Graph

1. Low Inflation Periods
   - ❖ Between 2017 and early 2019, inflation remained below the RBI's target of 4% supported by low crude oil prices.

2. Pandemic Spike
   - ❖ Inflation surged to over 6.6% in FY20, driven by supply chain disruptions.

3. Recent Moderation
   - ❖ Inflation eased to 4.9% in FY24 , helped by proactive government measures to stablise food prices.

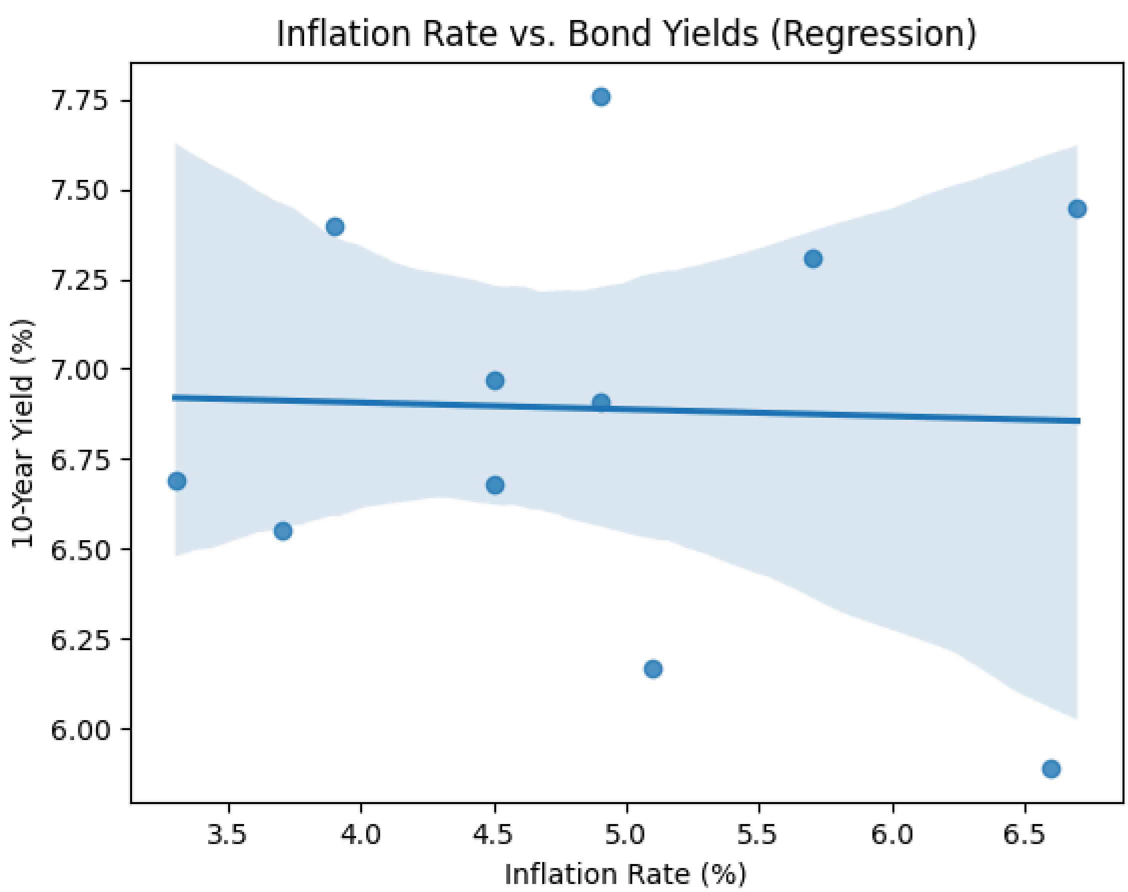
4. RBI Target Band Perfomance
   - ❖ Lower Target(4%)
     - ➢ Inflation remained below this level duing 2017-2019
   - ❖ Upper Target(6%) Branched Twice
     - ➢ Duing COVID-19 pandemic(2020)
     - ➢ Russia-Ukraine War impact(2022)

Trend Analysis

- Overall pattern shows three distinct phases

    1. Initial stability and moderation (2015-2019)
    2. High volatility period (2020-2022)
    3. Return to Stablity(2023-2025)

- The trend demonstrates RBI's successful inflation management despite significant global shocks.



Notable Observations from Graph

1. Regression Line Characteristics
    - ❖ The slightly downward sloping blue indicates a weak negative correlation.
    - ❖ The relationship is nearly flat , suggesting limited direct influence of inflation on bond yields.

2. Confidence intervals
    - ❖ The light blue region shows 95% confidence interval.
    - ❖ Wider bands at extremes.
    - ❖ Narrowest at around 4-5% inflation , indicating more predictable relationship in this range.

Key Insights from Graph

1. The weak negative correlation contrasts with traditional economic theory.

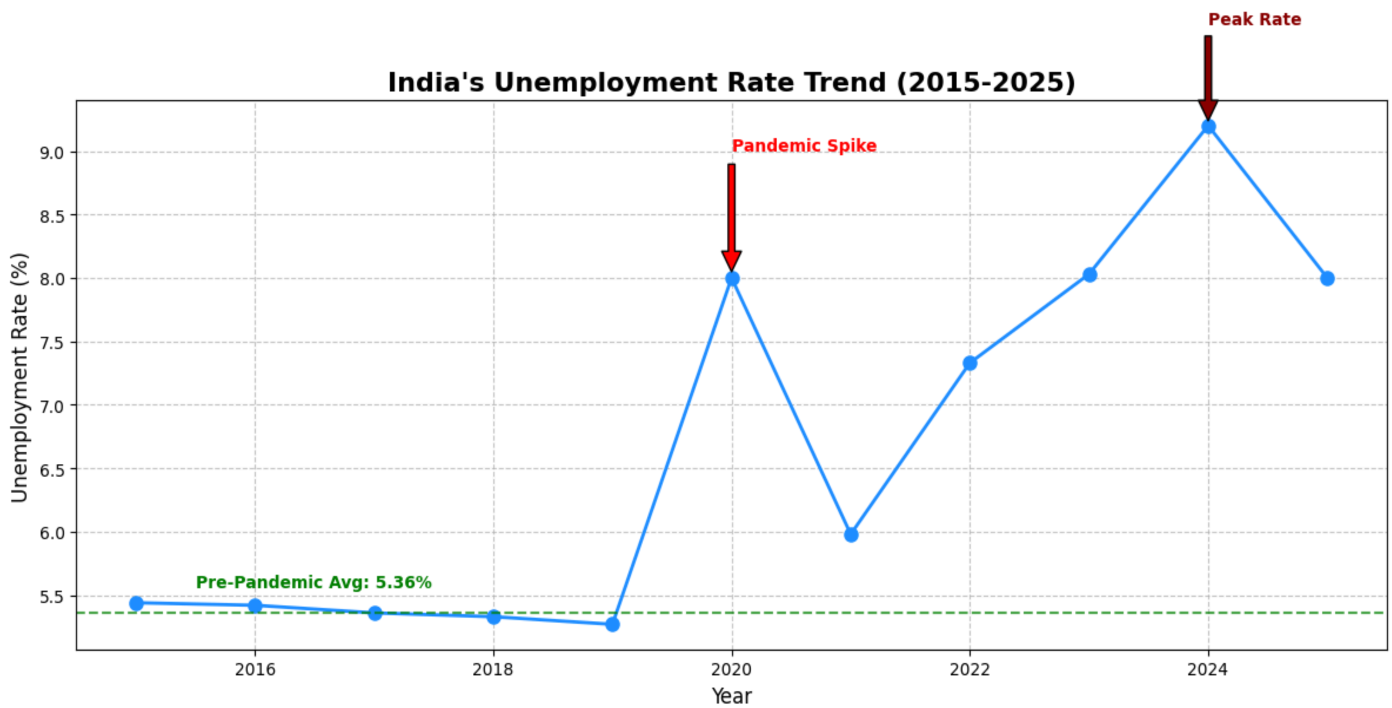
2. Other factors might have stronger influence on bond yields.

3. The relationship appears more stable when inflation is within RBI's target band(4-6%).

3. Analysis of Unemployment Rate

DATA TABLE : India’s Unemployment Rate(Annual%)

Year	Unemployment Rate	Key Events
2015	5.44%	Stable Period
2016	5.42%	Pre demonetisation stability
2017	5.36%	GST implementation impact
2018	5.33%	Moderate economic growth
2019	5.27%	Pre Pandemic Period
2020	8.00%	COVID-19 peak impact
2021	5.98%	Post-Pandemic recovery
2022	7.33%	Global economic challenges
2023	8.03%	Recovery challenges
2024	9.20%	June 2024 spike
2025	8.00%*	Current Rate



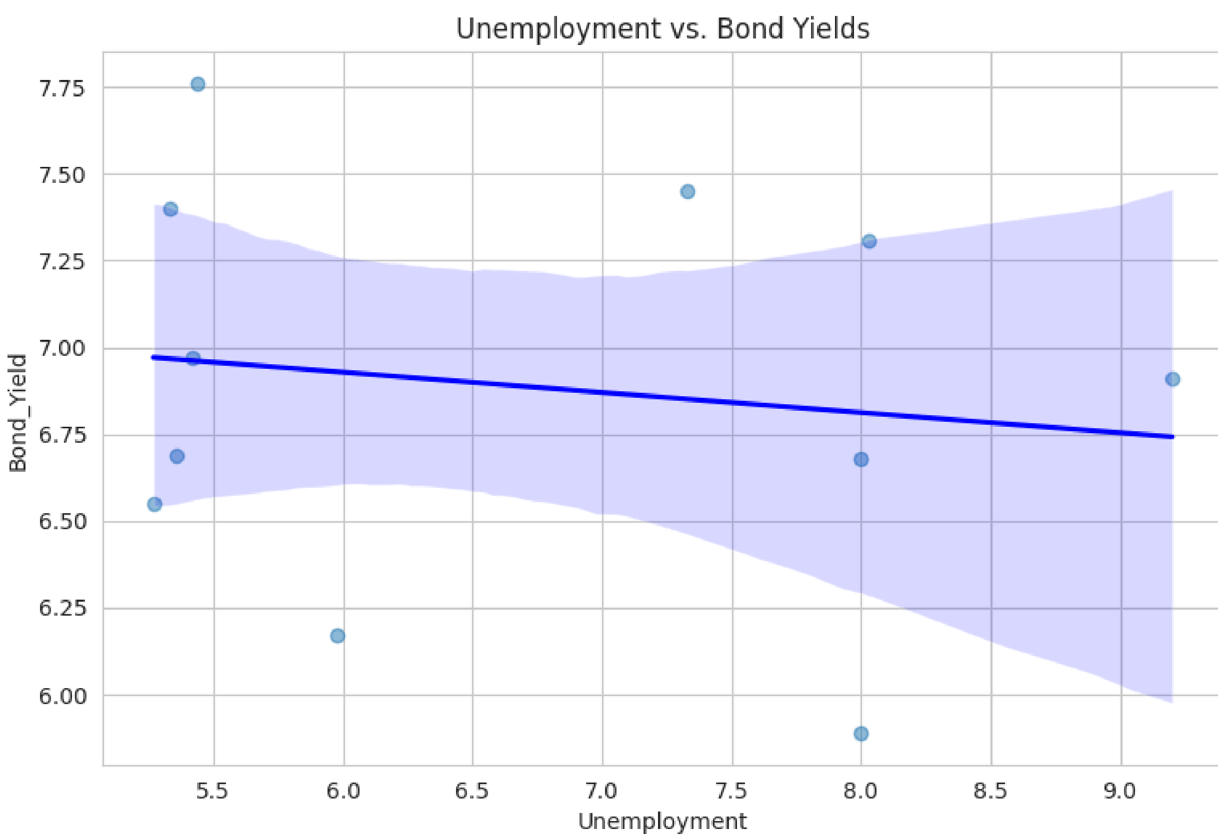
Key Observations from Graph

1. Pre- Pandemic Period(2015-2019)
   - ❖ Relatively stable unemployment rate around 5.3-5.4%.
   - ❖ Minimal fluctuations despite major reforms like GST.
   - ❖ Consistent labor maket conditions

2. Pandemic Period(2020)
   - ❖ Sharp spike 8.00% due to COVID-19.
   - ❖ Highest recorded rate in recent years.
   - ❖ Significant economic disruption.

3. Post-Pandemic Period(2021-2025)
   - ❖ Initial recovery in 2021 i.e 5.98%.
   - ❖ Gradual increase over the years.
   - ❖ Spike in June 2024 due to AI automation and sluggish industrial growth .
   - ❖ Current rate stablising around 8% in early 2025.

4. Recent Developments
    - ❖ Urban unemployment generally higher than rural unemployment.
    - ❖ Labour participation Rate(LPR) increased to 41.4% .
    - ❖ Employment numbers shown improvement with 4.67 crores increase in FY 2023-2024.



Notable Observations from Graph

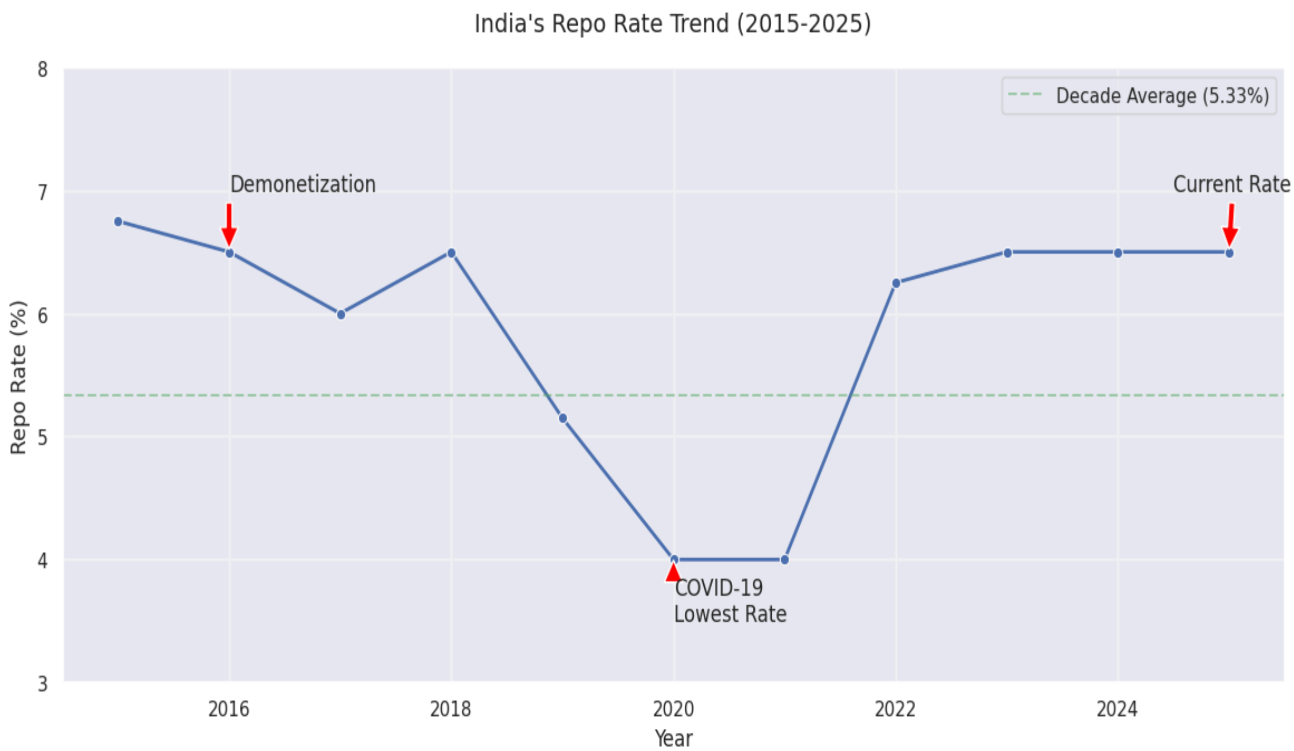
1. Negative Correlation
   - ❖ The regression line shows a slight downward slope.
   - ❖ It indicates a weak negative relationship between unemployment and bond yields.
   - ❖ As unemployment rates increase, bond yields tend to decrease marginally.

2. Confidence intervals
   - ❖ The light blue shaded area represents the 95% confidence interval.
   - ❖ Wider confidence bands at the extremes of unemployment rates.
   - ❖ Increasing uncertainty in the relationship at higher unemployment levels.

4. Analysis of India’s Repo Rate

DATA TABLE : India’s Repo Rate(Annual%)

Year	Repo Rate	Key Events
2015	7.75->6.75%	Multiple rate cuts ; Make in India initiative
2016	6.75->6.5%	Demonetisation impact;Inflation targeting framework
2017	6.25->6.00%	GST implementation ; Monetary Poilcy Committtee Formation
2018	6.00->6.5%	Rate hikes due to rising inflation; Oil price surge
2019	6.5->5.15%	Five consecutive rate cuts ; Economic slowdown
2020	5.15->4%	Emergency cuts due to COVID-19;Lowest rate in decade
2021	4%	Maintained historic low ; Accommodative stance
2022	4-6.25%	Multiple rate hikes; Russia - Ukraine War Impact
2023	6.25->6.5%	Rate Stablisation; Inflation Management
2024	6.50%	Maintained rates; Focus on price stability
2025	6.50%	Current Rate (Feb 2025)

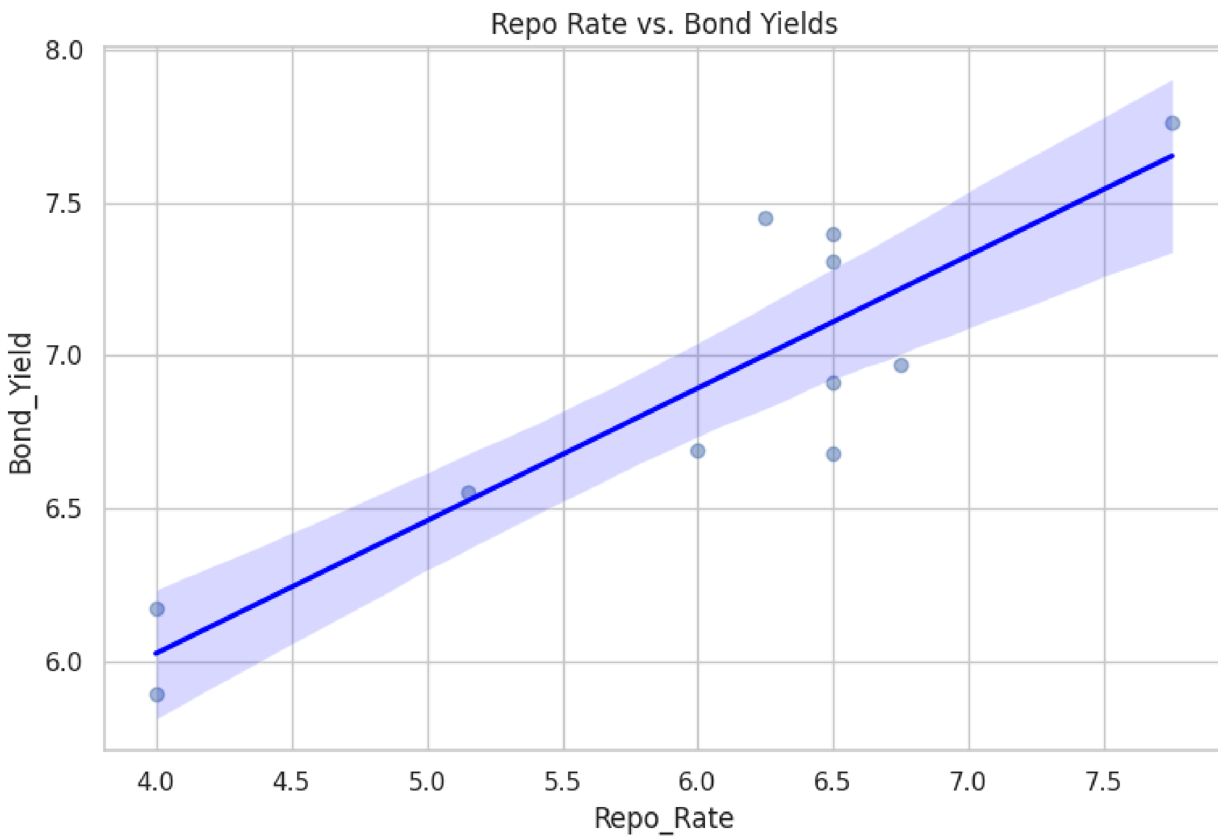


Key Observations from Graph

1. Rate Trajectory
    - Highest: 7.75%(Early 2015)
    - Lowest: 4.00%(2020-2021)
    - Current: 6.50%(Feb 2025)

2. Notable Periods
    - Pre-Pandemic Reduction (2015-2019)
    - Sharp cuts during COVID-19(2020)
    - Rapid Normalisation post pandemic (2022-2023)

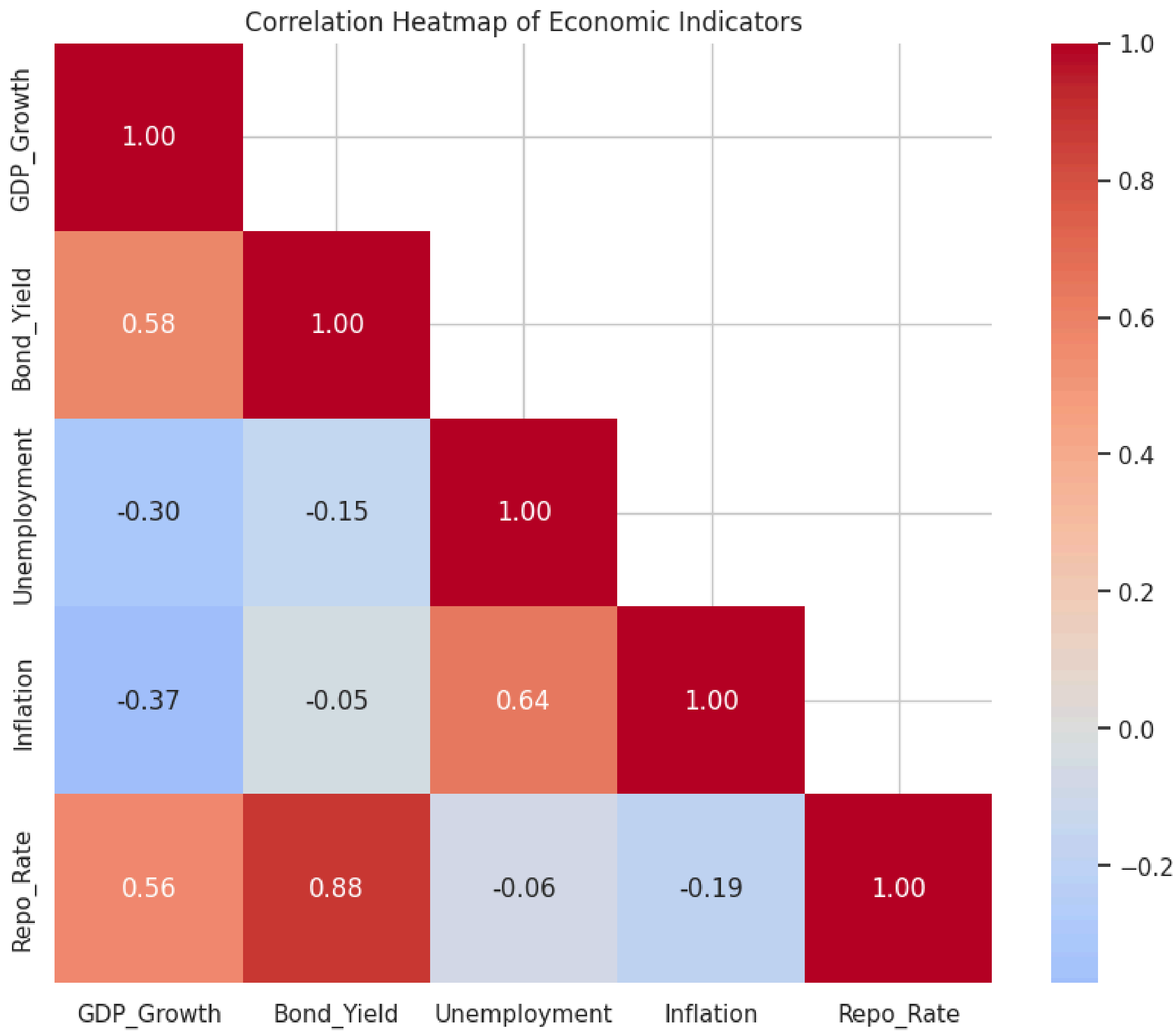
3. Policy Phases
    - Accomodative stance (2019-2021)
    - Tightening cycle(2022-2023)
    - Stability Phase(2023-2025)



Notable Observations from Graph

1. Strong Positive Correlation
   - ❖ The regression line shows clear upward slope.
   - ❖ Indicates strong positive relationship between repo rates and bond yields.
   - ❖ As repo rates increase,bond yields tend to increase proportionally.

2. Confidence Interval
   - ❖ Light blue shaded area represents 95% confidence interval.
   - ❖ Relatively narrow band around regression line.
   - ❖ Indicates high confidence in predicted relationship.



CORRELATION HEAT MAP

1. Strong Positive correlation
    - ❖ Bond Yield and Repo Rate(0.88)
    - ❖ GDP Growth and Bond yield(0.58)
    - ❖ GDP Growth and Repo Rate(0.56)

2. Negative correlation
    - ❖ GDP Growth and Inflation Rate(-0.37)
    - ❖ GDP Growth and Unemployment(-0.30)

3. Weak Correlations
    - ❖ Inflation Rate and Bond yield (-0.05)
    - ❖ Unemployment and Repo Rate(-0.06)

- The heatmap uses a color scale from dark red (strong positive correlation) to dark blue(strong negative correlation) with white representing no correlation.
- The diagonal shows perfect correlation(1.00) as variables correlate perfectly with themselves.

Key Insights on Bond Yield Information Context

1. **Monetary Policy Realtionship**
    - Strongest correlation exists between bond yields and repo rate indicating bond yields are highly responsive to monetary policy decisions.
    - The regression shows clear positive linear relationship with narrow confidence interval .

2. Economic Growth Signals
    - Moderate positive correlation(0.58) between bond yield and GDP growth .
    - Higher bond yields generally signal stronger economic growth expectations.

3. Inflation and Unemployment Dynamics
    - Weak correlation(-0.05) between bond yield and inflation .
    - Negative correlation(-0.15) with unemployment indicates countercyclical behaviour.

4. Policy Implications
    - Bond yields serve as effective indicators of monetary policy transmission.
    - Economic growth has more influence on yields than inflation and unemployment .