



# “Macro Factors Affecting The Credit Spread Of Indian Debt

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## Abstract:

This study investigates the impact of macroeconomic factors on credit spreads in the Indian debt market through a multiple regression analysis. The research findings indicate that Repo rate, BSE Index, and Volume have a significant effect on the credit spread. The findings of this research can inform investors and financial professionals about the factors that influence credit spreads in the Indian debt market.

## I. Introduction

### A. Background

The Indian debt market has been growing steadily in recent years and is expected to remain strong in the coming years. As of December 2022, the total Indian debt market was estimated to be worth over Rs. 100 trillion (\$1.4 trillion). This is an increase of around 23% since December 2020. The growth is mainly attributed to the increasing issuance of government bonds and corporate bonds. The Indian government bond market is the largest segment of the Indian debt market and is estimated to be worth around Rs. 63.5 trillion (\$873.3 billion). This is an increase of around 9% since December 2020. The growth in the government bond market has been driven by the government's efforts to increase borrowing for infrastructure development and public welfare. The corporate bond market also witnessed a growth of around 19%, from Rs. 14.7 trillion (\$201.3 billion) in December 2020 to Rs. 17.5 trillion (\$241.2 billion) in December 2022. The growth has been driven by the increased issuance of corporate bonds for infrastructure development, refinancing debt, and other corporate purposes. The Indian debt market is expected to continue to grow in the coming years, as the government and corporates continue to borrow

for various purposes. This is expected to be driven by the government's focus on infrastructure development and public welfare, as well as growing corporate needs for funds.

Currently, there are several issues plaguing the Indian debt market. These include

1. **Low liquidity:** The Indian debt market suffers from low liquidity, which means there are fewer participants in the market. This reduces the depth of the market and makes it difficult for investors to easily buy and sell debt instruments.
2. **Low demand:** The demand for Indian debt instruments is relatively low due to a lack of investor confidence. This is due to a lack of transparency in the pricing of debt instruments and the lack of a proper debt market infrastructure.
3. **Low yields:** Yields on Indian debt instruments are currently low, which means that investors don't get a good return on their investments. This is due to the fact that the Indian government has kept borrowing costs low in order to stimulate economic growth
4. **High cost of borrowing:** The cost of borrowing in India is higher than the cost of borrowing in other countries, which makes it difficult for companies to access capital.

## **B. Objective and Need for the Study**

The objective of this study is to analyze the effect of macro factors like market risk factors and liquidity factors on credit spread in the current Indian debt market. Credit spreads indicate the risk perceived by the market (participants/investors). A widening credit spread indicates an increase in credit risk whereas a tightening credit spread indicates a decline in the perceived credit risk. With the emergence of new players in the Indian debt market, it is important to understand the interplay between macro factors and credit spread. This research study aims to understand the significance of these factors in determining the credit spread and identify the macro factors that have an effect on the credit spread. \*Credit spread is the difference in yield of a corporate bond and a government bond of the same maturity.

## **II. Literature Review**

### **A. Overview of the Indian Debt Market**

The Indian debt market has been a key contributor to the overall economic growth of the country. It is regulated by the Reserve Bank of India (RBI) and provides a vital source of funding for the government. Over the past few years, the Indian debt market has been performing well, with the yield on 10-year government bonds falling from 7.80% in April 2018 to 6.55% in April 2021 (RBI, 2021). This has been accompanied by an increase in the trading volumes of government securities, both in the primary and secondary markets (RBI, 2021). Despite the positive performance of the market, recent reports have highlighted certain volatilities in the debt market (Chakraborty, 2021). Foreign institutional investors have been reducing their exposure to Indian debt, leading to a decline in liquidity and increased volatility in

government securities (Chakraborty, 2021). Furthermore, the rise in oil prices is expected to further increase the volatility in the Indian debt market (Desai & Jain, 2021). To ensure that the debt market remains stable and continues to contribute to the economic growth of the country, the government needs to take effective steps. This includes providing incentives to foreign investors, increasing the liquidity in the market, and improving the transparency and efficiency of the debt market (Chakraborty, 2021).

## **B. Macro Factors Affecting Credit Spread**

A literature review of macro factors affecting credit spread in the Indian debt market reveals that macroeconomic factors such as inflation, exchange rate, interest rates, and public debt are significant drivers of credit spreads. According to Dhawan et al. (2020), credit spreads in the Indian debt market are affected by macroeconomic factors, such as rising inflation rate, higher exchange rate, and higher public debt. Similarly, Gudipalli et al. (2020) found that rising inflation, higher exchange rate, and higher public debt are some of the significant factors that affect credit spreads in the Indian debt market. Additionally, government policies and regulations also play a major role in affecting credit spreads in the Indian debt market. According to Chaturvedi et al. (2019), government policies and regulations such as capital adequacy norms, prudential norms, and monetary policies significantly influence credit spreads in the Indian debt market. Similarly, Bhattacharya et al. (2018) found that macroeconomic policies and regulations, such as monetary policy and capital adequacy norms, significantly impact credit spreads in the Indian debt market. Overall, the literature review on macro factors affecting credit spread in the Indian debt market reveals that macroeconomic factors, such as inflation, exchange rate, interest rates, and public debt, are significant drivers of credit spreads. Additionally, government policies and regulations also play an important role in influencing credit spreads in the Indian debt market.

## **III. Research Methodology**

### **A. Data Sources**

The dependent variable in this regression analysis is a credit spread, which is the yield of 10-year AAA-rated corporate bonds minus the yield of 10-year G-sec. The source of data for the yields of the 10-year AAA-rated corporate bond and the 10-year G-sec is [www.investing.com](http://www.investing.com). The independent variables include the Volatility Index (VIX), CPI, GDP, IIP, Repo rate, BSE Index, USDINR exchange rate, and Corporate bond volume. The source of data for these variables are [www.investing.com](http://www.investing.com), [www.mospi.gov.in](http://www.mospi.gov.in), RBI website, BSE website, and NSE website, respectively. All the data is collected for a period of 12 months.

## B. Analysis and Statistical Tools

The present research study uses multiple regression to analyze the relationship between the dependent variable (credit spread) and independent variables (macro factors) in the Indian debt market. The quantitative analysis will be conducted by the researcher using excel to test the derived relationship between the dependent and independent variables. The statistical significance of each independent variable will be tested, and the acceptance or non-acceptance of the null hypothesis will be decided based on the outcome. Data for the research report will be collected from various sources, such as RBI databases, government documents, and financial reports. The researcher will utilize these sources to acquire macroeconomic data related to inflation, exchange rate, interest rates, public debt, and government policies. This data will then be used to analyze the relationship between credit spreads and macro factors. The researcher will also use a variety of statistical methods to analyze the data. These methods include multiple regression, correlation analysis, and sensitivity analysis. Through these methods, the researcher will explore the impact of macroeconomic factors on credit spreads in the Indian debt market. The results of the analysis will be used to draw conclusions on the relationship between credit spreads and macroeconomic factors.

### Hypothesis:

Ho: Macro risk factors have no significant effect on credit spreads.

H1: Macro risk factors have a significant effect on credit spreads.

## IV. Results and Discussion

### A. Descriptive Statistics

#### Dependent variable:

The dependent variable in this regression analysis is the credit spread, which is the difference between the yield of a 10-year AAA-rated corporate bond and the yield of a 10-year G-sec (government security). The credit spread reflects the risk associated with corporate debt relative to government debt and can be used as an indicator of market conditions.

#### Independent variables:

1. Volatility Index (VIX): The Volatility Index (VIX) is a measure of market risk, reflecting investors' expectations of near-term volatility in the stock market. It is generally accepted that a higher VIX suggests that stock market investors are expecting higher levels of volatility in the near future, and the credit spread is likely to increase.

2. CPI: The Consumer Price Index (CPI) measures the average price level of a basket of consumer goods and services. A higher CPI suggests an increase in inflation and can lead to an increase in the credit spread.

3.GDP: Gross Domestic Product (GDP) is a measure of the market value of all the goods and services produced in a country over a given period of time. A higher GDP usually indicates a healthier economy and will often lead to an increase in the credit spread.

4.IIP: The Index of Industrial Production (IIP) is a measure of the level of industrial production in a country. An increase in the IIP can be indicative of an increase in economic activity which can lead to an increase in the credit spread.

5.Repo rate: The Repo Rate is the rate at which the Reserve Bank of India lends money to commercial banks. An increase in the repo rate can lead to an increase in the credit spread.

6.BSE Index: The Bombay Stock Exchange (BSE) Index is an index of the stock prices of the companies listed on the BSE. A higher BSE Index suggests that stock prices are increasing, which may lead to an increase in the credit spread.

7.USDINR exchange rate: The US Dollar Indian Rupee (USDINR) exchange rate is the rate at which the US Dollar is exchanged for the Indian Rupee. A lower USDINR exchange rate can lead to an increase in the credit spread.

8. Corporate bond volume: The volume of corporate bonds traded in the market is a measure of the demand for corporate debt. A higher volume of corporate bonds traded can lead to an increase in the credit spread.

## **B. Regression Analysis**

To perform the multiple regression analysis, Excel is used to calculate the linear regression equation for the relationship between the dependent variable, credit spread, and the independent variables. The Excel regression function is used to calculate the coefficient of determination (R squared) and the coefficients for each independent variable. The coefficient of determination is used to measure the goodness of fit of the regression model, where a higher R-squared value indicates a better fit. The coefficients of each independent variable are used to measure the statistical significance of each variable in the model. The p-value of each coefficient is used to determine if the independent variable has a statistically significant effect on the dependent variable. If the p-value is less than 0.05, then the independent variable is considered to be statistically significant. The results of the multiple regression analysis can be used to test the hypothesis. If the p-values for all the independent variables are less than 0.05, then the hypothesis that macro risk factors have no significant effect on credit spreads is rejected, and the alternate hypothesis that macro risk factors have a significant effect on credit spreads is accepted.

## C. Regression output

### *Regression Statistics*

Multiple R	0.841827
R Square	0.708673
Adjusted R Square	0.690465
Standard Error	0.00379
Observations	137

The R-squared value of the model is 0.7086, which indicates that the model explains about 70.86% of the variation in the dependent variable, credit spread. The adjusted R-squared value of 0.6940 indicates that the model is able to explain about 69.40% of the variation in the dependent variable even after adjusting for the effects of the independent variables. This indicates that the model is a good fit for the data and that the independent variables are able to explain a significant amount of the variation in the dependent variable.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.0063	0.007785172	-0.80911	0.419951
VIX	-0.00163	0.004069945	-0.39931	0.690329
GDP	-0.01015	0.00854158	-1.18878	0.236726
CPI	-0.0215	0.042659862	-0.50407	0.615078
IIP	-0.00161	0.003104644	-0.5179	0.605421
Repo	0.257777	0.109643415	2.35105	0.020248
BSE Index	0.039413	0.011589857	3.400644	0.000897
Exchange rate	0.025029	0.03920328	0.638452	0.52432
Volume	-0.67611	0.04798334	-14.0906	8.37E-28

The regression equation for the relationship between the dependent variable, credit spread, and the independent variables is: Credit Spread = -0.0062 - 0.0016\*VIX - 0.010\*GDP - 0.0215\*CPI - 0.0016\*IIP + 0.2577\*Repo + 0.0394\*BSE Index + 0.0250\*Exchange rate - 0.6761\*Volume

Next, from the p-values of the independent variables, it can be seen that the Exchange rate, VIX, GDP, CPI, and IIP variables are not statistically significant as their p-values are greater than 0.05. However, the Repo rate, BSE Index and Volume variables are statistically significant as their p-values are less than 0.05. This means that these three variables have a statistically significant effect on the credit spread.

## V. Conclusion and Recommendations

### A. Summary

From the p-values of the independent variables, it can be seen that the Exchange rate, VIX, GDP, CPI and IIP variables are not statistically significant as their p-values are greater than 0.05. However, the Repo rate, BSE Index and Volume variables are statistically significant as their p-values are less than 0.05. This means that these three variables have a statistically significant effect on the credit spread.

However, statistically insignificant variables do not necessarily have no impact on the dependent variable. While statistically insignificant variables may not have a statistically significant effect, they may still have an effect on the dependent variable. It is possible that the effect is too small to be detected by the statistical test, or the effect may be masked by the effects of the other variables in the model.

The multiple regression analysis has shown that the independent variables Repo rate, BSE Index and Volume have a statistically significant effect on the credit spread. This indicates that these macroeconomic factors have a significant impact on the debt market in India. The results of this analysis can be used to inform investors and financial professionals of the factors that have an impact on the credit spread and can be used to make more informed decisions. This analysis is especially useful in the current debt market scenario in India, as it can help investors to identify and mitigate risks associated with debt investments.

### B. Limitations of the Study

This multiple regression analysis has several limitations. Firstly, the data used in the analysis is limited to the monthly data of the variables which may not capture the full range of the variables. Secondly, the sample size of the data used in the analysis is small, which may not be representative of the population. Thirdly, the independent variables may not be independent of each other, as some of them may be correlated. Finally, the analysis does not account for any other factors that may have an effect on the credit spread, such as changes in interest rates or changes in the economic environment.

### C. Suggestions for Future Research

The results of this multiple regression analysis provide useful insights into the factors that have an effect on the credit spread in the Indian debt market. However, further research is needed to gain a better understanding of the factors that affect credit spreads and their relative importance. Future research should include a larger dataset and a longer time period to capture a more comprehensive picture of the debt market. Additionally, further research should include other macroeconomic variables, such as inflation, unemployment rate and interest rates, to get a better understanding of the relationship between these variables and credit spreads. Finally, further research should also consider the impact of other factors that may affect credit spreads, such as changes in the economic environment or changes in the regulatory framework.

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