

The Existence of Flight to Quality: Evidence From Indonesia

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Abstract—This paper aimed to analyze the investments shift from high-risk investment (stock) to a more secure investment (bond) or commonly called a flight to quality in the event of a crisis in Indonesia. The samples in this study are Jakarta Composite Index (JCI), Indonesia Corporate Bond Index (CBIX) and Indonesia Government Bond Index (GBIX) in Indonesia during the study period from January 2007 to December 2014. This study uses the event study. The data sources for bond prices are from Indonesia Bond Pricing Agency (IBPA) and Indonesian Capital Market Electronic Library (ICAMEL) while the stock data is from Yahoo Finance. During the study period, 2007-2014 is found five events that identified the crisis. The results showed that during the study period 2007-2014 in Indonesia, when the market is experiencing a crisis, the investment movement from high-risk investment (stock) to a more secure investment (bond) does not occur or flight to quality does not occur. The cases differ from previous studies in times of crises.

Keywords—Stock, bond, investment

I. INTRODUCTION

Investments made by individuals and economic operators aim to maximize the return on the assets they have by considering the number of risks attributed to the asset. Decision making in investing is very dependent on the return obtained and risks borne by the investors. The investment that considered riskier will offer a higher profit level (high-risk, high return). In the financial investment markets, the one better known is stocks and bonds, which both are the main instrument in developing an optimal investment portfolio.

Several previous studies showed that the risk taken by the investors associated with the instability of the country's economic condition and the instability condition of its social and politic situation. The unstable economic condition in a country allows investors to search for more secure investments. In times of crisis, investors will shift their investment from the high-risk investment into more secure investments (flight to quality) like a bond [1]. Baur and Lucey [2] found a negative relation between stock return and bond return in times of crisis.

Under normal circumstances, there is a positive relationship between stock return and bond return. Gulko [3] found a positive relationship between stock return and

government bond return in normal situation or coupling, the study conducted in a US capital market. Andersson et al. [4] found a positive relationship between stock return and bond return during the high inflation period in the US and German capital market. Guidolin and Timmermann [5] found a positive relationship between stock return and bond return in economic expansion in the UK capital market.

II. PREVIOUS RESEARCH AND HYPOTHESIS DEVELOPMENT

Gulko [3] studied in the US about the relation between stock return and treasury bond. He found a positive relation or couple between stock return and treasury bond in a normal situation; however, when the stock market fell, treasury bond tended to reinforce while the stock return weakened so he found a negative relation between stock's return and return treasury bond or it called as decouple. Gulko [3] found empirical evidence that US treasury bond offered an adequate diversification during the financial crisis so that when a crisis occurred in the US most of the investor that investing their fund into stock tended to reallocate their investment into more secure investment's instruments, one of them was treasury bond.

Andersson et al. [4] studied the relationship between stock return and bond return that were the impact of economic growth expectations and the stock market's indeterminacy. The result showed that the relation between stock return and bond return varies from time to time. This study used stock price index data S&P 100 from US and DAX index from Germany. The study analysis period was from January 1991 to April 2004 in the US and Germany. The study used monthly data for inflation and growth expectations, expected the growth rate in the US and Germany, using consumer price indices (CPI) and real gross domestic products (GDP) in 12 months. This study found that most of the positive relations between stock return and bond return in both countries, although the next period had a negative correlation. The exciting thing was the relation between stock return and bond return in the US and Germany showed a relatively similar pattern from time to time. Besides, this study also showed that the relationship varies from positive to negative significantly between stock return and bond return in a short period.

Brocato and Smith [6] studied about the decrease of stock return in the US and the occurrence of flight to safety phenomena between stock return to bond return using daily data both stock index and a bond index. This study period started from 3 March 1984 to 17 October 2006. The result

showed some crisis indication that was found during that period, so it can be concluded that there was a flight to safety from stock to bond. Ilmanen [7] studied about the relation between stock return and government bond return and found that there was a positive relation in the 1990 period between stock return and bond return, but the positive relation changed into negative in 1956-1966 and 1998-2001.

Mustafa et al. [1] studied about the relation between stock return and bond return in Malaysia using daily data from the Malaysian stock price index, bond price index, government stock price index, Malaysia Syariah bond price index and Malaysia current bond price index. The study period was from January 2006 to December 2011. The result of the study showed that there was a negative relation between Malaysia stock return with Malaysia Syariah bond return, as well as Malaysia expected bond return and Malaysia government stock return during the crisis. Investors tend to shift or reallocate their investment from the high-risk investment to the most secure investment or flight to quality. During the economic crisis, the investment in Malaysia's government stock was most favored by investors since they thought that it was more secure, and then the investors invested their fund into Malaysia's government bond, Syariah special bond, and a common bond. The other result found a positive relation between stock return and bond return before the crisis, but on the contrary, when a crisis occurred, the relation changed to negative between stock return and bond return. Based on those previous studies, then the hypothesis is formulated as follows:

- H1:** There is a positive relation between stock's return and corporate bond's return, as well as stock's return and government bond's return in prologue/before and epilogue/after the crisis occurs.
- H2:** There is a negative relationship between stock return and corporate bond return as well as between stock return and government bond return during a crisis event occurs.

III. METHOD

The data used in this research is secondary daily data, which includes: data about daily index in the 2007-2014 period, that is a corporate bond price index and government bond derived from the Indonesian Bond Pricing Agency (IBPA) and Indonesian Capital Market Electronic Library (ICAMEL) and stock daily index data on Indonesia Stock Exchange 2007-2014 period obtained from Yahoo Finance.

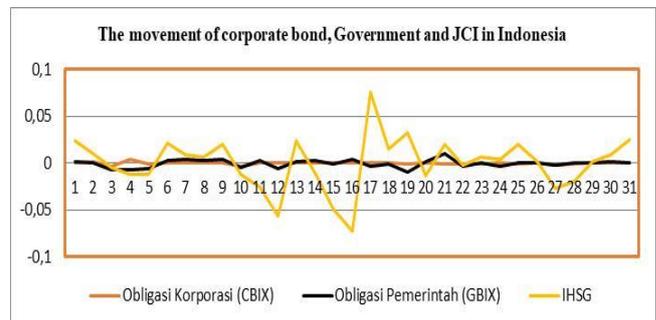
The Table 1 below explains that during the study period from 2007 to 2014, five crisis periods were identified, or there are five decreases in market return (JCI) of five percent or more.

The result of the graph explains that the vertical axis is the change level of the market return (JCI), corporate bond (CBIX) and government bond (GBIX) while the horizontal axis is the event windows in research. The windows used in research that are before the crisis/prologue for 60 days, after the crisis/epilogue for 60 days and during the crisis event for 31 days, so in total in five crisis periods there are 300 days before the crisis/prologue and 300 after the crisis/epilogue and 155 days during the crisis period of the study.

Table 1. Event from January 2007 to December 2014

Crisis Date	Day	JCI Reducer	Cause of Crisis
15 August 2007	Wednesday	-6,40%	Subprime mortgage crisis
22 January 2008	Tuesday	-7,69%	Stock experienced global chaos
06 November 2008	Thursday	-10%	Subprime mortgage crisis
22 September 2011	Thursday	-8,80%	The impact of weakening global stock markets, especially the United States and Europe
19 August 2013	Monday	-5,50%	Macroeconomic assumptions that tend to be incompatible with the real situation only made the Jakarta Composite Index (JCI) decrease. Investors tend to sell. It is also caused by external factors, including US central bank's plan (the Federal Reserve) to reduce monetary stimulus.

The shift of bond return and the stock market in Indonesia when the decrease occurs is 7.69%.



Graph 1. The Movement of Corporate Bond, Government and JCI in Indonesia

Hypothesis Testing Methods

In this study, the researcher used three methods to analyze the occurrence of flight to quality in Indonesia during the crisis period of 2007-2014.

Equation I (Regression Model)

$$y_t = \alpha + \beta x_t + \varepsilon$$

y_t is Return_CBIX or Return_GBIX, and α is constant, and β is regression coefficients, and Return_IHSG_t is market return (JCI) t period, and ε is an error term

Equation II (Regression Dummy)

$$Y_t = \beta x_t + \lambda D_t + \varepsilon_t$$

y_t is Return_CBIX or Return_GBIX, and Return_IHSG_t is the market return (JCI) t period, and λ is coefficient that indicates the occurrence of flight to quality, and D_t is Dummy 1 at the time of crisis, and Dummy 0 outside the crisis and ε_t is an error term

Equation III (GARCH Model)

$$y_t = \alpha + \beta x_t + \varepsilon$$

$$\sigma_t^2 = \omega + \alpha \varepsilon_{t-1}^2 + \beta \sigma_{t-1}^2$$

y_t is Return_CBIX or Return_GBIX, and α is constant, and β is regression coefficients, and Return_IHSG_t is the market return (JCI) t period, and ε is error term, and σ_t^2 is the conditional variant, and ω is the constant, and $\alpha \varepsilon_{t-1}^2$ is

residual coefficient before t period, and $\beta\sigma_{t-1}^2$ is the GARCH coefficient before t period.

IV. RESULT AND DISCUSSION

Table 2. Descriptive Statistic Research Variables

	CBIX	GBIX	IHSG
Mean	-0,0002	-0,0002	-0,0003
Median	8,03E-06	-0,0002	0,0010
Maximum	0,0323	0,1217	0,0792
Minimum	-0,0209	-0,0489	-0,1037
standard deviation	0,0033	0,0092	0,0195
Observations	755	755	755

Source: data processed

Based on the descriptive statistic table between dependent and independent variables can be explained that the value of the mean for each negative variable as an independent variables market return (JCI) -0.03% and dependent variable corporate bond return (CBIX) -0.02% and government bond return (GBIX) -0.02%. The maximum value of the data on government bond return (GBIX) 12% while the minimum value of the data on market return (JCI) -10% with the number of observation 755 days. This study uses Augmented Dickey-Fullerr (ADF) to test whether the data time series used stationary. Data stationary test results, Augmented Dickey-Fullerr (ADF) Test: Market Return (JCI), corporate bond (CBIX) and Government (GBIX).

Table 3. Result t-test

Series	ADF t-test (1 st Difference-Intercept)	t-test 1% level
Prologue	IHSG -9,590581***	-3,452141
	CBIX -15,65894***	-3,452066
	GBIX -9,106348***	-3,452215
Event	IHSG -10,05271***	-3,473096
	CBIX -11,56873***	-3,473096
	GBIX -9,883738***	-3,473096
Epilogue	IHSG -18,10989***	-3,452215
	CBIX -14,97884***	-3,452066
	GBIX -16,94917***	-3,452066

*, **, *** RESPECTIVELY 10%, 5% AND 1%

Hypothesis Testing

Corporate Bond and Government Regression Results. The table presents regression results during the prologue, epilogue and at the time of the crisis event with the dependent variable corporate bond return (CBIX) and government bond return (GBIX) while the independent variable market return (JCI) by testing one by one.

Table 4. Hypothesis Test

NO.OBS		Corporate Bond (CBIX)		Government Bond (GBIX)	
		B (t-stat)	Probability	β (t-stat)	Probability
Prologue	300	0,0115 (1,4234)	0,1556	0,1602*** (7,8269)	0,0000
Event	155	0,0032*** (3,5051)	0,0006	0,1433*** (4,8903)	0,0000
Epilogue	300	0,0630*** (4,3046)	0,0000	0,2112*** (5,8859)	0,0000

*, **, *** respectively at 10%, 5%, and 1%

Dummy Regression Results of Corporate Bonds and Government Return. This table presents the overall dummy results. 1 in the event of a crisis and 0 outside the event or during the prologue and epilogue. The dependent variable corporate bond return (CBIX) and government bond return (GBIX) while the independent variable market return (JCI).

Table 5. Regression Result

	Λ (t-stat)	Probability	Adj. R ²
CBIX	0,00008 (0,2688)	0,7881	0,0354
GBIX	0,00052 (0,6656)	0,5059	0,1219

*, **, *** respectively at 10%, 5%, and 1%

GARCH Model Results of Corporate Bonds and Government Return. This table presents the overall results of GARCH model testing in the event of a crisis. The dependent variable corporate bond return (CBIX) and government bond return (GBIX) while the independent variable market return (JCI) by testing one by one.

Table 6. Model Result

Variable	JCI and CBIX Variance Equation		JCI and GBIX Variance Equation	
	Coefficient	Prob.	Coefficient	Prob.
C	3,58E-07	0,0392	1,99E-06	0,0201
RESID(-1) ²	0,1048	0,0775	0,0925	0,0003
GARCH(-1)	0,8660***	0,0000	0,8907***	0,0000

*, **, *** respectively at 10%, 5%, and 1%

Correlation Results of Corporate Bonds and Government Return. This table presents the overall results of the correlation of the prologue, epilogue, and at the event crisis. Dependent variable corporate bond return (CBIX) and government bond return (GBIX) while the independent variable market return (JCI) by testing one by one.

Table 7. Correlation Result

Period/Bond Type	Corporate Bond (CBIX)	Government Bond (GBIX)
Prologue	0,0821	0,4129***
Event	0,2726***	0,3676***
Epilogue	0,2419***	0,3227***

*, **, *** respectively at 10%, 5%, and 1%

The analysis result obtained in the prologue and epilogue are positive and significant. The result shows that during the prologue and epilogue, or before and after the crisis, the investors remained on their investment, or it can be concluded that flight to quality does not happen. This result supports Mustafa's research result [1], that at the time when a crisis does not occur, investors prefer to hang on to their investments in stock. Gulko [3] who studied in the US about the relation between stock return and treasury bond also found similar results: positive relation or couple between stock return and treasury bond in a normal situation. This result is also supported by Ilmanen's research (2003) who studied about the relation between stock return and government bond return and found a positive relation return during 1990 period or the period before the crisis.

The result shows that during the critical period or event, investors do not move their investments into safer investments or flight to quality does not occur. The result does not support the previous studies conducted by Mustafa [1], Gulko [3], and Brocato [8]. The previous study's results show that outside investors like Malaysia's investors are tending to shift their investments from the riskier investment into a safer investment, that is from stock investment to bond investment or often called as the flight to quality. Chordia et al. [9] found a correlation between stock return and bond return spreads, but during the crisis period changes in volume between stock return and bond, return increased significantly. During the crisis period, it was found that there is a decrease in funds flowing into stock mutual funds and an increase in funds flowing into government bonds. The increase of uncertainty investor will impact on investment change made by investors during periods of crisis. Connolly and Strivers [10] also found a different result, that the correlation of daily stock return and bond return from positive significance in a period of uncertainty is low, then significantly change into negative in a period of high uncertainty for most countries. This indicates that the return movement in the market is significantly different when the uncertainty high and low. The difference in results is possible because there are differences in capital market's regulation in Indonesia and in other countries, as described by Connolly and Strivers [10] in his study that the transfer of the investment or flight to quality occurs only in some countries. In addition, the decrease in return is 5% in Indonesia may not give a quite significant impact on investment in the capital market. These results are supported by all three methods used: the regression equation, the dummy method, and correlation method.

V. CONCLUSION AND LIMITATIONS

Statistically, the result shows that during the prologue and epilogue, investors remain in the investment chosen, so there is no transfer from high-risk investment to safer investment or from stock to bond. The result of this study is supported that there is no flight to quality at the prologue or epilogue. The test result at the time of the event or crisis period shows that there is no flight to quality in Indonesia. It can be concluded that in Indonesia in a crisis period, investors do not shift their investment from high-risk investment into safer investment or not switching from stock investment to bond.

This study has several limitations, namely from the determination of crisis date, because no research explains how much a decrease in the market return (JCI) gained for the determination of the crisis period. Further weakness in this study is about the determination of the event windows. Several previous studies using different event windows.

There are no rules that describe how many exactly the event window to be able to determine the occurrence of flight to quality in a country. Further research to see the flight to quality is expected to choose the crisis period that refers to the crisis globally, not just a domestic crisis, because the result of this research conducted partially in the second event when the exchange experienced global chaos shows an indication of flight to quality in Indonesia despite the result does not support statistically.

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