A STUDY ON THE IMPACT OF SELECTED MONETARY, FISCAL, ECONOMIC VARIABLES ON THE INDIAN BOND MARKET

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Abstract: This paper titled "A Study on Bond market and its relevance in the Indian context" studied the status of the Indian Bond market. This is the need of the hour as not much research has been made on this area in India despite Bond market being a key player in the development of the economy. The period under study is ten years from Financial Year 2005-06 to 2014-15. The variables used in the study were Yield rates, Bank Rate, Repo Rate, Reverse Repo Rate, WPI, IIP, GFD, GDP. While focusing on the Government Bond market, it also examined the relationship that existed between the yield rates of the government securities and monetary and fiscal variables. It also checked how economic growth of the country had its impact on the Yield rates. Correlation and Linear regression tools were used to satisfy the objectives. An equation was formulated for the investors to determine the yield rates based on the seven variables that were used in the study.

Keywords: Yield rates, Bank Rate, Repo Rate, Reverse Repo Rate, WPI, IIP, GFD, GDP

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1. Introduction

The next big revolution in the history of finance after the rise of banks was the bond market. Government's expenditure is often more than what they can raise through taxes and they cover this difference by issuing bonds that pay interest. A whole new way for the government to borrow money is created by an efficient bond market. The government is given the power by the bond market to fund right from the social needs, research, and infrastructure projects to even army and national calamities.

The Indian Financial System is at its own pace adapting to the Financial Innovations with the support of factors like robust markets, economic growth and considerable greater efficiency. Though India has a resilient banking sector, world-class equity markets, and class apart financial reforms which are setting an example for economies across the world, it still lacks an efficient bond market which may be able to dictate its economic development. In order to meet the needs of the firms, investors and the government it is necessary for the Indian Bond Market to evolve.

The Bond market in India has completely transformed with liberalization. It has diversified immensely and is acting as a huge contributor to the stable growth of the economy. The Bond Market has a great potential in raising funds to support the infrastructural development undertaken by the government and expansion plans of the corporates. Keeping this in mind, the study focusses on checking the relationship between yield rates of government securities and monetary, fiscal, economic variables as this advantageous to corporates, government and other investors.

2. Review of Literature

Rajendra Pandit(2005), the author examined the relationship between long- term nominal interest rates and budget deficit variables. It is confined to Nepal. The theoretical prediction about the relationship between interest rates and public debts which is a matter of controversy and empirical evidence of other countries on the relationship between the above said variables has become inclusive. The study also finds the evidence that there exists positive but insignificant relationship between long-term nominal interest rate of government securities and budget deficit variables.

Lekha S. Chakraborty (2012), Controlling for capital flows using the high-frequency macro data of a financially deregulated regime, this paper examined whether there was any

evidence of the fiscal deficit determining the interest rate in the context of India. The period of analysis is FY 2006–07 (April) to FY 2011 (April). Contrary to the debates in policy circles, the paper finds that an increase in the fiscal deficit does not cause a rise in interest rates. Using the asymmetric vector autoregressive model, the paper established that the interest rate is affected by changes in the reserve currency, expected inflation, and volatility in capital flows, but not by the fiscal deficit. This result had significant policy implications for interest rate determination in India, especially since the central bank had cited the high fiscal deficit as the prime reason for leaving the rates unchanged in all its recent policy announcements. The paper analysed both long- and short-term interest rates to determine the occurrence of financial crowding out, and finds that the fiscal deficit does not appear to be causing either shorts or longs. However, a reverse causality is detected, from interest rates to deficits. This paper examined whether there was any evidence of financial crowding out in the recent years of financially deregulated interest rate regime. Using the high frequency macro data, the study found quite contrary to the popular belief that increase in fiscal deficit induces a rise in the interest rate, that there exists no significant relationship between the two. The conclusion drawn from the multivariate vector autoregressive analysis for the period from FY 2006 to FY 2011 revealed that the interest rate is affected by the unanticipated components of high-powered money, expected inflation, and fluctuations in capital flows. As the causality is not established from fiscal deficits to interest rates, the plausible evidence for nil financial crowding out is reinforced in the Indian context.

Isaac Linus Ochieng, Dr. Tobias Olweny(2015), in their paper studied the effect and nexus between the nominal value of gilt-edge treasury bonds and interest rates at Nairobi Securities Exchange (NSE). The main objective was to establish a link between these two variables. The specific objectives of the study were: To assess the effect of Central Bank Rate (C.B.R.) on value of gilt-edge Treasury bonds at NSE, to analyse the effect of Inter-bank rate (I.B.R.) on value of gilt-edge Treasury bonds at NSE and to establish the relationship between the Repurchase rate of interest (REPO rates) on value of gilt-edge at NSE. Quasi experimental research was undertaken with time series data of nominal value of treasury gilt-edged bonds being regressed against the three regressors (interest rates) using regression statistics. From the summary output, all the three rates affected the nominal value of treasury gilt-edged bonds (i.e. there was an overall effect of all the three rates under study on the value of gilt-edged treasury bonds) nevertheless, the CBR was more significant even though the combined effect (multiple R) was a weak positive one leading to the rejection of the null hypothesis. Further, the CBR affected the nominal value of treasury gilt-edged

bonds negatively (bidirectional relationship) whereas; the IBR and the Repo rate had a unidirectional (positive relationship).

3. Research Design

3.1 Statement of the Problem

Though India has a resilient banking sector, world-class equity markets, and class apart financial reforms which are setting an example for economies across the world, it still lacks an efficient bond market which may be able to dictate its economic development. In order to meet the needs of the firms and investors, it is necessary for the Indian Bond Market to evolve efficiently. Therefore this study has been conducted to analyze such market by checking its performance based on the monetary and fiscal variables.

3.2 Objectives of the study

1)   To understand the relationship between fiscal variables and yield rates of Bond
2)   To understand the relationship between monetary variables and yield rates of Bond
3)   To study the relationship between economic growth and Yield rates of Bond

3.3   Research Methodology

Statistical Tools used

The tools of analysis used in the study are:

1.   **Correlation**
2.   **Linear Regression**

4.   Analysis and Interpretation

Data has been collected from secondary sources. These selected variables represent monetary, fiscal and economy policies. Correlation and regression tools have been used to check the relationship between yield rates and the selected variables.

4.1 Relationship between yield and monetary, fiscal and economic variables

Table 4.1 Table representing relationship between yield and monetary, fiscal and economic variables

Year	Yield	Bank rate	Repo	Reverse Repo	WPI	IIP	GFD as % of GDP	GDP
2005-06	7.34	6.00	6.38	5.25	104.47	106.10	4.13	35432.44
2006-07	7.89	6.00	7.25	5.75	111.35	115.60	3.68	38714.89

2007-08	8.12	6.00	7.63	5.75	116.63	125.90	2.99	42509.47
2008-09	7.69	6.00	7.92	3.75	126.02	128.10	7.63	44163.51
2009-10	7.23	6.00	5.00	3.38	130.81	134.10	8.74	47908.46
2010-11	7.92	6.00	6.00	4.82	143.32	142.20	7.07	52823.84
2011-12	8.52	7.75	7.90	6.90	156.13	150.00	9.16	56330.49
2012-13	8.36	8.75	7.75	6.75	167.62	153.60	8.31	58998.49
2013-14	8.45	9.13	7.65	6.63	177.64	156.90	8.12	61958.41
2014-15	8.51	8.63	7.63	6.50	181.19	167.80	8.00	66472.85
Correlation		0.79	0.75	0.86	0.76	0.76	0.29	0.75

Interpretation:

Correlation is found to be highest between yield rates and Reverse Repo. It has a high positive correlation. It is least with GFD(as a % of GDP). All other variables have a correlation with the range of 0.75 to 0.79 which is a good sign indicating that these variables determine the yield rate. Variables representing Monetary, Economic policies have been found to have a high positive correlation. GFD being a fiscal variable doesn't have a high positive relation.

4.2 Multiple Regression analysis

Model Summary of monetary, fiscal, economic variables and Yield

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.998ᵃ	.996	.981	.06487

a. Predictors: (Constant), WPI, Repo, Reverse Repo, GFD(as a % of GDP), Bank rate, IIP, GDP

$R^2 = 0.996$, it means the independent variable can explain 99.6% of the variation in the dependent variable. In this case all the seven variables are responsible for 99.6% of the variation in Yield rates.

ANOVAᵃ

Model	Sum of Squares	Df	Mean Square	F	Sig.

	Regression	2.012	7	.287	68.295	.015[b]
1	Residual	.008	2	.004		
	Total	2.020	9			

a. Dependent Variable: Yield

b. Predictors: (Constant), WPI, Repo, Reverse Repo, GFD(as a % of GDP), Bank rate, IIP, GDP

Here $p = 0.015$, which is less than 0.05, it indicates that the regression model statistically significantly predicts the dependent variable. The regression equation is of good fit.

Table 4.26 Coefficients[a] of monetary, fiscal, economic variables and Yield

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.468	1.070		2.306	.148	-2.137	7.073
	Bank rate	-.319	.104	-.922	-3.061	.092	-.769	.130
	Repo	.081	.057	.169	1.426	.290	-.163	.325
	Reverse Repo	.284	.049	.746	5.801	.028	.073	.494
	IIP	.062	.027	2.541	2.280	.150	-.055	.178
	GFD(as a % of GDP)	-.032	.021	-.155	-1.517	.269	-.123	.059
	GDP	.000	.000	-4.142	-1.924	.194	-.001	.000
	WPI	.049	.024	2.863	2.063	.175	-.053	.150

a. Dependent Variable: Yield

The regression equation obtained is as follows:

Yield = 2.468 - 0.319(Bank rate) + 0.081(Repo) + 0.284(Reverse Repo) +0.062(IIP) - 0.032(GFD as % of GDP) + 0.049(WPI)

The seven independent variables explain the yield of the bond to the extent of 99.7% as the R^2 is 0.997. One can predict yield of the bond based on these seven variables as the model is of good fit. An investor can find out the increase or decrease yield rate of the bond by using the above equation.

5. Findings, Suggestions, Conclusion

5.1 Findings

The major findings arrived at by conducting the study has been listed below:

- If the yield of the bond has to increase, the Bank Rate has to increase
- To predict yield of the Bond based on bank rate an equation is coined
- Yield rates of the bond have found to be consistent compared to the other variables
- The yield rate would increase with the increase of repo rate and to predict the yield rate based on repo rate, an equation has been coined
- Reverse repo rate and yield rate tend to move in the same direction as the government tries to control the money supply by borrowing funds from all sources
- Greater the IIP, greater the yield rate which means that when there is growth in the industrial sector, there will be more flow of funds in the economy and the investors too will have greater capital to invest in the bond market
- As the WPI increased, even the yield rates increased making the investors less affected by inflation
- GFD and yield rates do not have a significant relationship
- An increase in Gross fiscal deficit has led to the increase in Market Borrowings as the expenditure has exceeded the revenue which has created the need for the Government to borrow funds from the market
- The yield rates were affected by economic growth as the increase in GDP, increased the yield rates
- All the seven independent variables contributed in determining the yield rates of the government bonds
- The equation obtained could be used to determine the yield rates

5.2 Suggestions

- India must develop a deep, liquid and transparent bond market system. This can be achieved by liberalizing interest rates, establishing a secondary and futures market for government bonds and increasing regulatory and legislative transparency

- To tap the resources from pension funds, hedge funds, government has to make the bond market transparent

- Stronger and more dependable yield curves must be developed. It must be set separately for short-term and long-term bonds

- A strong and efficient bond futures market should be established

- Indian capital markets must be further developed to sustain its economic growth and fund its social and infrastructure initiatives

- It is essential that sound risk management along with specific public debt structures are to be put in place by the Public Debt Management to reduce government's exposure to market risk, settlement risk, liquidity risk, credit risk and operational risk. Excessive reliance on short-term instruments to take advantage of lower short-term interest rates can lead to increase in rollover risk and possibly increase the debt service costs

- On the other hand, investors interested in longer term investments can opt for long-term income gilt funds to profit from capital gains once the interest rates smoothen. Long term maturity bonds are more prone to interest rate risk and thus usually have higher yields

- Government has to take an all-out effort to promote bond market so that it can mobilize resources that are required for infrastructure development of the country

5.3 Conclusion

The Government securities market has witnessed significant changes during the past decade. Introduction of an electronic screen based trading system, dematerialized holding, straight through processing, establishment of the Clearing Corporation of India Ltd. (CCIL) as the central counterparty (CCP) for guaranteed settlement, new instruments, and changes in the legal environment are some of the major aspects that have contributed to the rapid development of the market. Major participants in the Government securities market historically have been large institutional investors. With the various measures for development, the market has also witnessed the entry of smaller entities such as co-operative banks, small pension and other funds etc.

Despite have numerous regulations, innovative techniques to improvise the existing Government Bond market, it has not met the desired expectations. Therefore more studies in this area will serve the purpose. It is very much needed especially to a country like India as it is opening up its Bond market to the Foreign Participants.

The study after examining the relationship between monetary, fiscal and economic variables with the yield rates has formulated an equation to determine the yield rates which will help in determining the yield rates based on these variables. By considering the recommendations given to the government in the study of making the system more transparent would to a great extent improvise the existing system.

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