

Co- Movements of India's Stock Market with Bond Market and Select Global Stock Markets

Arun T C¹, Akhila T V², Dr. M. Dharmalingam³

¹Research scholar, Dept. of management, School of management, Pondicherry University- Karaikal campus,

²Research scholar, Dept. of management, School of management, Pondicherry University- Karaikal campus,

³Associate Professor, Dept. of Management, School of Management, Pondicherry University, Karaikal campus,

ABSTRACT: *The study intends to carry out a comparative analysis of performance of stocks and bond market in India, and moreover comparing the Indian stock market with select global stock market. It is found that Indian stock market has a very high correlation with developed stock markets. And it is also found that bond market is negatively correlated with the stock market. The study indicates the existence of linear combination between stock returns of India with U.S, U.K, Japan and Government Bond market. In short, there exist a long term relationship and long run equilibrium between these markets in short run there may be disequilibrium. Comparison of India's stock and bond market will benefit in creating optimal portfolio possessing minimum risk and maximum return, when the Indian stock or bond index facing a trouble.*

KEY WORDS: *stock markets, cointegration, bond market, correlation*

I. INTRODUCTION

Indian security market is showing more integration with global security market. Here the study intends to carry out a comparative analysis of performance of stocks and bond in India, and moreover comparing the Indian stock market with select global stock markets. Precisely examine the interrelationship and co movement of Indian wholesale stock market with bond market and with major global stock markets: U.K, U.S and Japan during the most recent period from 2007 to 2015. Investors are keep track on the fluctuations and movements of financial market and accordingly they are creating their choice of investment in global market. The integration happens in Indian stock market with global stock market due to globalisation and liberalisation. Cross border trading and investment brings more relationship with stock markets all over the world.

As a result of this Indian market hold a distinguished place in the global scenario. The previous research on bond and stock market is showing that there is precise difference in risk-return relationship between stock and bond. Stock market is more volatile to the bond market in long run so the investors would expect more return. It is necessary to understand stock and bond market for optimal portfolio creation and managing risk for the investment. An investor can make his/her best portfolio by combining both stock and bond; thereby he/she can reduce risk and maximize profit. Investors are desired to invest in bond to protect volatility in stock market. This study examine the co-movements of stock and bond return and tries to find out whether the relationship between stock market and bond market is positive or negative. Comparative analysis of YTM of Bond and Stock Index return are used in this study to understand co-movement between bond and stock market. Here we examine interrelationship among Indian stock market with bond market and with global stock market. Our intention by comparing India's stock market with bond market and global market is to guide investors to select better investment avenue when India face stock market clash. India's stock market is highly volatile, volatility creating risk for some investors at the same time it may be the return for some others. It is important to analyse the risk and return before going for an investment and it is necessary to compare with other investment opportunities. Such an analysis brings suitable allocation of fund. So investors can allocate their fund to profitable investments. So here our study helps the investors to choose an alternative when Indian stock market has a poor performance.

II. REVIEW OF LITERATURE

2.1 Co integration

It's marked that if a linear combination of integrated variables are stationary, then such variables are said to be Co integrated. To examine co integration relationship there are mainly two methods, one is EG two-step procedure, put forward by Engle and Granger in 1987, the other one is Johansson co integration test (Johansson 1988). Co integration test is applicable to understand the linkages and dynamic interactions among stock prices indices across global stock market (Arshanapalli and Doukas, 1993). To know the relationship of stock market and bond market and to find out how these two markets are integrated and moreover to test whether these two markets are correct each other or not co integration test can be used (Roopali & Kapil,

2002). Integrated financial market has a vital role because of many reasons (Reddy, 2002), they are creating a very good channel for conveying or means of transmitting important price signals. (Mishra, 2007) found that there is an international integration in the long run relationship between BSE and NASDAQ indices. Indian stock market has relationship with major Asian markets also (Kroner and Ng, 1998). Previous studies it is suggested that co integration test is appropriate for this study.

2.2 India's Bond and Stock Market

There are many studies (Geotzman & Massa, 2002; Longstaff, 2004; Angew and Balduzzi, 2005; Chordia, Srakar & Subrahmanyam, 2005) investigated that stocks and bond market has an inverse relationship in the developed market, and it will be beneficial to test whether is Co -movement between these two market. Long run volatility is different in stocks and bond there by, the yields also not similar (Clifford S. Asness, 2000). It is important to know about the co-movements of stock and bond market to create optimal portfolio for investment, a portfolio including both stocks and bonds is better than a portfolio of all stock. Sharp (1987) explains both tactical and strategic asset allocation decisions, the tactical decision involves taking benefits from the short term opportunities within a long run changes. Stock and bond return possess a strong relationship on its returns. Shiller and Beltratti (1990) opined that a well-built positive (negative) correlation between changes in stock price and long-term bond prices.

2.3 India's stock market and global stock market

It has been an attracting thing to study the links between national stock markets (Roll (1989). (Tarika & Seema (2014) found that here is a significant co-integration relationship among U.S, EU and Indian equity markets. Indian market is related with some of the markets around the world (Subha, Sagar & Rajiv (2009). So, there are lot of studies to reveal how Indian market is co-related with other stock markets all over the world. (Cerny and Koblas, 2008) the flow of information from one market to another market leads to arbitrage. India's market showed positive correlations from around 1994 with other Asian markets and the level of positive correlation increased significantly after 2000 (Seungwook Bahng, 2007). Indian market was isolated from the influence Hong Kong, Japan, Singapore, the U.S and the U.K during the study period of 1993 to 1998 (Lamba, Janaki Raman, 1998), however after the liberalisation and deregulation of norms and regulation including SEBI act 1992, Indian market started to show the possibility of creating interdependence with these markets. Janak and Sarath (2008) found that India's stock market provides opportunities for higher returns than other regional and global markets. Understanding the interdependence among global market has an important role for creating international diversification for investment. Levy and Sarnat (1970) opined that the inclusion of stock markets of emerging countries in investment leads to attain more gains.

So many studies are there which comparing international stock market and stock market with bond market. This paper tries to contribute on the particular area that comparing stock market with both other countries stock market and government bond market. And the findings will be helpful for investors, on those time when share market clashes, to choose better alternative.

III. RESULTS AND DISCUSSIONS

3.1 Correlation

Correlation Matrix					
	SENSEX	DOWJONES	FTSE_100	NIKKEI	BOND
SENSEX	1	0.531182	0.578489	0.528584	-0.098067
DOWJONES	0.531182	1	0.837591	0.640963	0.022697
FTSE_100	0.578489	0.837591	1	0.655661	0.022643
NIKKEI	0.528584	0.640963	0.655661	1	0.080356
BOND	-0.098067	0.022697	0.022643	0.080356	1

Table 3.1

To show whether the stock markets are correlated and how much Indian stock market is correlated with the bond market, correlation test is used. The result of correlation is given in table 3.1. A total of 570 weekly stock index and bond index return observation are used for correlation. It is found that Indian stock market has a very high correlation with developed stock markets. And it is also found that bond market is negatively correlated with the bond market. From the result it is clear that when the stock market is showing a negative trend or when the stock market goes down.

3.3 ADF unit root test

Stock index return for 10 year and Government bond are used for the analysis. Log returns of the indexes are used for the study and it is found that all index return and bond return are stationary at levels.

3.2 Johansen Cointegration Testing (Multivariate)

The trace statistic table shows that there exist four co integrating equations at the 5% significance level. For confirming the result trace statistic value and critical value can be compared. In unrestricted co integration test table all critical values are lesser than the trace statistic value so we can reject the null hypothesis of no co integrating equation. And it indicates that there exist a linear combination between stock returns of India, U.S, U.K and Japan. In short, it indicates that there exist a long term relationship and long run equilibrium between these markets. In short run there may be disequilibrium.

Unrestricted Co integration Rank Test (Trace)			
Hypothesized No. of cointegrated Equations	Trace Statistic	0.05 Critical Value	Probability
None *	454.9227	47.85613	0.0001
At most 1 *	313.1721	29.79707	0.0001
At most 2 *	197.974	15.49471	0.0001
At most 3 *	94.6871	3.841466	0.0000

Table 3.2

The Maximum Eigen value test also shows 4 co integrating equations at the 5% level of significance. Comparing the Max-Eigen Statistic with Critical Value it is clear that all the Max Eigen Statistic values are greater than the Critical Value, it also indicates the existence of co integration vectors.

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
Hypothesized No. of CE(s)	Max-Eigen Statistic	Critical Value 0.05	Probability
None *	141.7506	27.58434	0.00000
At most 1 *	115.1982	21.13162	0.00010
At most 2 *	103.2869	14.2646	0.00000
At most 3 *	94.6871	3.841466	0.00000

Table 3.3

The Maximum Eigen value test also shows 4 co integrating equations at the 5% level of significance. Comparing the Max-Eigen Statistic with Critical Value it is clear that all the Max Eigen Statistic values are greater than the Critical Value, it also indicates the existence of co integration vectors.

3.3 Johansen Cointegration Testing (Bivariate)

By comparing the stock market with bond market, p value is significant at 5% level indicates that there exist 2 co integrating vectors over Indian bond and stock returns. Trace statistic and critical value also reveals the same, that there is a long term relationship or long term equilibrium between bond market and stock market. trace statistic result failed to accept the null hypothesis of no co integrating equation.

Unrestricted Cointegration Rank Test (Trace)			
Hypothesized No. of Cointegrating Equations	Trace Statistic	0.05 Critical Value	Probability
None *	193.4033	15.49471	0.0001
At most 1 *	79.23441	3.841466	0.0000

Table 3.4

In the comparison between stock market and bond market indicates 2 cointegration equations at 5% level of significance. In the long run there should be long run equilibrium between stock market and bond market of India.

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)			
Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Probability
None *	114.1689	14.2646	0.0001
At most 1 *	79.23441	3.841466	0.0000

Table 3.5

IV. CONCLUSION

The study examined extends of Cointegration between Indian stock market with Government bond market and with other global stock market. By measuring SENSEX index return along with the return of other stock market indices of Japan, U.S, and U.K, found that Indian market is keeping at least four cointegrating vectors with the leading markets of Japan, U.S, and U.K. Indian stock market has a long term relationship with the leading stock market, there exist a long run equilibrium relationship between India's market and other leading stock markets. It is important to understand the strength of interdependence between Indian stock market with other stock markets for the act of international diversification. In the comparison of India's bond market with stock market of India it's found that there exist a linear combination between India's bond and stock market follows an equilibrium level in the long run. The reason behind the comparison of India's stock and bond market is creating an optimal portfolio possessing minimum risk and maximum return. And from the study it is advisable that when stock market is showing a negative trend better to go with less risk securities such as bond instead of investing in foreign stocks.

REFERENCE

- [1] Agnew, B. (2005). Rebalancing Activity in 401(k) Plans. *Working Paper, Boston College*.
- [2] Bahng, S. W. (2009). Recent evolutions of capital structure and its detremnants: A comparison of major stock exchanges in Japan. *Journal of Economic Research*, 251-283.
- [3] Doukas, B. A. (1993). International Stock Market Linkages: Evidence from the pre and post october 1987 period. *Journal of Banking and finance*, 193-208.
- [4] Dr. Roopali Patoda, D. K. (2012). Assimilation Between Bond market and stock market. *Global Journal of management and Business Research*.
- [5] Janakiramanan, L. (1998). An Empirical Examination of Linkages Between Pacific-Basin Stock Markets. *Journal of International Financial Markets, Institutions and Money*, 155-173.
- [6] Kenneth F. Kroner, V. K. (2006). Modeling Asymmetric Comovemnts of Asset Return. *The Review of Financial Studies*.
- [7] Koblas, C. a. (2008). Stock market integration and the speed of information transmission. *Journal of Economics and Finance*.
- [8] Longstaff. (2004). The Flight-to-Liquidity Premium in U.S. Treasury Bond Prices. *Journal of Business*, 511-526.
- [9] M.V. Subha, N. R. (2009). Cointegration of Indian stock markets with other leading stock markets. *Studies in Economics and Finance*, 87-94.
- [10] MISHRA. (2007). THE MARKET REACTION TO STOCK SPLITS — EVIDENCE FROM INDIA. *International Journal of Theoretical and Applied Finance*.
- [11] Pierluigi Balduzzi, E. J. (2001). Economic News and Bond Prices: Evidence from the U.S. Treasury Market. *JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS*, 523-543.
- [12] Robert J. Shiller, A. E. (1990). Stock Prices and Bond Yields: Can Their Comovements Be Explained in Terms of Present Value Models? *The National Bureau of Economic Research*.
- [13] Roll, R. (1989). Price volatility, international market linkages and their implications of regulatory policies. *Journal of Financial services Research*.
- [14] S. J. (1988). Statistical analysis of Cointegrating Vectors. *Journal of Economic Dynamics & control*, 231-254.
- [15] Tarika, S. (2014). Co -Movements of U.S. Eu and Indian Equity Markets: Portfolio Diversification. *Research Journal of Finance and Accounting*.
- [16] Tarun Chordia, A. S. (2005). An Empirical Analysis of Stock and Bond Market Liquidity. *The Review of Financial Studies*, 85-129.
- [17] William N. Goetzmann, M. M. (2002). Daily Momentum and Contrarian Behavior of Index Fund Investors. *JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS*, 375-389.