

The Existence of Flight to Quality: Stock Bond in Malaysia

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ABSTRACT

Flight-to-quality occurs during economic crisis. It refers to a sudden shift in investment behaviors in a period of economic crisis. During the crisis, investors will shift from risky asset like stocks towards safer asset like bonds. According to Baur and Lucey (2009), if investors buy bonds when they sell stocks, investors flee from stocks into bonds and cause a flight-to-quality. This study wants to examine the existence of flight from stock to bond (FTQ) and the pattern of correlation of stock and bond across different economic environment. There are three data set which employed; before economic crisis, during economic crisis and after economic crisis. The daily stock indices and bond indices are collected from January 2006 until December 2011. The ARCH/GARCH and correlation test will employ to test the hypothesis. There are different pattern of time variation in stock-bond correlation over the period. The stock-bond correlation during pre-crisis are positive and turn to be negative during crisis, there is flight to quality. The Government Investment Issue (GII) is a preferred bond investment followed by Malaysian Government Securities (MGS), Corporate Bond (Islamic) and Corporate Bond (Conventional) during economic crisis

Keywords: Flight to Quality, Correlation, Global Financial Crisis

Penerbangan kepada kualiti berlaku semasa krisis ekonomi. Ia merujuk kepada perubahan secara tiba-tiba dalam tingkah laku pelaburan dalam tempoh krisis ekonomi. Semasa krisis, pelabur akan beralih daripada aset berisiko tinggi kepada aset yang lebih selamat seperti saham kepada bon. Menurut Baur dan Lucey (2009), jika pelabur membeli bon dan mereka menjual saham, inilah yang di katakan penerbangan kepada kualiti. Kajian ini mengkaji kewujudan penerbangan dari saham kepada bon (FTQ) dan corak korelasi saham dan bon di seluruh persekitaran ekonomi yang berbeza. Terdapat tiga set data yang digunakan; sebelum krisis ekonomi, semasa krisis dan selepas krisis ekonomi. Data bagi kajian ini menggunakan indeks saham harian dan indeks bon harian dari Januari 2006 hingga Disember 2011. Kaedah ARCH/GARCH dan korelasi digunakan untuk menguji hipotesis. Terdapat corak yang berbeza variasi masa dalam korelasi saham bon dalam tempoh tersebut. Korelasi saham bon semasa pra-krisis adalah positif dan beralih kepada negatif semasa krisis, terdapat penerbangan kepada kualiti. GII adalah bon kegemaran diikuti dengan MGS, Bon Korporat (Islam) dan Bon Korporat (konvensional) semasa krisis ekonomi.

INTRODUCTION

Flight-to-quality occurs during economic crisis. It refers to a sudden shift in investment behaviors in a period of financial crashed. During the crisis, investors will shift from risky asset like stocks towards safer asset like bonds. According to Baur and Lucey (2009), if investors buy bonds when they sell stocks, investors flee from stocks into bonds and cause a flight-to-quality. In normal times, the returns on stocks and government bonds are either unrelated or move together in response to changes in the risk-free discount rate. In times of financial stress, however, investors may view stocks as much riskier than government bonds. If so, they will shift out of stocks into bonds, causing the returns on the two assets to move in opposite directions. A number of studies, some for United States and some for other countries, confirm that the correlation between stock returns and government bond returns tends to turn

negative during financial crises (Andersson and others; Baur and Lucey; Connolly and others). Thus, the stock-bond correlation provides an additional measure of the flight to quality during periods of financial stress.

How can we identify that flight exists during crisis episodes? According to Baur and Lucey (2009), they said that when a stock bond correlation during pre-crisis are positive and turn to be negative during crisis, there is flight to quality. Another case of flight-to-quality is constituted by a negative stock bond correlation during pre-crisis period and a significant negative change in the crisis period. From the empirical studies, it shows that flights are a common feature in crisis periods. During global financial crisis in year 2007 until 2008, Malaysia was not affected up to first half of 2008. But the financial and economic environments become worst in the second half of 2008. Like other Asian countries, Malaysia suffered capital flight because banks and financial institution in United States and the West reduced their international business and focused on their home market. There was a big drop in funds flowing into Malaysia, with net financial and capital flows falling from –RM37.7 billion in 2007 to –RM118.8 billion in 2008.

From these capital flows, portfolio investments are the most volatile and recorded the largest net outflows of RM84.4 billion in 2008, compared to a positive net inflow of RM18.4 billion in 2007. Malaysia was one of the countries affected by portfolio investment outflows in 2008 (Khor, 2009). There is a high level of foreign participation in Malaysia stock market. The reversal of the portfolio capital flows due to repatriation of foreign participants affected the stock market significantly, with the Kuala Lumpur Composite Index (KLCI) falling from 1393 points in January 2008, to 876 points in December 2008. Due to the impact of global financial crisis towards Malaysia, is flight-to-quality exists in Malaysia financial market? Due to question above, this paper will examine (i) whether there is an existence of flight to quality economics crisis from stock to either government bond or corporate bond, (ii) the pattern of correlation of stock and bond across different economics environments, and (iii) the effect of flight on diversification.

LITERATURE REVIEW

Baur and Lucey (2009), they defined flight-to-quality from stocks to bond as a significant decrease in the correlation in a (stock market) crisis period compared to a benchmark period resulting in a negative correlation level. If the pre-crisis stock and bond correlation are positive, and become negative during crisis period, there is flight-to-quality. In this study, they had examined the existence of flight from stock to bonds and vice versa. They used daily stock and bond index return of the US, UK, Germany, France, Italy, Australia, Canada and Japan. At the end of the study, they found that flight exists and occur frequently in crises periods. Same goes to Mardi Dungey et al (2009) who also had examined the flight-to-quality during financial crisis. Its differ with Durand et al (2010) who had examine the flight-to-quality effect by using copula-based analysis. In this study, they had analysed the relationship between equity and long-term bond returns. At the end of the study, they found that in the normal course of events, the discounting story describes the relationship between returns of bonds and the value-weighted index. In rare cases, falling equity prices are associated with -increasing bond prices as predicted by the flight-to-quality story. Guler and Ozlale (2005) had done a study to investigated the relationship between inflation uncertainty and interest rates for safe assets. In this study they had employ a time-varying parameter model with GARCH specification. The result supports the existence of a flight-to-quality effect. They found that an increase in uncertainty, which could also be viewed as a rise in economy-wide risk, might generate a flight-to-quality effect and decrease their interest rate. Financial crises are also strongly associated to flight-to-quality events. (Caballero and Krishnamurthy 2008) present a model in which Knightian uncertainty induces investors to flee risky claims in favour of safe ones as they cover themselves against worst-case scenarios.

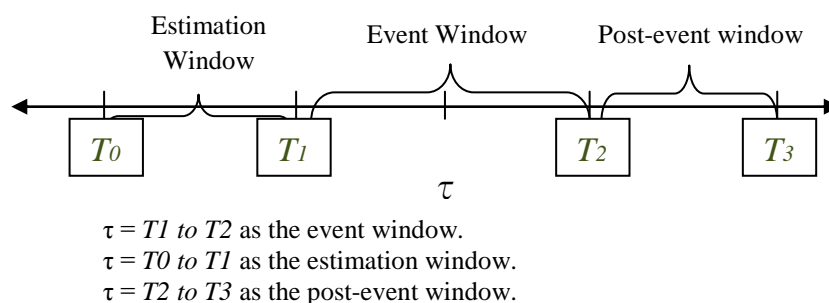
Nature of volatility linkages between markets was important for a variety of investment and risk management decisions. Fleming et al (1998), had investigate the nature of volatility linkages in the stock, bond and money markets. They had develop a simple model of speculative trading that predicts strong volatility linkages in these market due to common information, which simultaneously affects expectations across markets, and information spill over cause by cross-market hedging. When stock market volatility expects to increase, portfolio managers will often shift funds from stocks into bonds. In this studied, they had develop stochastic volatility model using GMM to estimate econometric specification and to test whether the volatility linkages between the stocks, bonds and money market are consistent with the implication of their trading model. They used daily data of stock index, T-bond futures, and T-bill futures for the period of 1983 until 1995. At the end of the study; they found that the specification explains many of the observed characteristics of the data, and that the volatility linkages

between the three markets are indeed strong. Moreover, they found that the linkages have become stronger since the 1987 stock market crash. Steeley(2006)investigates the volatility transmission between stock and bond market. By using the GARCH framework, he found that the volatility of short-term and long-term bonds was stable during the research timeframe. However, when he tests the correlation between short-term and long-term bond with stocks, the result showed the volatility between the different markets. It support by King and Wadhvani(1990), found that the correlation between different market, different countries and general level of volatility was positively correlated. It means that, when stocks market increasing and bonds market will be decreasing and vice versa. It seems the significantly volatile of the stocks market and bonds market.

Caballero and Krishnamurthy(2008) had done a comparison between GARCH and Wavelet method. He used wavelet method to decompose the bond return and study the volatility spillovers from other bond markets into the Asian local currency bond markets. Instead of using the popular method GARCH, this paper used wavelet to derive volatility from the data. The finding showed that the Asian bond markets can affect the more developed bond markets. Based on Ahmed(2009), he states that evidence from volatility linkage between stock and bond index also suggests that bond market cannot provide a meaningful explanation for conditional volatility in stock market. Christiansen(2010) had investigated volatility spillover from US and aggregate European asset markets into European national asset markets. A main contribution is that bond and equity volatility spillover is analysed simultaneously. A new model belonging to the ‘volatility-spillover’ class is suggested: The conditional variance of e.g. the unexpected German stock return is divided into separate effects from US bonds, US stocks, European bonds, European stocks, German bonds, and German stocks. Significant volatility-spillover effects are found. The national bond (stock) volatilities are mainly influenced by bond (stock) effects. After the introduction of the euro the European markets have become more integrated; bond markets more so than stock markets.

METHODOLOGY

The data set consists of daily Malaysia Stock Exchange Composite Index, Malaysia Government Bond Index, Government Investment Issue Index, Islamic Corporate Bond Index and Conventional Corporate Bond Index issue from January 2006 until December 2011. A daily data is chosen because high frequency data is more preferable to see the sensitivity between stock index and bond index. This study will use event study which is a method to assess the impact of an event on the value of a stock and bond. Mackinlay (1997) design the time frame for an event study for accounting and finance, management, economics, marketing, information technology, law, and political science. In this study, there are three data set which employed; before economic crisis, during economic crisis and after economic crisis. Figure 1 illustrates the time frame for this study.



This study uses January 2006 as its starting point because based on Mackinlay (1997), the length of observation at least 120 days before the event and 120 days after the event. In this case, bank Negara annual report stated that Global Financial Crisis begin at mid-year 2007 until first quarter of 2009. If using the Mackinlay (1997) study as a benchmark, the period for estimation window should be at least 120 days. In this research, the estimation window start from January 2006 until May 2007 (from T0 to T1) which include only 5 working days, consist of 346 days and it can captures the effect of stock and bonds before the Global Financial Crisis. This research start the post-event window from April 2009 until December 2011 (from T2 to T3) which is consists of 682 days. The time line for event study are split with estimation window, event window and post-event window to make sure the data are not overlap. Data analysis starts with test the stationary. The stationary process is a stochastic process

whose joint probability distribution does not change when shifted in time or space. Consequently, parameters such as the mean and variance, if they exist, also do not change over time or position. Stationary is used as a tool in time series analysis, where the raw data are often transformed to become stationary. The second step is to test the volatility for bond and stock by using ARCH/GARCH. After look the volatility of the stock and bond, the final step is the test the correlation between the stock and bond. By testing the correlation between stock and bonds, can answer the objective of this research.

FINDINGS AND DISCUSSION

Test Of Stationary For Stock-Bond

In attempt to test whether the presence of stochastic non-stationary data series, I try to examine the integration order of individual series using Augmented Dickey-Fuller (ADF) test. I use Trend-Stationary Process (TSP) to test the stationary of the data series.). Since I have done the TSP before, but it does no succeed. So, I try to use Difference-Stationary Process (DSP) to get a stationary time series. From Table 2 reported the entire test for stock and bond during pre-crisis, crisis and post-crisis shows that ADF test smaller than critical value 1% level, 5% level and 10% level. It indicates we could not reject null hypotheses for stock and bond. That means the data series at 1st difference-intercept for KLCI, MGS, GII, CC, CI for pre crisis, crisis and post crisis period becomes stationary.

(TABLE 1)

Volatility Linkage Between Stock And Bond Market Indices

Autoregressive Conditional Heteroskedasticity (ARCH) and Generalized ARCH (GARCH) models are the most popular models for financial volatility. Table 3 shows the result for the volatility for the entire variable during crisis period.

By looking the result for ARCH/ GARCH in table 2, all the p-value for KLCI & MGS, KLCI & GII, KLCI & CC and KLCI & CI are all less than 0.05. It indicates that all the coefficients are significant at the 5% level. It means there have the volatility linkage between stock and bond during the crisis period. Is volatility directly influences the dependent variables? The answer will be yes. The volatility in stock market may causes investors to worry about the risk which impact on their investment return.

Flight To Quality Between Stock And Bond

Table 3 present the result of the correlation of stock and bonds return during the period January 2006 until December 2012. The period of analyses is divided into three sub period which the first sub period is pre-crisis period start from January 2006 until May 2007, the second period is crisis period start from June 2007 until Mac 2009 and the third period is post-crisis period start from April 2009 until December 2012.

Table 3 presents correlation structure of stock and bonds indices over the period from 2006 until 2012 at daily frequency across the different economies period. From the result above, all variables are positive during the pre-crisis sub period. To determine the effect of flight to quality is by looking the result of correlation during the period of economic crisis from June 2007 until Mac 2009. All the variables show the negative correlation during economic crisis is compare with the previous period. Malaysia Government Securities is negative correlation which is -0.736820. However, the Government Investment Issue, Corporate Bond Conventional and Corporate Bond Islamic show the same pattern which negative correlation and recording -0.732868, -0.737689 and -0.746211 respectively. As we can see from the finding that there is clear pattern in correlation structure of stock and bond return. It means the existences of flight to quality from stock to bond occur during economic crisis period. The investor will shift from risky investment to safer investment. The result support by previous research by Baur and Lucey(2009), Durand et.al(2010) Caballero and Krishnamurthy 2008.

Time Varying Correlation Between Stock-Bond

Based on the correlation result above, we can see that the Government Investment Issue state the lowest figure rather than other types of bond even thought the result more or less close amount. This

paper shows that, the Government Investment Issue (GII) is the favorite bond investment follows by Malaysian Government Securities, Corporate Bond (Islamic) and Corporate Bond (Conventional).

Figure 1 show that the time varying correlation between stock and GII. The economic crisis period start on second quarter 2007 until first quarter 2009. Bank Negara Report, reports that up to the first half of 2008 Malaysia was relatively unaffected by the financial turmoil. The financial and economic environment worsened in the 2nd half of 2008 and first quarter of 2009. During economic crisis the stock market falling from 1393 points to 876 points. From the figure above, show the line of stock will decrease during crisis period and line of GII will increase during crisis period. It means, when demand on stock decrease lead to increase demand on GII. The situation support by Fleming et.al(1998), when stock market volatility expects to increase, portfolio managers will often shift funds from stocks into bonds.

CONCLUSION

The goal of this paper to examine the existence of flight to quality during crisis, the pattern of correlation of stock and bond across different economics environments, and the effect of flight on diversification. The findings shows there have volatility linkage between stock and bond by looking the result of ARCH and GARCH. From the correlation result, there have existences of flight to quality during economic crisis. During economic crisis, there is an evidence of negative correlation of MGS, GII, Corporate Bond (Conventional) and Corporate Bond (Islamic). The investor will shift from risky investment to safer investment. The result support by previous researcher by Baur and Lucey(2009), Durand et.al(2010) Caballero and Krishnamurthy 2008. We can see the different pattern of correlation during different economics environments. However, based on the previous finding, during economic crisis the Government Investment Issue (GII) is the favorite bond investment follows by Malaysian Government Securities, Corporate Bond (Islamic) and Corporate Bond (Conventional).

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TABLE 1: Augmented Dickey-Fuller (ADF) Test: Stock and Bond

Series	ADF t-test (1 st Difference-Intercept)	t-test 1% level	t-test 5% level	t-test 10% level
i. Pre -Crisis : KLCI	-14.45960	-3.449164	-2.869726	-2.571200
MGS	-11.65343	-3.449164	-2.869726	-2.571200
GII	-13.39878	-3.984961	-3.422942	-3.134382
CC	-22.09552	-3.984961	-3.422942	-3.134382
CI	-20.77529	-3.984961	-3.422942	-3.134382
ii. Crisis KLCI	-19.85022	-3.444724	-2.867772	-2.570153
MGS	-15.37937	-3.444724	-2.867772	-2.570153
GII	-16.37196	-3.444724	-2.867772	-2.570153
CC	-20.92153	-3.444724	-2.867772	-2.570153
CI	-21.52056	-3.444724	-2.867772	-2.570153
iii. Post Crisis: KLCI	-38.07822	-3.439738	-2.865573	-2.568975
MGS	-18.41163	-3.439738	-2.865573	-2.568975
GII	-19.85309	-3.439738	-2.865573	-2.568975
CC	-25.55307	-3.439738	-2.865573	-2.568975
CI	-25.73527	-3.439738	-2.865573	-2.568975

TABLE 2: Estimation of ARCH/GARCH Model for Stock and Bond: Crisis Period

Variables	KLCI & MGS		KLCI & GII		KLCI & CC		KLCI & CI	
	Variance Equation		Variance Equation		Variance Equation		Variance Equation	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.194485	0.0002	0.066475	0.0000	0.028587	0.0000	0.073536	0.0006
RESID(-1)^2	0.122325	0.0000	0.407354	0.0000	0.065129	0.0000	0.448337	0.0000
GARCH(-1)	0.895731	0.0000	0.775140	0.0000	0.944479	0.0000	0.735301	0.0000

Table 3: Malaysia's Stock and Bonds Indices Correlation (2006-2012)

Period/Types Of Bond	Government Bond Conventional: MGS	Government Bond Islamic: GII	Corporate Bond (Conventional)	Corporate Bond (Islamic)
Pre-Crisis (Jan 2006-May 2007)	0.929205	0.921731	0.947516	0.949223
Crisis (June 2007-Mac 2009)	-0.736820	-0.731868	-0.737689	-0.746211
Post-Crisis (Apr 2009-Dec 2012)	0.850682	0.853227	0.839294	0.856293

FIGURE 1: Time Varying Correlation between Stock and GII

