IMPACT OF BOND YIELDS ON RETURNS WITH RESPECT TO SELECT COMPANIES IN INDIA

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Abstract

Understanding how to invest is more important than what or where to invest in. In this paper, an analysis will be conducted to see the impact, if there is any on select companies traded in the stock market by the interest rates imposed on the government. This paper aims to use one of the many macroeconomic variables governments use to keep the economy in check. This paper also aims to study the relationship of returns between companies.

Keywords: invest, interest rate, Government, economy, returns

I. Introduction

The BSE was established in the year 1875 and it has grown to become the 10th largest stock exchange in the world with a market capitalization running in trillions and also the oldest stock exchange centre in Asia. The BSE was the first stock exchange to be recognized by the Indian Government as per the Securities Contract Regulation Act. The exchange became an electronically traded stock exchange in just 50 days in the year 1995 and in the year 2012, it joined the United Nations Sustainable Stock Exchange Initiative. On 30 December 2016, the exchange launched India INX, the first international exchange of India, where it can execute trades in the time span of 4 microseconds. Bond Yields are determined by the following factors: the issuers credit quality, the time to maturity, inflation expectation. Financial Services Industry responsible for the acceptance of deposits and providing of loans and advisors for effective deployment of funds in order to boost the economy and to aid in the growth of the country.

The chemical industry, more specifically the agrochemical industry is responsible for the production of chemicals that aid the agricultural industry in growing, harvesting and protecting of the crops.

The metal industry is responsible for the mining and excavation of metals that is used for the development of other projects in the country.

The automobile industry produces automobile ranging from passenger cars to scooters for the purchase and usage by the consumers of that country at different price points.

The energy industry is responsible for the extraction and processing of various fuels be it natural gas or coal that is used for the development of energy that is dispersed to the public for daily usage. The energy industry is also responsible for the maintenance of the energy consumption in a country.

The IT industry is the category of companies that are responsible for the research and development of technologically based goods and services that are sold to individual customers or companies alike.

The Media and Entertainment Industry is an amalgamation of multiple sectors that provide entertainment to consumers such as TV shows, movies, music etc.

The consumer goods industry relates to the group of companies that are involved in the production of goods and services that are consumed by customers for the satisfaction of their needs and wants. For example: food and beverages.

The pharmaceutical industry is responsible for the market, development, and discovery of drugs that aid in the betterment of individuals. Companies in this sector deal in generic or brand medications and medical devices such as pacemaker.

Telecom Industry has moved from phone calls to messaging and providing Internet services. This sector plays an important role in the evolution of mobile communications and information society.

II. Review of Literature

a. Administered Interest Rates in India

Interest rates play an important role in any economy for decision making for savings, investments, resource allocation, and financial and monetary policies. This research paper analysis the working of the authorizes regulating the system of interest rates. It talks about why there should be an alternate system of high and free interest rates with multiple monetary control techniques used. (Bhole, 1985)

b. Yield Curve Analysis for Government Securities in India.

In this paper, the author explains what a governmental security is in the Indian Market, the structure of the Indian market and the feasibility of constructing yield curves for government bonds. The author explains the workings of the calculation of the yield curve based on the face value of the bond and the time to maturity of the bond. This paper was chosen as it can give an understanding on the nature of the bond yield and the impact these percentages can have on the market. (Nag & Ghose, 2000)

c. Lending boom and Lending Standards:

In this paper, the author examines how the informational structure of the loan markets behaves with the banks' decisions in the determination of lending rates, lending volumes and the allocation of credit among other strategies banks take. The article also identifies the level of standards banks may keep on the loan holders based on private information of their customers and how this raises red flags in the workings of the banks and the instability this causes. The author also identifies the implications of such decisions on the portfolios of banks it may have in the long and short run. The author examines the sequence of financial liberalization, lending booms and crises triggered by the banks behaviour. (MARQUEZ, 2006)

d. **Relationship between Interest Rate and Stock Price: Empirical Evidence from Developed and Developing Countries:**

In this paper, the authors discuss the relevance of the stock market as a growing and an important factor in the development of the economy and the impact of interest rates enacted by the government. The paper also highlights the effect the interest rates enacted by the government have on the share prices on the stock market. It also looks into the performance of the stock market and its deviation of the Efficient Market Hypothesis, as stock markets do not function as proposed in the hypothesis. The paper concludes with the relationship the interest rates have with the stock market of a given country. (Alam & Uddin, 2009)

e. **How Does Liquidity Affect Government Bond Yields?**

In this paper, the author describes the effect of liquidity on the bond yields of the central government. The paper further explains a model that can predict the yield differentials with a change in the liquidity and the risk. These predictions were tested on daily data and thus the results would be consistent with priced with the risk factor. The paper concludes with the results that the bond yields are in fact directly related to the liquidity and risk factors and are this said to be directly related to each other. (Favero, Pagano, & Von Thadden, 2010)

f. **A comparative analysis of equity stocks of ICICI Bank and SBI:**

In this paper, the authors describe what a stock and an equity interest means for a company and the introduction of the Indian Banking Sector. The comparisons between the two companies are Fundamental and Technical Analysis. This paper covers the period from 2011 to 2015. This papers simply talks about the comparison of the two companies between each other; there is no comparison between the two of them as to which stock must be purchased or ignored. The purpose for the selection of this paper is to develop an understanding of the relationships banking companies have on each other. (N & Prabhakar, 2016)

III. Research Design

Research Statement

This research paper shows:

a. The impact on the returns of different companies from different industries due to the change in bond yield.
b. Relationship between returns of select stocks in the different industries.
c. Correlation between the companies of different industries.

Research Questions

Upon the formulation of the research statement, the following research questions were formulated:

d. Is there an impact on the company returns of various companies in different industries due to changes in bond yields?
e. Is there a relationship between the returns of the different companies?
f. Is there a correlation between the companies from the different industries?

Limitations of the Study

Given below are the limitations of this study:

g. The study is only done for one or two companies per industry.
h. The data collected is only limited to one year. Thus, a trend may not be established to see the true impact of the change in bond yields on the share returns.

Data Analysis Tools

The tool used to perform this analysis is SPSS and the tests performed are listed below:

i. One – Way ANOVA Analysis
j. Linear Regression Analysis
k. Correlation Analysis

Hypothesis

Significance Level 'a' = the probability level which helps us decide whether to accept or reject the Null or Alternate hypothesis. If the significance level is below 0.05 we will reject the Null Hypothesis (H0) and accept the Alternate Hypothesis (H1) and vice – versa.

1. **Regression Hypothesis**

Regression analysis is performed to find the relationship between one independent variable with one or more than one dependent variables. Here, the independent variable is 'Bond

Yield' and the dependent variables are the returns of various companies. The formula is given below:

$$Y_i = \beta_0 + \beta_1 X_i + E_i$$

Where,

Y_i = Dependent Variable

β_0 = Population Y intercept

β_1 = Population slope coefficient

X_i = Independent Variable

E_i = Random error component

- **Null Hypothesis (H0):** There is no significant impact on the returns of various companies due to the changes in bond yields.
- **Alternate hypothesis (H1):** There is a significant impact on the returns of various companies due to the changes in bond yields.

2. One – Way ANOVA Hypothesis

This test is used to compare the means between or within two or more groups on common independent variable (Bond Yield). The formula is given below:

$$SS = \Sigma(x - \bar{x})^2$$

$$MS = \frac{\Sigma(x - \bar{x})^2}{df}$$

Where,

x = Measurement

$\bar{x}$ = Group Mean

df = Degree of Freedom

- **Null Hypothesis (H0):** There is no significant difference between the returns of select stocks.
- **Alternate hypothesis (H1):** There is a significant impact on the returns of various companies due to the changes in bond yields.

IV. Data Analysis

1. One – Way ANOVA

ANOVA

Company Returns

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	986.362	10	98.636	1.444	.169
Within Groups	8267.641	121	68.328		
Total	9254.003	131			

The significance level is 0.169, which is above 0.05 therefore; we will accept the null hypothesis. This means that there is no significant difference between the returns of the selected companies.

2. Linear Regression Analysis

1. State Bank of India

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.491	1	15.491	.174	.685[b]
	Residual	888.401	10	88.840		
	Total	903.892	11			

a. Dependent Variable: SBI

b. Predictors: (Constant), Bond Yield

2. ICICI Bank

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.244	1	34.244	.318	.585[b]
	Residual	1075.553	10	107.555		
	Total	1109.797	11			

a. Dependent Variable: ICICI Bank

b. Predictors: (Constant), Bond Yield

3. UPL Ltd.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.079	1	28.079	.513	.490[b]
	Residual	547.303	10	54.730		
	Total	575.383	11			

a. Dependent Variable: UPL Ltd.

b. Predictors: (Constant), Bond Yield

4. TATA Motors

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.101	1	42.101	.469	.509[b]
	Residual	897.365	10	89.736		
	Total	939.466	11			

a. Dependent Variable: TATA Motors

b. Predictors: (Constant), Bond Yield

5. Sun Pharmaceuticals

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.178	1	51.178	.400	.541[b]
	Residual	1279.286	10	127.929		
	Total	1330.464	11			

a. Dependent Variable: Sun Pharmaceuticals

b. Predictors: (Constant), Bond Yield

6. Tata Consultancy Services

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.083	1	1.083	.011	.919[b]
	Residual	1003.127	10	100.313		
	Total	1004.210	11			

a. Dependent Variable: Tata Consultancy Services

b. Predictors: (Constant), Bond Yield

7. Tata Steel

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.369	1	4.369	.100	.758[b]
	Residual	436.319	10	43.632		
	Total	440.688	11			

a. Dependent Variable: Tata Steel

b. Predictors: (Constant), Bond Yield

8. Power Grid Corp

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.

1	Regression	8.036	1	8.036	.240	.635[b]
	Residual	335.263	10	33.526		
	Total	343.300	11			

a. Dependent Variable: Power Grid Corp

b. Predictors: (Constant), Bond Yield

9. Bharti Airtel

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.591	1	3.591	.047	.832[b]
	Residual	756.060	10	75.606		
	Total	759.651	11			

a. Dependent Variable: Bharti Airtel

b. Predictors: (Constant), Bond Yield

10. Zee Entertainment

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	125.915	1	125.915	4.693	.056[b]
	Residual	268.317	10	26.832		
	Total	394.232	11			

a. Dependent Variable: Zee Entertainment

b. Predictors: (Constant), Bond Yield

11. Hindustan Unilever

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.085	1	11.085	.243	.632[b]
	Residual	455.474	10	45.547		

Total	466.559	11			

a. Dependent Variable: Hindustan Unilever

Correlations

		SBI	ICICI Bank	UPL Ltd.	TATA Motors	Sun Pharmaceuticals	Tata Consultancy Services	Tata Steel	Power Grid Corp	Bharti Airtel	Zee Entertainment
SBI	Pearson Correlation	1	.812**	.460	-.035	.076	.012	.211	.260	.036	
	Sig. (2-tailed)		.001	.133	.913	.815	.971	.510	.414	.910	
	N	12	12	12	12	12	12	12	12	12	
ICICI Bank	Pearson Correlation	.812**	1	.494	.103	.183	.162	.537	.457	-.110	
	Sig. (2-tailed)	.001		.102	.749	.569	.614	.072	.135	.734	
	N	12	12	12	12	12	12	12	12	12	
UPL Ltd.	Pearson Correlation	.460	.494	1	.365	-.272	-.074	.148	.529	.384	
	Sig. (2-tailed)	.133	.102		.243	.393	.818	.646	.077	.218	
	N	12	12	12	12	12	12	12	12	12	
TATA Motors	Pearson Correlation	-.035	.103	.365	1	.580*	.515	.645*	.460	.670*	
	Sig. (2-tailed)	.913	.749	.243		.048	.087	.024	.133	.017	
	N	12	12	12	12	12	12	12	12	12	
Sun Pharmaceuticals	Pearson Correlation	.076	.183	-.272	.580*	1	.432	.603*	.187	.126	-
	Sig. (2-tailed)	.815	.569	.393	.048		.161	.038	.561	.697	
	N	12	12	12	12	12	12	12	12	12	
Tata Consultancy Services	Pearson Correlation	.012	.162	-.074	.515	.432	1	.686*	.290	.173	
	Sig. (2-tailed)	.971	.614	.818	.087	.161		.014	.360	.592	
	N	12	12	12	12	12	12	12	12	12	

Tata Steel	Pearson Correlation	.211	.537	.148	.645*	.603*	.686*	1	.303	.201	
	Sig. (2-tailed)	.510	.072	.646	.024	.038	.014		.339	.531	
	N	12	12	12	12	12	12	12	12	12	
Power Grid Corp	Pearson Correlation	.260	.457	.529	.460	.187	.290	.303	1	.126	
	Sig. (2-tailed)	.414	.135	.077	.133	.561	.360	.339		.695	
	N	12	12	12	12	12	12	12	12	12	
Bharti Airtel	Pearson Correlation	.036	-.110	.384	.670*	.126	.173	.201	.126	1	
	Sig. (2-tailed)	.910	.734	.218	.017	.697	.592	.531	.695		
	N	12	12	12	12	12	12	12	12	12	
Zee Entertainment	Pearson Correlation	.290	.275	.502	.304	-.239	.069	.098	.064	.339	
	Sig. (2-tailed)	.360	.387	.096	.336	.455	.832	.761	.843	.281	
	N	12	12	12	12	12	12	12	12	12	
Hindustan Unilever	Pearson Correlation	.544	.432	.440	.492	.083	.395	.359	.416	.604*	.(
	Sig. (2-tailed)	.068	.161	.152	.104	.797	.204	.252	.178	.037	
	N	12	12	12	12	12	12	12	12	12	
Bond Yield	Pearson Correlation	.131	.176	-.221	-.212	.196	.033	.100	.153	-.069	-
	Sig. (2-tailed)	.685	.585	.490	.509	.541	.919	.758	.635	.832	
	N	12	12	12	12	12	12	12	12	12	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

3. Correlation Analysis

This method of analysis is used to determine the strength of the relationship between two variables. From the table shown above the following observations have been made:

- There is a very high positive correlation between SBI and ICICI bank. While either of these bank with the other industries have very low or no correlation.
- There is a very low correlation between bond yields with all the companies except Zee Entertainment, which has a negatively high correlation.
- Tata motors, Tata Steel, and Tata Consultancy Services have a high positive relationship with each other.
- Power Grid Supplies energy to almost 50% of the country yet it has a very low correlation with bond yields and it is also a public company.
- All companies with negative correlation will be good to invest in as the risk will be diversified.
- Investing in shares of companies from different industries will make a good portfolio because there will be less or no impact on each other if one industry does not do well and hence the risk is mitigated.

V. Conclusion

There is no impact on the company returns of various companies in different industries due to changes in bond yields. This is because traders are interested to make higher returns compared to the bond yield. There is no relationship between the returns of the different companies. This is because they are not interdependent on each other. There are different levels of correlations noted between different industries.

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