

A Comparative Analysis on Bonds and Equity Markets Across Major International Stock Exchanges

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Abstract

This study covers that the relationship between beta and return, for bonds & equity in international stock exchanges with their stock movements from 2011-17. The study analyses indices of 10 leading international stock exchanges for the period 2011-17 – NYSE, HSE, BSE, etc. Risk, returns and coefficient of variation for these indices are calculated and hypothesis testing using ANOVA – 2-way method is conducted. Bond & equity segments of these leading stock exchanges and their movements from 2011-17 are the focus of this study. From the study the returns of Shenzhen Stock exchange are more in Bond market and in equity market Bolsa Stock Exchange is higher and they are continuously rising in their returns. According to data analysis we can say that no stock exchange is similar they are different from each other across the world from the period 2011-17. Bonds and equity markets also differ from each other in the period of 2011-17. It says that all the markets are different based on their risk, return and consistency. Main limitation of the study is some of the stock exchanges could not be considered due to unavailability of data.

Key words: Beta and return, International stock exchanges, NYSE, HSE, ANOVA-2-way method, Data analysis,

INTRODUCTION

Stock market refers to the collection of markets and exchanges where regular activities of buying, selling, and issuance of shares of publicly-held companies take place. Such financial activities are conducted through institutionalized formal exchanges or over-the-counter (OTC) marketplaces which operate under a defined set of regulations. There can be multiple stock trading venues in a country or a region which allow transactions in stocks and other forms of securities.

Equity: Equity gives the investors a right to ownership in the company. The capital received by a company through issue of equity shares is permanent capital. Though investors can sell their shares and transfer ownership to another investor but the capital of the company remains untouched. The return on equity varies and depends on price fluctuations of shares.

Risk and Return from investing in equity Return: The equity market is highly volatile because large number of investors keep evaluating stocks and realigning their current investment position leading to fluctuating share prices. Since performance of companies can be evaluated based on its share prices, the company with increasing rate in share prices indicates profitability whereas deteriorating stock prices indicate an overall decrease in company share prices and profits.

Risk: The risk to an equity investor is that the future benefits are not assured or guaranteed, but have to be estimated based on dynamic changes in the business environment and profitability of the business.

BONDS: Bonds, or fixed income investments, are essentially loans from an investor to a company or government. Bond investors receive periodic payments based on the interest rate at which the bond was sold.

The bond market is a financial market where participants can issue new debt, known as the primary market, or buy and sell debt securities, known as the secondary market. This is usually in the form of bonds, but it may include notes, bills, and so on.

BOND VALUATION: Bond valuation is the determination of the fair price of a bond. As with any security or capital investment, the theoretical fair value of a bond is the present value of the stream of cash flows it is expected to generate. Hence, the value of a bond is obtained by discounting the bond's expected cash flows to the present using an appropriate discount rate.

In practice, this discount rate is often determined by reference to similar instruments, provided that such instruments exist. Various related yield-measures are then calculated for the given price

LITERATURE REVIEW

Ho, K., Milevsky, M. A., & Robinson, C. (1999). International equity diversification benefits Canadian investors very substantially by reducing shortfall risk, as shown by results of a model that minimizes the risk of shortfall from a desired consumption level for a retired investor with an unknown date of death and stochastic investment returns. It does not benefit American investors materially. The United States equity market is a large proportion of the international equity market that is available to individual investors, and United States returns are highly correlated with other markets

Hui, T. K., Kurniawan, R., Mak, K. S., & Shiesh, J. H. (2006). This paper aims to investigate the benefits of including different assets from several countries in optimal portfolio management, particularly in bonds and stocks markets, using the Classical model and the Empirical Bayes model. Our results show that, when the classical approach is used, investing in the bond markets alone will provide substantial return and optimal risk reduction for investors who are risk averse. However, the combination of stocks and bonds will provide a better mix giving a higher return per unit risk.

Çitak, L. (2007). This paper investigates the validity of the relationship between beta and return, for stocks traded in Istanbul Stock Exchange (ISE). In order to find out whether there are relationships between beta coefficients and stock returns, three extreme shocks to the market (a disastrous earthquake, a political crisis leading to financial turmoil, a brutal terrorist attack) are chosen and five regression models, reflecting the abrupt single day falls and recoveries, are estimated. In order to come to a sound conclusion about the relationship between beta and return ten additional regression models are estimated for the five largest ups and five largest downs in the index during the history of Istanbul Stock Exchange.

Altman, E. I. (2005). This article we introduce a scoring system (EMS Model) for Emerging Corporate Bonds. The scoring system provides an empirically based tool for the investor to use in making relative value determinations. The EMS Model is an enhanced version of the statistically

proven Z-Score model. Unlike the original Z-Score model, our approach can be applied to nonmanufacturing companies, and manufacturers, and is relevant for privately held and publicly owned firms. The adjusted EMS Model incorporates the particular credit characteristics of emerging markets companies, and is best suited for assessing relative value among emerging markets credits.

NEED FOR THE STUDY:

- This study covers that the relationship between beta and return, for bonds & equity in international stock exchanges with their stock movements from 2011-17
- This study covers various international stock exchanges from different socio-political and economic background such as New York Stock exchange (NYSE) Hong Kong Stock Exchange (HSE).
- This paper studies the validity of the relationship between beta and return, for bonds & equity in international stock exchanges.

OBJECTIVES:

- To understand equity and bonds markets.
- To study leading international stock exchanges of the world for the period 2011-17.
- To understand hypothesis testing to compare bond & equity segments of leading stock exchanges.

RESEARCH METHODOLOGY:

- **VARIABLES:** The data was taken from the SEBI handbook 2017. The variables used in the study are turnover and volume in Dollars of different international stock exchanges. The study uses ANOVA to compare and test the differences in the stock movements in these stock exchanges from 2011-2017
- **DATA SOURCE:** The study uses secondary data taken from SEBI handbook 2017 and yahoofinance.com
- **DATA ANALYSIS:** It consists of descriptive and inferential tools like:

Descriptive tools:

- Mean
- Standard deviation

Inferential tools:

- ANOVA -2 way

HYPOTHESES:**BONDS:**

H0: There is no significant difference between years of trading with movements of different stock exchanges in bond market.

H1: There is significant difference between each market movements with years

EQUITY:

H0: There is no significance difference between each stock exchange movements with years in the equity market

H1: There is significance difference between each market movements with years

BONDS & EQUITY:

H0: There is no significance difference between Bond and equity market in different international stock exchanges

H1: There is significance difference between bond and equity market and movements of stock exchanges

LIMITATIONS:

- Some of the stock exchanges could not be considered due to unavailability of data.
- The study does not cover all asset classes.

DATA ANALYSIS

BONDS

YEAR	Bolsa de Comercio de Buenos Aires	Borsa Istanbul	Hong Kong Exchanges and Clearing	Johannesburg Stock Exchange	Korea Exchange	London SE Group	Oslo Bors	Shenzhen Stock Exchange	Tel-Aviv Stock Exchange	BSE
2011	14,145	79,149	19,599	26,081	5,05,168	9,08,819	1,21,495	5,549	29,402	15454.92
2012	18,062	85,831	43,998	44,392	5,09,176	9,20,853	1,11,139	11,093	31,747	19426.71
2013	21,100	1,00,493	74,302	47,818	5,15,761	10,53,657	70,537	12,947	26,329	21170.68
2014	28,330	90,618	1,23,961	46,489	5,29,356	7,02,439	57,415	5,028	23,770	27499.42
2015	49,645	55,005	96,847	72,669	5,39,799	5,97,031	50,367	11,129	23,094	26117.54
2016	61,352	49,617	99,836	30,345	4,53,127	5,00,272	50,278	39,488	29,295	26626.46
2017	74,923	75,750	1,52,795	44,823	4,81,137	4,03,244	51,369	22,643	31,011	34056.83

EQUITY

BONDS

YEAR	Bolsa de Comercio de Buenos Aires	Borsa Istanbul	Hong Kong Exchanges and Clearing	Johannesburg Stock Exchange	Korea Exchange	London SE Group	Oslo Bors	Shenzhen Stock Exchange	Tel-Aviv Stock Exchange	BSE
2011	49	2,416	63,049	12,116	3,874	827.46	7,623	73,772	1,841	4598.21
2012	225	5,970	39,375	9,719	1,125	909.25	2,628	32,411	1,058	5975.74
2013	90	2,683	48,850	9,667	2,137	1351.09	3,188	29,238	1,557	6326.72
2014	16	1,382	1,21,581	17,210	4,294	1893.69	4,266	68,040	1,358	8369.27
2015	14	637	1,43,921	22,819	3,842	2513.42	3,151	1,08,204	8,528	8097.57
2016	15	648	62,742	8,144	5,410	2729.42	2,933	1,61,032	1,548	8386.69
2017	76	1,322	74,336	7,605	7,138	62,136	5,235	1,15,778	2,870	11029.78

Anova: Two-Factor Without Replication

SUMMARY	Count	Sum	Average	Variance
2011	10	170167.1	17016.71155	752537369.69
2012	10	99396.43	9939.64342	198764207.34

2013	10	105088.5	10508.85076	255163882.11
2014	10	228409.5	22840.9451	1622725129.76
2015	10	301726.5	30172.65016	2667553198.53
2016	10	253589.8	25358.98449	2624659677.88
2017	10	287526.5	28752.64699	1643557844.13

Bolsa de Comercio de Buenos Aires	7	485.345	69.33499405	5640.621474
Borsa Istanbul	7	15058.47	2151.210617	3461502.676
Hong Kong Exchanges and Clearing	7	553854.3	79122.04121	1507919740
Johannesburg Stock Exchange	7	87280.84	12468.691	31250801.33
Korea Exchange	7	27819.91	3974.272756	3948787.179
London SE Group	7	72360.42	10337.20266	522263393.4
Oslo Bors	7	29024.71	4146.387183	3162240.334
Shenzhen Stock Exchange	7	588475.8	84067.97358	2258197633
Tel-Aviv Stock Exchange	7	18760.55	2680.078096	6977684.579
BSE	7	52783.98	7540.568571	4411184.215

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	4.14E+09	6	690106211.73	1.700936284	0.14	2.271989
Columns	6.6E+10	9	7330633045.81	18.06814592	0.00	2.05852

Error	2.19E+10	54	405721377.27
Total	9.2E+10	69	

INTERPRETATION:

H0: There is no significant difference between years of trading with movements of different stock exchanges

H1: There is significant difference between each market movements with years

From ANOVA analysis we can say that there is significance difference between each stock exchange movement based on their economic factors and internal or external reasons. Alternative hypothesis (H1) is accepted. It says that each market different from each other in bond market it does not based on years. It is based on market to market.

EQUITY

<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
2011	10	1724863	172486.3	8.97E+10
2012	10	1795717	179571.7	9E+10
2013	10	1944114	194411.4	1.14E+11
2014	10	1634906	163490.6	5.97E+10
2015	10	1521703	152170.3	4.89E+10
2016	10	1340236	134023.6	3.32E+10
2017	10	1371752	137175.2	2.75E+10
Bolsa de Comercio de Buenos Aires	7	267557	38222.43	5.65E+08

Borsa Istanbul	7	536462.7	76637.53	3.42E+08
Hong Kong Exchanges and Clearing	7	611338.1	87334.01	2.08E+09
Johannesburg Stock Exchange	7	312617.7	44659.68	2.25E+08
Korea Exchange	7	3533524	504789.1	8.66E+08
London SE Group	7	5086315	726616.4	5.85E+10
Oslo Bors	7	512598.3	73228.32	9.25E+08
Shenzhen Stock Exchange	7	107875.6	15410.8	1.47E+08
Tel-Aviv Stock Exchange	7	194649.4	27807.06	11873115
BSE	7	170352.6	24336.08	37652636

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	2.97E+10	6	4.94E+09	0.757269	0.61	2.271989
Columns	3.81E+12	9	4.24E+11	64.86401	0.00	2.05852
Error	3.53E+11	54	6.53E+09			
Total	4.19E+12	69				

INTERPRETATION:

H0: There is no significance difference between each stock exchange movements with years in the equity market

H1: There is significance difference between each market movements with years

ANOVA analysis we can say that there is significance difference between each stock exchange movement based on their economic factors and internal or external reasons. Alternative hypothesis (H1) is accepted. It says that each market different from each other in equity market it does not based on years. It is based on market to market

BONDS AND EQUITY

Anova: Two factor without replication

BONDS EQUITY

Anova: Two
without

SUMMARY	Bolsa de Comercio de Buenos Aires	Borsa Istanbul	Hong Kong Exchanges and Clearing	Johannesburg Stock Exchange	Korea Exchange	London SE Group	Oslo Bors	Shenzhen Stock Exchange	Tel-Aviv Stock Exchange	BSE	Total
2011											
Count	7	7	7	7	7	7	7	7	7	7	70
Sum	267557	536463	611338	3E+05	4E+06	5E+06	5E+05	1E+05	2E+05	170353	11333291
Average	38222.4	76637.5	87334	44660	5E+05	7E+05	73228	15411	27807	24336	161904.2
Variance	5.6E+08	3.4E+08	2E+09	2E+08	9E+08	6E+10	9E+08	1E+08	1E+07	4E+07	6.08E+10
2011											
Count	7	7	7	7	7	7	7	7	7	7	70
Sum	485.345	15058.5	553854	87281	27820	72360	29025	6E+05	18761	52784	1445904
Average	69.335	2151.21	79122	12469	3974	10337	4146	84068	2680	7540.6	20655.78
Variance	5640.62	3461503	2E+09	3E+07	4E+06	5E+08	3E+06	2E+09	7E+06	4E+06	1.33E+09
Total											
Count	14	14	14	14	14	14	14	14	14	14	
Sum	268042	551521	1E+06	4E+05	4E+06	5E+06	5E+05	7E+05	2E+05	223137	
Average	19145.9	39394.4	83228	28564	3E+05	4E+05	38687	49739	15244	15938	
Variance	6.5E+08	1.7E+09	2E+09	4E+08	7E+10	2E+11	2E+09	2E+09	2E+08	1E+08	

AND

factor
replication

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit

Sample	6.98E+11	1	6.98E+11	205.2099	0.00	3.920124
Columns	1.84E+12	9	2.04E+11	60.01479	0.00	1.958763
Interaction	2.04E+12	9	2.27E+11	66.61295	0.00	1.958763
Within	4.08E+11	120	3.4E+09			
Total	4.98E+12	139				

INTERPRETATION:

H0: There is no significance difference between Bond and equity market in different international stock exchanges

H1: There is significance difference between bond and equity market and movements of stock exchanges

From above table we can say that H1 can be accepted. So, it says that there is difference between each market and also from movements of each stock exchange to other stock exchange.

CO-EFFICIENT OF VARIATON

YEAR	B0SLA	(BORSA)	HONG	JOHANNES	KOREA	LONDON0	OSL0	SHEN	TEL	BSE
CV BONDS	58.59	881.72	96.87	216.26	- 1350.90	-134.86	- 104.63	166.93	765.13	91.30
CV EQUITY	278.20	857.66	423.04	242.66	338.77	240.24	2077.16	242.22	287.81	89.22

INTERPRETATION:

From the above risk, return and coefficient of variation analysis Shenzhen Stock Exchange is giving more returns in bond market and in equity market Bolsa Stock exchange giving higher return than all the stock exchanges It is raising over the period of time.

FINDINGS

- Study reveals that Shenzhen Stock Exchange is performing well in Bond market and NYSE Stock Exchange is giving more returns with higher risk in equity segment constitutently over the years from 2011-17
- Highest returns from Shenzhen, Johannes and Hong Kong Stock Exchanges inn bond market.IN equity market NYSE, TEL-Aviv Stock Exchange and Bolsa Stock Exchange.
- Least risk Stock Exchanges are Korea Stock Exchange, OSLO Stock Exchange and BSE in bond market. In equity market NYSE, TEL-Aviv and Bolsa Stock Exchange.
- There is no significant difference in returns between the various stock exchanges, however there is a difference based on period.
- There is no significant difference in risk and consistency between the various stock exchanges, however there is a difference based on period.
- An international investor who is a risk taker can invest in NYSE, TEL-Aviv and Bolsa Stock Exchange
- An international investor who is a risk averse can invest in Korea Stock Exchange, OSLO Stock Exchange and BSE

CONCLUSION:

- According to data analysis we can say that no stock exchange is similar they are different from each other across the world from the period 2011-17.Bonds and equity markets also different from each other in the period of 2011-17.It says that all the markets are different

based on their risk , return and consistency viz.And also each stock exchange is different from other stock exchange depends on country micro and macro-economic factors.

- From the study we can say that bond market is best for the people who can't take risk according to their time horizon and equity is market is chosen for the people who can take risk for high returns. And movements of each stock exchange are differing from other country stock exchanges based on their affecting factors

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