RELATIONSHIP BETWEEN INFLATION AND STOCK RETURN ACROSS FINANCIAL CRISES: EVIDENCE FROM MALAYSIA

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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BNM	Bank Negara Malaysia
KLCI	Kuala Lumpur Composite Index
OPR	Overnight Policy Rate
SRR	Statutory Reserve Requirement

ABSTRACT

This study aims to analyze relationship between stock return and inflation in Malaysia. Based on the sample period of 1996-2011, the results indicate that there is no long-run relationship between stock return and inflation. Hence, this finding rejects the Fisher hypothesis in Malaysia. Then, the findings from Granger causality, variance decomposition indicate that stock return and inflation possess insignificant short-run causality relationship during each of sub-periods. Lastly, some policy implications are suggested for policymakers and investors based on our findings.

CHAPTER 1: INTRODUCTION

1.0 Overview

This chapter provides the explanation on importance of relationship between stock return and inflation. The general background inspired the carried out of this study. Moreover, there are few current issues about the stock return and inflation surrounding Malaysia which motivates us to conduct this study. Furthermore, research questions will be addressed. In order to answer the research questions, there are few research objectives will be constructed. Lastly, the significance of this study and outline of study are explained.

1.1 Importance of Relationship between Stock Return and Inflation

The volatility of stock return always link with the movement of inflation over time. Due to such linkage, relationship between stock return and inflation has been received an attention among market practitioners and academia. Changes in inflation can affect stock returns in two ways. First, an increase in inflation drive volatility in stock return, which increase the riskiness of stocks, therefore the investors require higher rate of return. This indicate that an increase in future expected returns mean the stock price would drop and lead to a negative impact on current return. Second, it affects future economic performance and corporate profits, increase in inflation makes the money to become less valuable and erode the stock market.

It is important for investors and policymakers to know about the relationship between inflation and stock return. First, investors concern about how the inflation affect the stock return. In the short-term, rising inflation can affect adversely the stock market, and erode the returns of investors. Second, government can implement monetary policy to influence the inflation and stock return through expansionary or contractionary policy. For example, when there is high inflation, governments implement contractionary policy to reduce the money supply in economy, therefore, government can control the inflationary pressure.

1.2 Background on Stock Return and Inflation in Malaysia

In 1997, Bank Negara Malaysia (BNM) has tightened the monetary policy. As a result, the growth rates of all monetary aggregates have been moderated at the end of 1997. Besides, the tightened monetary policy has reinforced the upward trend in interest rates that began in 1995. In the first four months of 1997, the interbank rates increased slightly from 7.22 per cent to 7.55 per cent. Therefore, the view of tightened monetary policy was maintained in order to control inflationary pressures resulting from a strong credit growth.

In 1996, financial institutions have lending to less productive sectors, such as property and investment sectors increased by 29.9 per cent and 30.5 per cent, respectively. In the first quarter of 1997, the proportion of total outstanding loans allocated to the property and share markets was 43 per cent. Due to a strong increase in lending by financial institutions to less productive sectors, BNM implemented prudential measures in the form of credit ceiling, banking institutions were not allowed to exceed 20 per cent of their outstanding loans to property sector and not more than 15 per cent for the purchase of shares. According to the development in the financial market, the main concern of BNM is to slow down the overall credit growth, especially to reduce the leverage of economy and to control the inflationary pressures.

After the Asian Financial Crisis, there was a declining trend in inflation. However, in 2006, inflation began to rise which resulting from removal of fuel subsidies and the upward adjustments to administered prices. BNM suggested that increasing the level of economic growth through continued improvements in productivity and an expansion of the capital stock and labor force were expected to further augment the productive capacity of the economy. The BNM intended to normalize interest rate that allowed monetary policy to respond to risks of higher inflation.

In the economy and financial condition with the rapidly changing inflation, BNM faced difficulties in implementing monetary policy during 2008. The significant rise in headline and core inflation has eroded the purchasing power of households. Besides, the rising costs also affected the profits of businesses.

Government raised domestic fuel prices by up to 40.4 per cent since the costs of fuel subsidies became unsustainable. As a result, food prices increased and led to Malaysian had spent 31.4 per cent of their total income in food.

In 2008, the combination of the sharp increase in inflation and unobservable sign of slower global and domestic growth raised the expectations for an increase in the OPR. The inflationary pressure made the monetary policy became complicate to implement. Thus, BNM left the monetary policy unchanged to support economic activity.

In 2009, BNM and government implemented comprehensive policy measure to cushion the impact of the global financial crisis. As inflation declined, BNM reduced Overnight Policy Rate (OPR) by 0.25 per cent to 3.25 per cent, Statutory Reserve Requirement (SRR) reduced by 0.5 per cent to 3.5 per cent in order to curb severity of the domestic economic slowdown. The large portion of total loan in Malaysia is made up by the variable rate loans, the increase in disposable income from lower borrowing rate led to increase in consumption and investment. The policy also focused in ensuring the flow of money in economy easily. Banking institutions increased the lending to support consumption and investment. However, depositors were affected by the lower returns.

1.3 Problem Statement

During the Asian Financial Crisis in 1997 has caused some impacts and uncertainties, such as the depreciation of the ringgit, abnormal inflationary pressure and adversely affected confidence of investors, thus increased the complexity of monetary policy implementation. The primary objective of monetary policy was to stabilize the price. However, this objective was difficult to achieve since the effect of depreciation of the ringgit began to affect domestic prices. The sharp depreciation in ringgit at the end of the year caused the stock prices declined. Besides, the unexpected gains in the assets markets increased the domestic consumption. The rapid growth in domestic spending through credit would increase vulnerability of the banking system in the short term. However, such effect would lead to inflationary pressure in the long term.

In 2006, the removal of fuel subsidies caused inflation began to rise. The decline in real interest rates resulted in the rise of inflation. Even, the real interest rate turned negative in the second quarter in 2005. Since Malaysia is a high saving country, continuous low and negative real interest rates would affect the allocation of savings and use of capital. As a result, there was a downside risk in stock market, the stock return dropped from -1.5680 to -8.9341.

During the Global Financial Crisis in 2008, the upward inflationary pressure was caused by the rising food and commodity prices, increased from 3.8 per cent in May to 7.7 per cent in June, and increased further to 8.5 per cent in July and August. The sharp increase in prices affected the purchasing power of consumers as well as their discretionary spending. As a result, the economic growth would slow down.

The outflow of ringgit assets by the foreign investors affected the local stock and bond markets. As a consequence, this would slow down the development of the local stock and bond markets. In 2009, the rapid decline in exports and private investment activity affected the economy. At the same time, BNM maintained at low real interest rates for a long period would create an adverse effect toward economy. This would lead to excessive rise of stock return from -0.8744 to 1.0559.

1.4 Research Questions

1. How does Granger causality happen between stock return and inflation during pre- and post-Asian Financial Crisis?

2. How does Granger causality happen between stock return and inflation during pre- and post-Global Financial Crisis?

3. How does the volatility spillover between stock return and inflation happen during pre- and post-Asian Financial Crisis?

4. How does the volatility spillover between stock return and inflation happen during pre- and post-Global Financial Crisis?

1.5 Research Objectives

1. To examine causal direction between stock return and inflation during pre- and post-Asian Financial Crisis.

2. To examine causal direction between stock return and inflation during pre- and post-Global Financial Crisis.

3. To examine variance proportion of inflation explained by the stock return for pre- and post-Asian Financial Crisis respectively, vice versa.

4. To examine variance proportion of inflation explained by the stock return for pre- and post-Global Financial Crisis respectively, vice versa.

1.6 Significance of study

This study provides a contribution which was for those investors who wish to invest in the stock market as well as policy makers that wish to implement some policies that can curb inflation and boost economic growth.

1.6.1 Investors

One of the objectives of this study is to examine whether Fisher hypothesis effect hold during pre- and post-Asian and Global Financial Crisis, and it will offer a protection to those investors. Thus, investors can protect their stock return from downside economics situation due to the crisis.

From this study, investors can know about how the inflation causes the stock volatility. For example, if the inflation is high, there is high volatility in stock return, therefore the investors will require high rate of return. This indicates that future expected return will increase mean the stock price will drop, the investors will take the opportunity to buy the stocks at low price and sell the stock at high price when the stock price increase, the investors gain their profit from the way of buy low and sell high. If investors find that the stock return can positively cause inflation in the long run, mean that they can use the stock return to hedge against the inflation.

1.6.2 Policymakers

Generally, policymakers will not intervene in stock market, but they can implement policies to control the inflation and to boost economic growth. The impact of the policies on stock market is indirect. For example, governments implements monetary policies to influence the inflation, when there is high inflation, government can reduce the money supply in economy to control the inflationary pressure. For example, BNM will increase the short-term interest rate when the inflation is high, people will save their money in the bank due to high interest rate. Therefore, the flow of money in economy will be low. As a result, BNM control the inflationary pressure through the interest rate. If the policymakers want to boost the economic growth through stock market, they should make sure inflationary pressure is under control. If the inflation is low, there is low volatility in stock return, therefore the investors will not require high rate of return. This indicates that future expected return will decrease mean the stock price will increase, the investors will obtain high stock return.

1.7 Outline of Study

The remaining chapter of this study proceeds as follow: The subsequent chapter provides different hypotheses on relationship between stock return and inflation done by previous studies. The next chapter explains on the methodologies. It is followed by the chapter that provides empirical analysis. The last chapter concludes the major findings, suggests the policy implications, research limitations and recommendations.

CHAPTER 2: LITERATURE REVIEW

2.0 Overview

This chapter discussed the various hypotheses on relationship between stock return and inflation done in previous studies. The hypotheses included Fisher's hypothesis, Fama's proxy hypothesis, Reverse causality hypothesis, Tax effect hypothesis, 2-Regime hypothesis and Inflation illusion hypothesis.

2.1 Fisher's Hypothesis

Fisher (1930) has contributed to the development of economic theory. The relationship between interest rate and inflation, first put by he suggested that the nominal interest rate in any period is equal to the sum of the real interest rate and the expected rate of inflation. He claimed that a one-to-one relationship between the rate of interest and expected inflation in a perfect market, with the real rate being independent of the rate of inflation and determined entirely by the real factors in an economy, such as the productivity of capital and investor time preference.

Many economists thought that real stock returns and inflation should be positively or at least non-negatively related. This idea was based on the Fisher's hypothesis that nominal asset returns should reflect expected inflation. Many studies have explored to the Fisher's hypothesis but there is no general consensus among researchers on this hypothesis. Therefore, it is worthwhile to determine whether or not the Fisher's hypothesis holds.

There are few studies that support Fisher's hypothesis. For instance, Payne and Ewing (1997) evaluated the hypothesis for 9 developing countries by used Johansen and Juselius (1990) cointegration test. They found that the relationship between stock return and inflation in Malaysia, Pakistan, and Sri Lanka support the full Fisher effect while there was no evidence of a Fisher effect for Argentina, Fiji, India, Niger and Thailand.

Furthermore, Berument and Jelassi (2002) have tested the validity of Fisher's hypothesis by observe the long-run relationship between interest rates and inflation for a sample of 26 countries in different period. They obtained the Treasury bill rates and lending rate as the interest data. They used Engle and Granger (1987) type of cointegration test for the data. As a result, the hypothesis did hold for 9 out of 12 developed countries and for 7 out of 14 developing countries. Thus, their empirical evidence shows that the hypothesis holds more for the developed countries than the developing countries.

Moreover, Ioannides, Katrakilidis and Lake (2005) also investigated the relationship between stock return and inflation rate for Greece over the period 1985-2000. They used Autoregressive Distributed Lag (ARDL) cointegration technique and Granger causality tests to detect long-run and short-run effects between the variables as well as the direction of these effects. As a result, Fisher's hypothesis did not hold since there is a negative long-run causal relationship between stock return and inflation rate. Furthermore, they also found that short-run causal effects from stock return to inflation for the period of 1985-1992, while the direction from inflation to stock return for the period of 1992-2000.

Choudhry and Pimentel (2010) evaluated the relationship between stock returns and inflation from 1986 to 2008 includes high inflation period (1986-1994) and low inflation period (1994-2008). They tested the monthly data from ten Brazilian firms and the general Brazilian stock market. Standard linear regressions are applied to estimate the relationship after testing first for the stochastic structure of the variables. The result showed that stock return was act as a hedge against high inflation but fail to act against low inflation. Thus, the Fisher hypothesis holds in high inflation period but reject in low inflation period.

Adam and Frimpong (2010) examined whether Ghana stock market provide hedge against inflation in the long run for the period of 1991-2007. They have tested the Fisher's hypothesis based on the long-run relation between stock prices and the general price level by using cointegration test. The result has supported the hypothesis since Ghana stock market provides full hedge against inflation. The evidence confirms that the Ghana stock market is efficient in inflationary environments as investors are compensated in high stock returns when the prices of goods increased.

Besides that, Jana (2013) also evaluated the relationship between inflation and stock return in Indian market for the period of 1982-2011. In order to test the validity of the Fisher's hypothesis, the author has regressed expected inflation and unexpected inflation on real stock return. As a result, there was a negative relationship between inflation and stock market when tested for the whole period and post reform period of Indian economy. On the other hand, pre-reform period Indian stock market was providing a complete hedge against Inflation since the result given a positive relationship. Therefore, the hypothesis is only applied in pre-reforms period of Indian economy but not applied in post reforms period.

2.2 Fama's Proxy Hypothesis

According to Fama (1981), the relationship between stock return and inflation were negatively correlated. He explained the negative relationship between stock return and inflation through the money demand theory. A combination between the money demand and quantity theories state that inflation and real activity have negative relationship. Such relationship further leads to stock return and inflation are negatively correlated.

Geske and Roll (1983) reexamine Fama's proxy hypothesis by linking weaker economic condition to larger budget deficits in order to precipitate expansionary monetary policy which would raises inflationary expectations. Kaul (1987) has argued that the negative relation between stock returns and inflation in the post-war period depends on countercyclical monetary policy.

Balduzzi (1995) also uses VARs (and vector moving averages) to test the proxy hypothesis using monetary base growth as a monetary policy indicator. Adrangi, Chatrath, and Raffiee (1999) used Fama's proxy hypothesis framework to investigate a relationship between equity returns and inflation in two emerging market economies, namely Korea and Mexico. They found that inflation and real activity as well as real stock return provided inflation and real stock returns in Korea exhibited a negative relationship. Besides that, Khil and Lee (2000) investigated the stock return-inflation relation in 10 Pacific countries for the sample period of 1970-1997. They found that negative real stock return and inflation correlation in nine Pacific countries; however Malaysia was the only exhibited positive relation between real stock returns and inflation.

Durai and Bhaduri (2009) used the wavelet methodology to examine the relationship between stock return, inflation and output for the post-liberalized period in India. Their results showed that negative relationship between stock return and inflation in the short and medium term, which consistent with Fama's (1981) explanations held in the long term. On the other hand, Adrangi, Chatrath and Sanvicente (2011) used Fama's Proxy hypothesis framework to investigate the negative relationship between stock return and inflation in Brazil. They found that the proxy effect might be valid in the long-run but not in the short-run. They also found that stock return negatively affected by inflation due to the future corporate profits might be affected by inflation, therefore lead to a drop on stock returns. Majid (2010) did not support Fama's proxy hypothesis, since the negative relationship between stock returns and inflationary trends are not supported by their findings for the Malaysian economy in post-1997 Asian financial turnoil.

2.3 Reverse Causality Hypothesis

Geske and Roll (1983) found that a reverse explanation on the negative relationship between both variable which is stock return affect inflation. The author states that the monetary and fiscal policies lead to causality between inflation and stock return. A decrease in the economy activity would made the government faced a fiscal deficit so the government would tend to borrow or issue money from the central bank to cover the deficit balance. Therefore, an over money supplied would raise the inflation rate. As a result, it would lead to a negative reverse causality effect between the stock return to inflation. Geske and Roll (1983) have pointed out Fama (1981) used an opposite direction of causality between stock return and inflation. For example, an increase of 10 per cent in expected inflation would cause a decline of 50 per cent in expected stock returns.

However, Lee (1992) used multivariate vector-autoregression (VAR) to investigate causal relations and dynamic interactions among stock return, real activity, and inflation in the postwar United States. The author supported Geske and Roll explanation rather than the explanations of Fama and found that there was no causal relation between stock return and inflation.

Grier and Ye (2009) used Autoregressive Distributed Lag (ARDL) model to determine the validity of the previous Hypotheses to interpret the relationship among 12 OECD countries. It indicated that these countries have a negative relationship between stock returns and inflation in short run. The result supported the hypotheses of Fama (1981) which explain that an increase in inflation reduces real returns on stock.

Oxman (2011) also used vector-autoregression (VAR) to run three model for each inflation by Using data from 1966 – 2009 and found out that there were no correlation exists between price inflation and stock returns. However, there was a negative correlation between monetary inflation and dividend yield.

2.4 Tax Effect Hypothesis

Feldstein (1980) argued that inflation erode real stock returns because of the inflation indirectly affect stock return through tax. A higher inflation would raise the effective tax rate on capital and reduced after-tax profitability of investors. Therefore, a lower demand of the company's common stock reduced the stock price. As a result, the relationship between stock returns and inflation was negatively correlated.

On the other hand, Feldstein (1980) also found that increased inflation would reduce the willingness of the investors to buy at a price of shares in stock market. Hence, the relationship between stock returns and inflation was negative, which was contradicted with Fisher Effect hypothesis stated that stock return and inflation have a positive relationship. Feldstein (1980) found that the valuation of depreciation and inventories, inflation generates artificial capital gains in US economy. However, the capital gains subjected to taxes. Under an inflationary situation, inflation would create tax liabilities reduce the real after tax earnings. So, corporate faced increased tax liability. Given this situation, the rational investor would reduce common stock valuation to take into account after the effect of inflation. In this case, inflation caused a downward movement in stock prices.

However, there are several studies were supported Feldstein's result. For example, Ammer (1994) stated that there was a linkage between corporate earnings and depreciation of capital asset. During a higher inflation period, depreciation in a current asset might understate the economic loss. Thus, this impact would raise the corporate tax liabilities function toward inflation and affect the corporate earnings. As a result, the higher taxation would reduce the profit earning of a corporate. The author reported a negative relationship between stock return and inflation for various foreign countries by collecting data from 10 industrialized countries with concerning on the significance to links between economy and inflation.

Furthermore, according to Limpanithiwat and Rungsombudpornkul (2010) a consistent inflation rate made the stock return increase. In contrast, an increased in inflation rate would made a drop in the stock return. The author also stated the impact of inflation on stock return was due to the company taxation because depreciation on cost of an asset and taxation of nominal capital gains. Once, the calculation on depreciation was using the historical cost. So, the cost depreciation raised the company expenses during a higher inflation period because the historical cost is not adjusted by a rising in inflation. The author also reported a negative correlated between both series from Thailand by using vector autoregression (VAR) with collected 10 years data from 2000 to 2010.

2.5 2-Regime hypothesis

Fama (1981) used monetary demand theory to explain the negative relationship between stock return and inflation, however Kaul (1987) and Hess and Lee (1999) have done further researches which included monetary demand and supply theory to explain the relationship between both series.

Kaul (1987) stated that stock return-inflation relationship was caused by the equilibrium process in the money demand and supply. The author found that the negative relationship between stock return and inflation in the post-war evidence of the United States (U.S.), Canada, the United Kingdom (U.K.) and Germany. The negative relationship between inflation and real activity was caused by money demand and counter-cyclical money supply effects, which indicated that the relationship between both series was negative.

Hess and Lee (1999) reexamined relation between inflation and stock returns with two independent disturbances: supply shocks and demand shocks based on postwar U.S. data (1947-1994), prewar U.S. (1926-1944), and postwar data of United Kingdom, Japan, and Germany (1961-1994). The authors stated that negative relationship between stock return and inflation was caused by supply (real output) shocks, while positive relationship between stock return was caused by demand (monetary) shocks. Those shocks could be used to determine the relationship between stock return and inflation.

2.6 Inflation Illusion Hypothesis

Modigliani and Cohn (1979) pointed out that investors mispriced the common stocks because inflation, this would create negative relationship between stock return and inflation. The hypothesis stated the failure of investors to incorporate inflation evaluate future earnings growth rates, thus the stocks with earnings growth are positively (negatively) related to inflation would be undervalued (overvalued).

Besides, they found that the ratio of market value to profits began to decline in the late of 1960s because of the investors mispriced the common stocks. Investors would not interpret equity earnings at the nominal interest rate less inflation premium during the inflationary period. This led to misvalued in stock prices.

Campbell and Vuolteenaho (2004) used time-series evidence and a vector autoregression (VAR), found that there was low prices for stocks during high inflation period, this relationship can be explained by inflation illusion, which supported Modigliani and Cohn's (1979) hypothesis. On the other hand, Cohen, Polk and Vuolteenaho (2005) used cross-sectional evidence and found that the market was suffered from inflation illusion.

Chordia and Shivakumar (2005) examined the possibility of earnings growth in response to inflation varies across stocks sorted on earnings growth as measured by standardized unexpected earnings (SUE) and that inflation illusion partly caused the post-earnings-announcement drift. The authors found that part of the drift anomaly were consistent with Modigliani and Cohn's (1979) inflation illusion hypothesis, which explained the negative relationship between the aggregate stock return and inflation due to inflation illusion. The authors stated that

“the sensitivity of earnings growth to inflation varies monotonically across stocks sorted on standardized unexpected earnings (SUE) and, consistent with the inflation illusion hypothesis, show that lagged inflation predicts future earnings growth, abnormal returns, and earnings announcement returns of SUE-sorted stocks. Interestingly, controlling for the return predictive ability of inflation weakens the ability of lagged SUE to predict future returns of SUE-sorted stocks.” Chordia and Shivakumar (2005), p.521

2.7 Theoretical Framework

There are five major hypotheses discussed the relationship between stock return and inflation. These theories included Fisher’s hypothesis, Fama’s proxy hypothesis, reverse causality hypothesis, tax effect hypothesis and 2-regime hypothesis. For instance, our study adopt Fisher’s hypothesis which suggests that stock return hedges inflation. This based on the fact that the hypothesis suggested that there is positive relationship between inflation and stock return. According to Fisher, the real interest rate and expected inflation rate is equal to nominal interest rate. The Equation (1) shows the relationship between the nominal interest rate, real interest rate and expected inflation:

$$N = R + \Pi^e \qquad (1)$$

where, N = nominal interest rate

R = real interest rate

Π^e = expected inflation rate

Nominal interest rate is represents the interest rate received by the lender or investor as an income from the investments. Since, the expected inflation has been taken into account so this is not a real income for lenders. Thus, the nominal interest rate must remove the expected inflation rate to examine the real interest rate. So, the Equation (1) is able to transform into equation (2) completely.

$$R = N - \Pi^{e} \qquad (2)$$

Equation (2) represents the nominal interest rate minus expected inflation rate equal to real interest rate. Additionally, the amount of real interest rate can be determined from the interaction between nominal interest rate and expected inflation. There are three situations can be assumed. The first situation is regarding the expected inflation rate is more than nominal rate($\Pi^{e} > N$), the real interest rate will be negative value so it indicates household will reduce their purchasing power because the increasing in price of goods rise is greater than the prediction. Therefore, the income earn from the interest is inadequate to cover the increasing in price of good.

The second situation is about when the expected inflation rate is equal to nominal rate ($\Pi^{e} = N$), the real interest rate will be zero so it indicate that there is no changing in the purchasing power of the household because income earn from interest is able to cover the prices increase in consumer goods. The third situation is when the expected inflation rate is lower than the nominal rate ($\Pi^{e} < N$), the real interest rate will be positive value indicate that purchasing power of households are greater because interest earn is sufficient to cover the rising in price of consumer goods.

CHAPTER 3: DATA AND METHODOLOGY

3.0 Data

The monthly data of Malaysian Kuala Lumpur Composite Index (KLCI) and Inflation rates are collected from Bloomberg and Yahoo! Finance. The sample period for these data is from January 1996 to December 2011. However, some observations have to waive due to the structure break during the Asian Financial Crisis and Global Financial Crisis.

As shown in Figure 3.1, the sample period is separated into four sub-periods, namely pre-Asian Financial Crisis (January 1996 - December 1997), post-Asian Financial Crisis (June 1999 - April 2004), pre-Global Financial Crisis (May 2004 - March 2008) and post-Global Financial Crisis (April 2009 - December 2011).

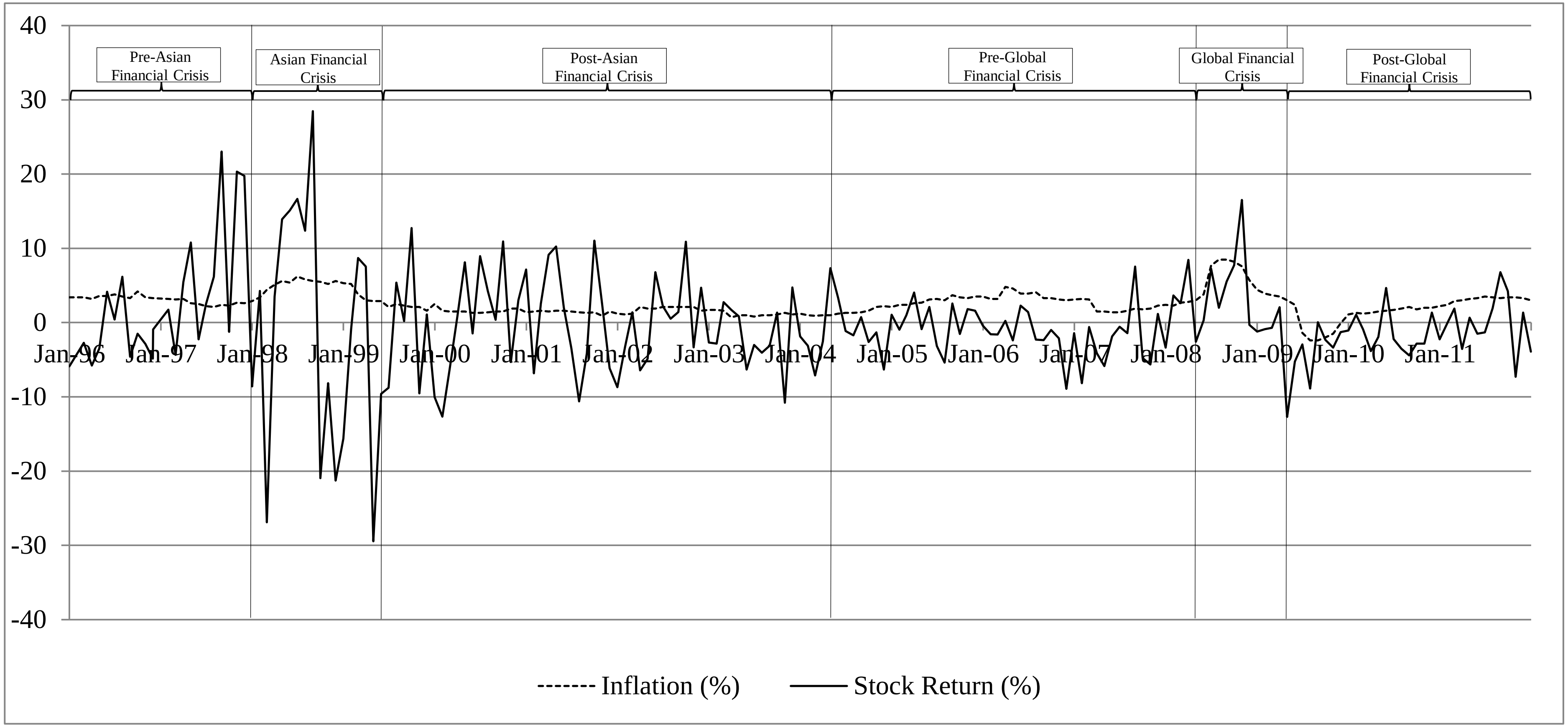

Figure 3.1: Stock return and inflation movements in Malaysia from January 1996 to December 2011

3.1 Empirical Framework

According to Fisher hypothesis, nominal interest rate is equal to real interest rate plus the expected inflation. However, the common stock return can be seem to be the same as the claim on real assets. In the view of stock return, real stock return is the sum of expected inflation and nominal stock return. So, if the real stock return can remain constant in the long run, so it can conclude that common stock return can provide a good hedge against inflation. The regression of stock price on inflation is shown as equation (3).

$$SR_t = \propto + \beta \text{Inf}_t + \varepsilon_t \qquad (3)$$

Where, P_t = Stock return

Inf_t = Inflation

$\propto$ = Real rate of stock return

ε_t =Residual

The coefficient of β equal to one, indicating that stock return can be used to fully hedge against the inflation. However, if stock return is partially hedge against inflation, the coefficient value will be valued at between zero and one. If stock return is more than the rate of inflation, the coefficient value will be greater than one.

3.2 Methodology

Firstly, the unit root test is employed to determine the number of integrated orders for two series. Secondly, if the integrated order between both series illustrate that there are no co-movement, then the cointegration test is no need to be employed to determine the number of cointegrated vector. Thirdly, vector autoregressive model is employed to capture the short run relationship between both series. In order to verify the causality relationship between both series in the short run, Granger causality test and variance decomposition are employed.

Unit root test

Unit root test is employed to determine the stationarity of both series in order to avoid the spurious result.

Augmented Dickey–Fuller (ADF) Test

If stock return and inflation are both non-stationary with some integrated order, then these two variables will be cointegrated. Dickey and Fuller (1979) developed models to test the null hypothesis of presence of a unit root, these model are written as equation (1). The difficulty in using the ADF test is the choosing of lag length (p). If lag length is too small then the remaining serial correlation in the errors will cause the test become spurious. If lag length is too large then the accuracy of the test will be affected. ADF test consider following three differential-form autoregressive equations to detect the presence of unit root:

$$\Delta Y_t = \alpha + \gamma Y_{t-1} + \sum_{j=1}^{p} \left(\delta_j \Delta Y_{t-j}\right) + e_t \qquad (1)$$

Where, t = time index

α = intercept constant

β = coefficient on a time trend

γ = coefficient presenting process root

p = lag order of the first-differences autoregressive process

e_t = independent identically distributes residual term

Dynamic Model Estimation

Cointegration analysis is used to examine whether stock return and inflation are cointegrated or not. If there is no cointegration relationship between both series, vector autoregressive (VAR) model is applied to capture the short-run relationship between the two series. The VAR is adopted to conduct the dynamic analysis. However, if both series are found to be cointegrated, the lagged one of error correction term (ECT_{t-1}) should be added to explain the short-run adjustment between both variables toward the long-run equilibrium.

Vector Autoregressive (VAR) Model

VAR model is used to detect the linear interdependencies among multiple time series. It is an extension model of the autoregressive model by adding multiple variables. Besides that, VAR model is a simultaneous model that two variables in this study are endogenous to explain the dynamic effect. All the variables used in the estimated VAR model are all stationary. The estimated VAR model is written as below:

$$SR_t = \propto_1 + \sum_{i=1}^{q} \beta_i INF_{t-1} + \sum_{i=1}^{p} \gamma_i SR_{t-1} + V_{1t} \quad (1)$$

$$\Delta INF_t = \propto_2 + \sum_{i=1}^{q} \beta_i INF_{t-1} + \sum_{i=1}^{p} \gamma_i SR_{t-1} + V_{2t} \quad (2)$$

Where, SR_t = Monthly Stock return

SR_{t-1} = lag term of stock return

ΔINF_t = Inflation rate

INF_{t-1} = lag term of inflation rate

V_{1t}, V_{2t} = residual

Dynamic short-run approaches

VAR model is employed to capture the short-run relationship between stock return and inflation. Besides that, both approaches that used to identify the causality effect between these two series are Granger causality and variance decomposition. Granger causality test is conducted to detect the causal relationship between both series.

Granger Causality test

Granger (1969) causality test is used to determine whether one time series is useful in predicting another series (Granger, 1969). Wald F-test is used to detect the causality between stock return and inflation, there are two null hypotheses: (1) stock return does not Granger causes inflation and (2) inflation granger does not causes stock return. If either one of the null hypothesis is rejected, there is a unidirectional effect between stock return and inflation. While, if both null hypotheses are not rejected, indicate a bidirectional effect between both series. According to Granger causality, if inflation "Granger-causes" stock return, then past values of inflation has reasonable information to forecast stock return in the future. Furthermore, variance decomposition test is used to determine the spillover effect between these two series. The F-test statistic is compute by using the following formula:

$$F= \frac{\left(\frac{RSS_1-RSS_2}{P_2-P_1}\right)}{\left(\frac{RSS_2}{n-P_2}\right)}$$

Where, RSS_1 = residual sum of squares of model for the restricted model

RSS_2 = residual sum of squares of model for the unrestricted model

P_1 = parameter for restricted model

P_2 = parameter for unrestricted model

n = sample size

Variance Decomposition (VD)

A variance decomposition (VD) is used to support the interpretation of a vector autoregression (VAR) model when it has been fitted. The variance decomposition is set up to indicate the information of stock return contribute to inflation by using the percentage of the effect between both variable. Furthermore, it is able to predict the stock return and inflation once a strong effect on each other has been observed. Therefore, the effect can be rising or declining significantly (Campbell, 1990).

CHAPTER 4: EMPIRICAL RESULTS

4.0 Unit Root Test

Unit root test is performed to determine the number of integrated orders for stock return and inflation. The results of unit root test are shown in Table 4.1.

The null hypotheses of a unit root are rejected at the level form at the significant level of 1 per cent for the stock return. However, the null hypotheses of non-stationary are not rejected at the level form except for the inflation during post-Asian Financial Crisis at the significant level of 5 per cent.

After undergoing the first difference for the stock return and inflation, the null hypotheses of non-stationary for a series are rejected at the significance level of 5 per cent in all cases. Therefore, the stock return and inflation follow the integrated at order of one process. As a result, there is no long-run relationship between stock return and inflation for all sub periods. Thus, cointegration analysis is not proceed.

Table 4.1: The results for Augmented Dickey-Fuller (ADF) unit root tests

Sub Periods	**Stock Return (y)**		**Inflation (x)**	
	Level	**First differences**	**Level**	**First differences**
Pre-Asian Financial Crisis	-4.981251*** (0)	-8.162144*** (1)	-2.075182 (0)	-8.156012*** (0)
Post-Asian Financial Crisis	-7.099310*** (0)	-6.357050*** (3)	-2.926419** (0)	-11.37999*** (0)
Pre-Global Financial Crisis	-5.860305*** (0)	-7.684769*** (1)	-2.025600 (0)	-6.767200*** (0)
Post-Global Financial Crisis	-5.584920*** (0)	-7.111570*** (1)	-1.276141 (0)	-3.359470** (0)

Notes: ***, **and * represent significance level at 1%, 5% and 10%, respectively. The optimal lag length is reported in the parentheses.

4.1 Granger Causality between Stock Return and Inflation across Asian Financial Crisis and Global Financial Crisis

Table 4.2 shows the results of Granger causality test for all sub periods. The null hypothesis of inflation does not Granger cause stock returns and stock return does not Granger cause inflation for all sub periods are not rejected except the post-Global Financial Crisis period is rejected the null hypothesis of inflation does not Granger cause stock return at the significance level of 5 percent. Therefore, inflation does Granger cause stock return in the post global financial crisis.

The results of Granger Causality test show that stock return and inflation do not have causality effect in pre-Asian Financial Crisis, post-Asian Financial Crisis and pre-Global Financial Crisis which mean the policies implemented in Malaysia will not make inflation and stock return Granger causes each other. As a result, investor will not use inflation to predict the stock return. In addition, changing in stock return does not have significant effect on inflation, because the investors think that the changing in inflation level is affected by the policies implemented by the central bank and government. The expansionary monetary policy implemented by the Bank Negara Malaysia (BNM) to boost the economic growth and foreign direct investment after Asian Financial Crisis.

However, the inflation Granger causes stock return during the post-Global Financial Crisis period. It indicates that investors are able to use the past information of inflation to predict the future stock return because the investors have learnt from the lesson during Asian Financial Crisis. Therefore, the investors will expect that the government and BNM will take the similar action in Asian Financial Crisis to balance the inflation level and recover the economic after the Global Financial Crisis.

Table 4.2: The results for Granger causality test

Null hypothesis of inflation does not Granger cause stock returns				
	Pre-Asian Financial Crisis	**Post-Asian Financial Crisis**	**Pre-Global Financial Crisis**	**Post-Global Financial Crisis**
F-statistic	0.71173	0.02515	0.05271	4.66489**
Null hypothesis of stock returns does not Granger cause inflation				
	Pre-Asian Financial Crisis	**Post-Asian Financial Crisis**	**Pre-Global Financial Crisis**	**Post-Global Financial Crisis**
F-statistic	0.00975	2.14758	7.2×10^{-5}	0.35305

Note: ** represent significance level at 5% respectively.

4.2 Volatility between Stock Return and Inflation across Asian Financial Crisis and Global Financial Crisis

As observed in Table 4.3, there is small proportion of stock return shock can be explained by inflation during the pre-Asian Financial Crisis period, the average proportion is 3.07 per cent for the first ten months. On the other hand, the same result was found in the inflation impact on stock return. The average percentage impact is almost same, which is 3.30 per cent. Therefore, there is slightly spillover effect between inflation and stock return during pre-Asian Financial Crisis.

For the period of post-Asian Financial Crisis, the average percentage of inflation reacts to stock return for the first ten months is 0.03 per cent. This impact is increasing at the beginning of post-Asian Financial Crisis period and remaining constant start from forth month. The stock return affects the inflation the most in this period since the average percentage is 8.68 per cent. This indicates that the spillover effect from stock return to inflation is slightly higher during post-Asian Financial Crisis as compared to such spillover effect during pre-Asian Financial Crisis. As a result, both pre- and post-crisis have slightly spillover effect between the series.

During pre-Global Financial Crisis period, the variance proportion of stock return is less explained by the variance proportion of inflation, the average of proportion is around 0.10 per cent. For instance, there is an increasing trend at the first two months and remains constant afterward during the period. Meanwhile, on average, there is 5.72 per cent of variance proportion of inflation can be explained by stock return.

During the post-Global Financial Crisis, there is large variance proportion of the stock return is explained by inflation. The average proportion is 12.69 per cent. However, there is a small variance proportion of inflation can be explained by stock return. The average proportion is only 1.01 per cent.

Overall, the variance decomposition between inflation and stock return is relative low except for the post-Global Financial Crisis, and there is an increasing trend during sub-periods in both crises.

Table 4.3: The results of variance decomposition for stock return and inflation during pre- and post-Asian Financial Crisis periods

	Pre-Crisis				Post-Crisis			
	Variation of Stock Return explained by		Variation of Inflation explained by		Variation of Stock Return explained by		Variation of Inflation explained by	
Month	Inflation	Stock Return	Inflation	Stock Return	Inflation	Stock Return	Inflation	Stock Return
1	0.0000	100.0000	96.5954	3.4046	0.0000	100.0000	96.5793	3.4208
2	3.1120	96.8880	96.2703	3.7297	0.0357	99.9643	91.1291	8.8709
3	3.3986	96.6014	96.2399	3.7601	0.0386	99.9614	90.7427	9.2573
4	3.4461	96.5539	96.2351	3.7649	0.0391	99.9609	90.6902	9.3098
5	3.4531	96.5469	96.2344	3.7656	0.0391	99.9609	90.6836	9.3164
6	3.4541	96.5459	96.2343	3.7657	0.0391	99.9609	90.6827	9.3173
7	3.4543	96.5457	96.2343	3.7657	0.0391	99.9609	90.6826	9.3174
8	3.4543	96.5457	96.2343	3.7657	0.0391	99.9609	90.6826	9.3174
9	3.4543	96.5457	96.2343	3.7658	0.0391	99.9609	90.6826	9.3174
10	3.4543	96.5457	96.2343	3.7658	0.0391	99.9609	90.6826	9.3174

Table 4.4: The results of variance decomposition for stock return and inflation during pre- and post-Global Financial Crisis periods

	Pre-Crisis				Post-Crisis			
	Variation of Stock Return explained by		Variation of Inflation explained by		Variation of Stock Return explained by		Variation of Inflation explained by	
Month	Inflation	Stock Return	Inflation	Stock Return	Inflation	Stock Return	Inflation	Stock Return
1	0.0000	100.0000	94.2861	5.7139	0.0000	100.0000	99.9961	0.0039
2	0.1254	99.8746	94.2838	5.7162	11.8395	88.1605	99.0385	0.9615
3	0.1255	99.8745	94.2838	5.7162	13.5240	86.4760	98.9227	1.0773
4	0.1255	99.8745	94.2838	5.7162	13.9734	86.0266	98.8919	1.1081
5	0.1255	99.8745	94.2838	5.7162	14.0836	85.9164	98.8844	1.1156
6	0.1255	99.8745	94.2838	5.7162	14.1113	85.8887	98.8825	1.1175
7	0.1255	99.8745	94.2838	5.7162	14.1182	85.8817	98.8820	1.1180
8	0.1255	99.8745	94.2838	5.7162	14.1200	85.8800	98.8819	1.1181
9	0.1255	99.8745	94.2838	5.7162	14.1204	85.8796	98.8819	1.1181
10	0.1255	99.8745	94.2838	5.7162	14.1206	85.8795	98.8819	1.1181
11	0.1255	99.8745	94.2838	5.7162	14.1206	85.8794	98.8819	1.1181
12	0.1255	99.8745	94.2838	5.7162	14.1206	85.8794	98.8819	1.1181

As a result, there is no evidence to indicate that occurrence of spillover effect between inflation and stock return in all sub periods except for the period of post-Global Financial Crisis. The Granger causality test reveals that there is only significant causality effect between both series during post-Global Financial Crisis.

During post-Global Financial Crisis, the inflation and stock return do not consist of bidirectional but unidirectional effect, which is the inflation granger cause the stock return. Meanwhile, investors and policymakers cannot use these series as the indicators to predict the movement of each other, since the inflation and stock return in Malaysia do not provide sufficient information to forecast each other even though results show that inflation can Granger cause stock return in post-Global Financial Crisis.

Government and BNM implemented inflation targeting policy and countercyclical monetary policy to control the inflationary pressure. As a result, the investors will not worry the increase of inflation level since policymakers aim in reducing the inflation level through the policies. When the inflation level is high, BNM will adjust the interest to curb the inflation. The stock market investor will not concern about the current fluctuation of inflation. Therefore, these two series have weak bidirectional relationship. As a result, the inflation will not Granger cause stock return in each sub-period, except for post-Global Financial Crisis.

CHAPTER 5: CONCLUSION

5.0 Overview

This study is to focus on the relationship between the stock return and inflation in Malaysia from January 1996 to December 2011. The sample period is divided into the pre- and post-crisis for Asian and Global Financial Crisis to examine the relationship between both series from the impact of structural break.

The empirical analysis shows a result on whether the stock returns can hedge against inflation in Malaysia with the sub-periods using variance decomposition analysis. Besides that, there is none of long-run causality effect between stock return and inflation. However, the Vector Autoregressive (VAR) analysis is used to determine the short run causality effect between stock return and inflation. Thus, there are several policy implications will be recommended based on the major findings from the study. This chapter also provides the limitations and recommendations for further study.

5.1 Major findings

Our empirical results show there are three major findings. First, the result shows that the common stocks in Malaysia do not provide a good hedge against the inflation during the pre- and post-crisis periods.

The cointegration analysis is used to determine the validity of the Fisher's hypothesis in Malaysia. However, the result shows that there is no long-run relationship between both series by using the unit root test. Thus, there is no cointegrated relationship between stock return and inflation during the both sub-periods. As a result, the long-run generalized Fisher hypothesis will not held in pre and post of Asian Financial Crisis and pre Global Financial Crisis.

The exclusion of Fisher hypothesis held in Malaysia is due to the government's policy implemented. The purpose of the policy taken by the Bank Negara Malaysia is adopting the monetary policies to balance the inflation rate and currency exchange rate during the Asian and Global financial crisis. Due to the policy implemented, the investors expect the changes in inflation will be constant. Generally, the movement of the stock price is uncertain so cannot use the inflation to predict it. Thus, the stock return and inflation are independent lead to the Fisher hypothesis do not held during the post Asian Crisis.

Some evidences show that Malaysia has implemented the contractionary monetary policy to reduce the inflation during the Asian Financial Crisis. BNM increased the overnight policy rate (OPR) in order to reduce the money supply. However, there are still unable to predict the movement of the stock price. Since the stock return is volatile all the time. Therefore, it can be concluded that whatever policy has been adopted to balance the inflation rate will not absolutely affect the stock market. If there is a decline in domestic investment, BNM will tend to reduce the interest rate in order to attract the foreign borrower to invest in domestic stock market and boost up the stock market performance. As a result, there is no interaction between inflation and stock return. Therefore, BNM implement different policies toward the inflation and stock return.

Second, the inflation and stock return are not able to use as indicators to predict each other in the short run because both series do not Granger cause with each other during the both pre-and post of Asian Financial Crisis, the Granger causality test and variance decomposition are used to capture the short-run dynamic relationship between both series. However, the results show that there is no Granger causality between stock return and inflation in the short run because investors and policymakers expected the inflation rate would be stable in the future due to the monetary policy to stabilize the price level. Besides, investors will expect the BNM adjust the interest rate to stabilize the price level under the price stabilization policy. As a result, investors do not make their investment decision based on the inflation since the both series do not Granger cause each other.

However, the inflation is able to be used as an indicator to predict the stock return because the inflation is found for Granger cause stock return during the post Global Financial Crisis. The main reason of this finding was because of the investor was expect the movement of the stock price based on the past movement of the inflation during the Asian Financial Crisis. Hence, the Bank Negara Malaysia are implemented the similar policy to stabilize the inflation rate on the post Global Financial Crisis.

There is a small proportion of stock return shocks can be explained by inflation during pre-Asian Financial Crisis. On the other hand, the spillover effect from stock return to inflation is higher during post-crisis compare to pre-crisis. However, both pre- and post-Asian crisis are unable to be explained the spillover effect between both series because there is a low average percentage can be used to explain the variance each other.

During pre-Global Financial Crisis, the variance proportion of stock return is not affected by the variance proportion of inflation, vice versa. At the post-Global Financial Crisis, there is a small variance proportion of inflation can be explained by the variance proportion of stock return but there is large variance proportion of the stock return can be explained by inflation.

The results found to be consistent in both sub-periods. The movement of stock price and consumer prices is similar in Malaysia during the pre- and post-crisis periods.

5.2 Policy Implications

Based on our analysis, we find that long-run generalized Fisher hypothesis is rejected in Malaysia's stock market. In other words, it indicates that the stock return cannot used to hedge against inflation. Thus, investors should chose to invest in other instruments such as treasury bills, bond or commodity future contract other than equity in order to overcome the reduction in purchasing power. Bond is a debt investment issued by companies to raise fund in order to expand their operation. By investing in bond, investors are ensure to be paid a sum of interest during the time before maturity and par value at the maturity. The fixed income from investing bond can protect investors from a fluctuation of inflation. However, the reputation and profitability of the companies must in a good situation. If the companies have a poor credit rating, the bond will be traded at a discount. This is due to the greater default risk faced by investors.

Besides that, Treasury bill is short term debt instrument issued by government. T-bills have different maturities and are issued at a discount from par. T-bills are very attractive to investors due to its lower default risk because it was backed by the credit of government. Furthermore, in most of the case, inflation increased will cause commodity prices also increase. Investors can use commodity futures contract to protect from the price fluctuation of a futures' underlying product or raw material. Hence, investors can use bonds, treasury bills, or commodity futures contract to avoid the reduction of purchasing power.

From the analysis, it indicates that common stock return cannot be used to hedge against inflation. During each crisis period, inflation targeting policy is adopted to reduce inflationary pressure. Bank Negara Malaysia had adjusted the OPR, so interest rate was also changed. This means that either cost of borrowing and profit for investment would reduce during the crisis periods. This policy was able to stabilize the price level, but the stock return would still remaining high volatility. The nominal stock return tends to be affected by the fluctuation in stock price and subsequently lead to the unstable real return. Hence, investors in those countries which adopt inflation targeting policy will not able to use stock return to hedge against inflation.

Based on the result of Granger causality test and variance decomposition, stock return and inflation are found to stand independently without affecting each other in the short run except during the post global crisis. In other words, this indicates that the past information of inflation cannot be used to predict the future movement of stock return in the short run. Thus, the investment decision for investors to earn profit from the stock market cannot be determined by an increase or decrease in inflation.

For the point of view of policymaker should not use the stock return as an indicator to predict the inflationary trend in the short run. For example, if the stock market is performed well, and offer a high return for investors, it does not indicate that the inflation rate would necessary be changed. Thus, if policymaker employ inflation targeted policy to reduce the inflation based on the movement of stock return, the policy might become ineffective. Hence, policymaker in Malaysia should not only focus on the information of stock market performance to forecast the trend of inflation. However, policymaker should focus on others macroeconomic variables in order to forecast the movement of inflation.

As a conclusion, there were similar result shown in explaining the relationship between stock return and inflation during both crisis periods. This indicates that the movements in stock return and consumer prices during both crises are similar. Thus, policymakers can use the contractionary monetary or fiscal policy which implemented during Asian Financial Crisis can also be applied in Global Financial Crisis.

5.3 Limitation and Recommendation

This study emphasizes in examine whether stock return can hedge against inflation during pre- and post- period of Asian Financial Crisis and Global Financial Crisis in Malaysia. However, the period during Asian Financial Crisis and Global Financial Crisis are excluded in our study. Thus, we suggest that future researchers carry out the study to determine the relationship between stock return and inflation before and after the threshold.

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APPENDIX A

Augmented Dickey-Fuller (ADF) unit root test for stock return and inflation during pre-Asian Financial Crisis

Null Hypothesis: Y has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.981251	0.0003
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y)
Method: Least Squares
Date: 02/26/17 Time: 20:05
Sample (adjusted): 1995M03 1997M12
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	-0.863707	0.173392	-4.981251	0.0000
C	1.276070	1.344326	0.949227	0.3496

R-squared	0.436747	Mean dependent var	0.051484
Adjusted R-squared	0.419146	S.D. dependent var	10.11171
S.E. of regression	7.706515	Akaike info criterion	6.979032
Sum squared resid	1900.492	Schwarz criterion	7.068818
Log likelihood	-116.6435	Hannan-Quinn criter.	7.009651
F-statistic	24.81286	Durbin-Watson stat	1.955457
Prob(F-statistic)	0.000021		

Null Hypothesis: D(Y) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.162144	0.0000
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y,2)
Method: Least Squares
Date: 02/26/17 Time: 20:06
Sample (adjusted): 1995M05 1997M12
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-2.694766	0.330154	-8.162144	0.0000
D(Y(-1),2)	0.682427	0.183406	3.720859	0.0008
C	0.921160	1.341065	0.686887	0.4976

R-squared	0.814775	Mean dependent var	-0.998864
Adjusted R-squared	0.802001	S.D. dependent var	16.71771
S.E. of regression	7.438897	Akaike info criterion	6.940382
Sum squared resid	1604.778	Schwarz criterion	7.077795
Log likelihood	-108.0461	Hannan-Quinn criter.	6.985930
F-statistic	63.78312	Durbin-Watson stat	1.862800
Prob(F-statistic)	0.000000		

Null Hypothesis: X has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.075182	0.2554
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X)
Method: Least Squares
Date: 02/26/17 Time: 20:08
Sample (adjusted): 1995M03 1997M12
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X(-1)	-0.241573	0.116411	-2.075182	0.0461
C	0.767151	0.377245	2.033563	0.0504

R-squared	0.118612	Mean dependent var	-0.005882
Adjusted R-squared	0.091069	S.D. dependent var	0.364269
S.E. of regression	0.347286	Akaike info criterion	0.779686
Sum squared resid	3.859442	Schwarz criterion	0.869472
Log likelihood	-11.25466	Hannan-Quinn criter.	0.810306
F-statistic	4.306381	Durbin-Watson stat	2.384875
Prob(F-statistic)	0.046091		

Null Hypothesis: D(X) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.156012	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X,2)
Method: Least Squares
Date: 02/26/17 Time: 20:09
Sample (adjusted): 1995M04 1997M12
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X(-1))	-1.370365	0.168019	-8.156012	0.0000
C	-0.017733	0.060580	-0.292717	0.7717

R-squared	0.682118	Mean dependent var	0.003030
Adjusted R-squared	0.671864	S.D. dependent var	0.606983
S.E. of regression	0.347699	Akaike info criterion	0.783732
Sum squared resid	3.747730	Schwarz criterion	0.874429
Log likelihood	-10.93158	Hannan-Quinn criter.	0.814249
F-statistic	66.52053	Durbin-Watson stat	2.039012
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller (ADF) unit root test for stock return and inflation during post-Asian Financial Crisis

Null Hypothesis: Y has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.099310	0.0000
Test critical values:	1% level	-3.548208	
	5% level	-2.912631	
	10% level	-2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y)
Method: Least Squares
Date: 02/26/17 Time: 20:58
Sample (adjusted): 1999M07 2004M04
Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	-0.943588	0.132913	-7.099310	0.0000
C	-0.037845	0.829539	-0.045622	0.9638

R-squared	0.473685	Mean dependent var	0.277278
Adjusted R-squared	0.464287	S.D. dependent var	8.619102
S.E. of regression	6.308531	Akaike info criterion	6.555557
Sum squared resid	2228.664	Schwarz criterion	6.626607
Log likelihood	-188.1112	Hannan-Quinn criter.	6.583232
F-statistic	50.40020	Durbin-Watson stat	1.914107
Prob(F-statistic)	0.000000		

Null Hypothesis: D(Y) has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic based on SIC, MAXLAG=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.357050	0.0000
Test critical values:	1% level	-3.557472	
	5% level	-2.916566	
	10% level	-2.596116	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y,2)
Method: Least Squares
Date: 02/26/17 Time: 20:58
Sample (adjusted): 1999M11 2004M04
Included observations: 54 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-2.789745	0.438843	-6.357050	0.0000
D(Y(-1),2)	1.140387	0.356181	3.201711	0.0024
D(Y(-2),2)	0.649845	0.249461	2.604992	0.0121
D(Y(-3),2)	0.277082	0.127927	2.165937	0.0352
C	0.038697	0.923316	0.041911	0.9667

R-squared	0.776733	Mean dependent var	0.594255
Adjusted R-squared	0.758507	S.D. dependent var	13.77501
S.E. of regression	6.769302	Akaike info criterion	6.750694
Sum squared resid	2245.349	Schwarz criterion	6.934860
Log likelihood	-177.2687	Hannan-Quinn criter.	6.821720
F-statistic	42.61708	Durbin-Watson stat	1.948540
Prob(F-statistic)	0.000000		

Null Hypothesis: X has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.926419	0.0484
Test critical values:	1% level	-3.548208	
	5% level	-2.912631	
	10% level	-2.594027	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X)
Method: Least Squares
Date: 02/26/17 Time: 20:59
Sample (adjusted): 1999M07 2004M04
Included observations: 58 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X(-1)	-0.262562	0.089721	-2.926419	0.0049
C	0.383479	0.142919	2.683182	0.0096

R-squared	0.132643	Mean dependent var	-0.018966
Adjusted R-squared	0.117154	S.D. dependent var	0.315371
S.E. of regression	0.296322	Akaike info criterion	0.439132
Sum squared resid	4.917169	Schwarz criterion	0.510182
Log likelihood	-10.73484	Hannan-Quinn criter.	0.466808
F-statistic	8.563927	Durbin-Watson stat	2.404795
Prob(F-statistic)	0.004946		

Null Hypothesis: D(X) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.37999	0.0000
Test critical values:	1% level	-3.550396	
	5% level	-2.913549	
	10% level	-2.594521	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X,2)
Method: Least Squares
Date: 02/26/17 Time: 21:01
Sample (adjusted): 1999M08 2004M04
Included observations: 57 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X(-1))	-1.387905	0.121960	-11.37999	0.0000
C	-0.033802	0.038533	-0.877206	0.3842

R-squared	0.701904	Mean dependent var	-0.007018
Adjusted R-squared	0.696484	S.D. dependent var	0.527074
S.E. of regression	0.290377	Akaike info criterion	0.399186
Sum squared resid	4.637543	Schwarz criterion	0.470872
Log likelihood	-9.376797	Hannan-Quinn criter.	0.427046
F-statistic	129.5041	Durbin-Watson stat	2.129319
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller (ADF) unit root test for stock return and inflation during pre-Global Financial Crisis

Null Hypothesis: Y has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.860305	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y)
Method: Least Squares
Date: 02/26/17 Time: 20:57
Sample (adjusted): 2004M06 2008M03
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	-0.945044	0.161262	-5.860305	0.0000
C	-0.879478	0.546023	-1.610698	0.1144

R-squared	0.438368	Mean dependent var	0.110882
Adjusted R-squared	0.425604	S.D. dependent var	4.646420
S.E. of regression	3.521471	Akaike info criterion	5.398139
Sum squared resid	545.6334	Schwarz criterion	5.477646
Log likelihood	-122.1572	Hannan-Quinn criter.	5.427923
F-statistic	34.34318	Durbin-Watson stat	1.859166
Prob(F-statistic)	0.000001		

Null Hypothesis: D(Y) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.684769	0.0000
Test critical values:	1% level	-3.588509	
	5% level	-2.929734	
	10% level	-2.603064	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y,2)
Method: Least Squares
Date: 02/26/17 Time: 20:59
Sample (adjusted): 2004M08 2008M03
Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-2.052666	0.267108	-7.684769	0.0000
D(Y(-1),2)	0.290158	0.149625	1.939237	0.0594
C	0.297401	0.564093	0.527220	0.6009

R-squared	0.805937	Mean dependent var	0.145793
Adjusted R-squared	0.796471	S.D. dependent var	8.291632
S.E. of regression	3.740707	Akaike info criterion	5.542172
Sum squared resid	573.7084	Schwarz criterion	5.663822
Log likelihood	-118.9278	Hannan-Quinn criter.	5.587286
F-statistic	85.13580	Durbin-Watson stat	1.865005
Prob(F-statistic)	0.000000		

Null Hypothesis: X has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.025600	0.2752
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X)
Method: Least Squares
Date: 02/26/17 Time: 21:00
Sample (adjusted): 2004M06 2008M03
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X(-1)	-0.135021	0.066657	-2.025600	0.0489
C	0.394349	0.187737	2.100543	0.0414

R-squared	0.085297	Mean dependent var	0.034783
Adjusted R-squared	0.064508	S.D. dependent var	0.428547
S.E. of regression	0.414494	Akaike info criterion	1.118987
Sum squared resid	7.559422	Schwarz criterion	1.198493
Log likelihood	-23.73670	Hannan-Quinn criter.	1.148770
F-statistic	4.103055	Durbin-Watson stat	1.969826
Prob(F-statistic)	0.048897		

Null Hypothesis: D(X) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.767200	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X,2)
Method: Least Squares
Date: 02/26/17 Time: 21:00
Sample (adjusted): 2004M07 2008M03
Included observations: 45 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X(-1))	-1.031477	0.152423	-6.767200	0.0000
C	0.034383	0.065501	0.524920	0.6023

R-squared	0.515738	Mean dependent var	4.07E-17
Adjusted R-squared	0.504477	S.D. dependent var	0.622312
S.E. of regression	0.438067	Akaike info criterion	1.230537
Sum squared resid	8.251816	Schwarz criterion	1.310833
Log likelihood	-25.68708	Hannan-Quinn criter.	1.260470
F-statistic	45.79500	Durbin-Watson stat	2.011199
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller (ADF) unit root test for stock return and inflation during post-Global Financial Crisis

Null Hypothesis: Y has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.584920	0.0001
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y)
Method: Least Squares
Date: 02/26/17 Time: 20:04
Sample (adjusted): 2009M05 2011M12
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	-0.864451	0.154783	-5.584920	0.0000
C	-1.137975	0.636486	-1.787905	0.0839

R-squared	0.509734	Mean dependent var	0.274929
Adjusted R-squared	0.493392	S.D. dependent var	4.641813
S.E. of regression	3.303874	Akaike info criterion	5.288530
Sum squared resid	327.4676	Schwarz criterion	5.380139
Log likelihood	-82.61648	Hannan-Quinn criter.	5.318896
F-statistic	31.19133	Durbin-Watson stat	2.137851
Prob(F-statistic)	0.000004		

Null Hypothesis: D(Y) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.111570	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(Y,2)
Method: Least Squares
Date: 02/26/17 Time: 20:05
Sample (adjusted): 2009M07 2011M12
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-2.047037	0.287846	-7.111570	0.0000
D(Y(-1),2)	0.400071	0.173751	2.302550	0.0292
C	0.182009	0.697094	0.261097	0.7960

R-squared	0.779332	Mean dependent var	-0.251659
Adjusted R-squared	0.762986	S.D. dependent var	7.815825
S.E. of regression	3.805062	Akaike info criterion	5.605181
Sum squared resid	390.9195	Schwarz criterion	5.745301
Log likelihood	-81.07772	Hannan-Quinn criter.	5.650007
F-statistic	47.67784	Durbin-Watson stat	1.950324
Prob(F-statistic)	0.000000		

Null Hypothesis: X has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.276141	0.6283
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X)
Method: Least Squares
Date: 02/26/17 Time: 20:06
Sample (adjusted): 2009M05 2011M12
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X(-1)	-0.102979	0.080696	-1.276141	0.2117
C	0.168628	0.194204	0.868301	0.3921

R-squared	0.051489	Mean dependent var	0.000000
Adjusted R-squared	0.019872	S.D. dependent var	0.813198
S.E. of regression	0.805077	Akaike info criterion	2.464704
Sum squared resid	19.44447	Schwarz criterion	2.556312
Log likelihood	-37.43526	Hannan-Quinn criter.	2.495069
F-statistic	1.628535	Durbin-Watson stat	1.038917
Prob(F-statistic)	0.211698		

Null Hypothesis: D(X) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.359470	0.0205
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(X,2)
Method: Least Squares
Date: 02/26/17 Time: 20:06
Sample (adjusted): 2009M06 2011M12
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X(-1))	-0.553381	0.164723	-3.359470	0.0022
C	0.015033	0.133658	0.112472	0.9112

R-squared	0.280148	Mean dependent var	0.009677
Adjusted R-squared	0.255325	S.D. dependent var	0.862305
S.E. of regression	0.744122	Akaike info criterion	2.309118
Sum squared resid	16.05782	Schwarz criterion	2.401633
Log likelihood	-33.79133	Hannan-Quinn criter.	2.339276
F-statistic	11.28604	Durbin-Watson stat	1.359271
Prob(F-statistic)	0.002201		

APPENDIX B

Granger causality test for pre-Asian Financial Crisis

Pairwise Granger Causality Tests
Date: 02/27/17 Time: 20:35
Sample: 1996M01 1997M12
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(X) does not Granger Cause Y	22	0.71173	0.4094
Y does not Granger Cause D(X)		0.00975	0.9224

Granger causality test for post-Asian Financial Crisis

Pairwise Granger Causality Tests
Date: 02/26/17 Time: 21:27
Sample: 1999M06 2004M04
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(X) does not Granger Cause Y	57	0.02515	0.8746
Y does not Granger Cause D(X)		2.14758	0.1486

Granger causality test for pre-Global Financial Crisis

Pairwise Granger Causality Tests
Date: 02/26/17 Time: 21:31
Sample: 2004M05 2008M03
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(X) does not Granger Cause Y	45	0.05271	0.8195
Y does not Granger Cause D(X)		7.2E-05	0.9933

Granger causality test for post-Global Financial Crisis

Pairwise Granger Causality Tests
Date: 02/26/17 Time: 21:33
Sample: 2009M04 2011M12
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(X) does not Granger Cause Y	31	4.66489	0.0395
Y does not Granger Cause D(X)		0.35305	0.5572

APPENDIX C

VAR lag order selection criteria for pre-Asian Financial Crisis

VAR Lag Order Selection Criteria
Endogenous variables: Y D(X)
Exogenous variables: C
Date: 02/27/17 Time: 20:32
Sample: 1996M01 1997M12
Included observations: 18

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-72.56343	NA*	13.58954*	8.284826*	8.383756*	8.298467*
1	-70.08799	4.125738	16.19568	8.454221	8.751011	8.495144
2	-66.67881	4.924366	17.70934	8.519868	9.014519	8.588074
3	-64.79935	2.297114	23.71565	8.755484	9.447995	8.850972
4	-61.18025	3.619099	27.64035	8.797806	9.688178	8.920576
5	-56.63455	3.535548	31.80887	8.737172	9.825404	8.887225

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR lag order selection criteria for post-Asian Financial Crisis

VAR Lag Order Selection Criteria
Endogenous variables: Y D(X)
Exogenous variables: C
Date: 02/26/17 Time: 21:26
Sample: 1999M06 2004M04
Included observations: 51

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-165.3298	NA*	2.425913*	6.561952*	6.637710*	6.590901*
1	-163.0506	4.290156	2.595954	6.629436	6.856710	6.716284
2	-161.6852	2.463175	2.881357	6.732752	7.111541	6.877498
3	-160.9819	1.213554	3.286315	6.862034	7.392339	7.064679
4	-158.9117	3.409673	3.558814	6.937714	7.619535	7.198258
5	-157.4303	2.323805	3.953068	7.036481	7.869818	7.354924
6	-154.4143	4.494368	4.146660	7.075071	8.059924	7.451413
7	-153.7722	0.906525	4.791290	7.206753	8.343121	7.640993

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR lag order selection criteria for pre-Global Financial Crisis

VAR Lag Order Selection Criteria
Endogenous variables: Y D(X)
Exogenous variables: C
Date: 02/26/17 Time: 21:29
Sample: 2004M05 2008M03
Included observations: 41

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-134.4295	NA*	2.662761*	6.655098*	6.738687*	6.685537*
1	-134.2519	0.329271	3.210174	6.841555	7.092322	6.932871
2	-131.5756	4.699840	3.430864	6.906126	7.324070	7.058318
3	-129.8540	2.855270	3.850756	7.017270	7.602392	7.230339
4	-125.3394	7.047238	3.784586	6.992165	7.744465	7.266111
5	-123.9643	2.012301	4.355234	7.120211	8.039688	7.455034

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR lag order selection criteria for post-Global Financial Crisis

VAR Lag Order Selection Criteria
Endogenous variables: Y D(X)
Exogenous variables: C
Date: 02/26/17 Time: 21:32
Sample: 2009M04 2011M12
Included observations: 27

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-79.66123	NA	1.452511	6.048980	6.144968*	6.077522
1	-74.27304	9.579005	1.312902	5.946151	6.234115	6.031778*
2	-73.41831	1.392889	1.668669	6.179134	6.659074	6.321845
3	-73.03821	0.563117	2.216080	6.447275	7.119190	6.647070
4	-65.13693	10.53503	1.708299	6.158291	7.022183	6.415172
5	-56.86628	9.802251*	1.305463*	5.841947*	6.897814	6.155912

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

APPENDIX D

Variance Decomposition for stock return and inflation during pre-Asian Financial Crisis

Variance Decomposition of Y:			
Period	S.E.	Y	D(X)
1	9.011158	100.0000	0.000000
		(0.00000)	(0.00000)
2	9.222406	96.88801	3.111992
		(8.19284)	(8.19284)
3	9.236299	96.60139	3.398608
		(9.57769)	(9.57769)
4	9.238727	96.55391	3.446087
		(10.8459)	(10.8459)
5	9.239081	96.54691	3.453085
		(11.7580)	(11.7580)
6	9.239134	96.54586	3.454142
		(12.5217)	(12.5217)
7	9.239143	96.54570	3.454301
		(13.1593)	(13.1593)
8	9.239144	96.54567	3.454325
		(13.6955)	(13.6955)
9	9.239144	96.54567	3.454329
		(14.1495)	(14.1495)
10	9.239144	96.54567	3.454329
		(14.5373)	(14.5373)
11	9.239144	96.54567	3.454330
		(14.8720)	(14.8720)
12	9.239144	96.54567	3.454330
		(15.1643)	(15.1643)
13	9.239144	96.54567	3.454330
		(15.4224)	(15.4224)
14	9.239144	96.54567	3.454330
		(15.6529)	(15.6529)
15	9.239144	96.54567	3.454330
		(15.8607)	(15.8607)
16	9.239144	96.54567	3.454330
		(16.0496)	(16.0496)
17	9.239144	96.54567	3.454330
		(16.2226)	(16.2226)
18	9.239144	96.54567	3.454330
		(16.3819)	(16.3819)
19	9.239144	96.54567	3.454330
		(16.5295)	(16.5295)
20	9.239144	96.54567	3.454330
		(16.6668)	(16.6668)
21	9.239144	96.54567	3.454330

		(16.7949)	(16.7949)
22	9.239144	96.54567	3.454330
		(16.9147)	(16.9147)
23	9.239144	96.54567	3.454330
		(17.0272)	(17.0272)
24	9.239144	96.54567	3.454330
		(17.1330)	(17.1330)

Variance Decomposition of D(X):

Period	S.E.	Y	D(X)
1	0.345366	3.404617	96.59538
		(8.64221)	(8.64221)
2	0.372186	3.729733	96.27027
		(11.2392)	(11.2392)
3	0.376000	3.760125	96.23988
		(11.6578)	(11.6578)
4	0.376572	3.764916	96.23508
		(11.8880)	(11.8880)
5	0.376658	3.765624	96.23438
		(11.9809)	(11.9809)
6	0.376671	3.765731	96.23427
		(12.0335)	(12.0335)
7	0.376673	3.765747	96.23425
		(12.0681)	(12.0681)
8	0.376673	3.765749	96.23425
		(12.0894)	(12.0894)
9	0.376673	3.765750	96.23425
		(12.1046)	(12.1046)
10	0.376673	3.765750	96.23425
		(12.1152)	(12.1152)
11	0.376673	3.765750	96.23425
		(12.1229)	(12.1229)
12	0.376673	3.765750	96.23425
		(12.1286)	(12.1286)
13	0.376673	3.765750	96.23425
		(12.1330)	(12.1330)
14	0.376673	3.765750	96.23425
		(12.1363)	(12.1363)
15	0.376673	3.765750	96.23425
		(12.1388)	(12.1388)
16	0.376673	3.765750	96.23425
		(12.1408)	(12.1408)
17	0.376673	3.765750	96.23425
		(12.1424)	(12.1424)
18	0.376673	3.765750	96.23425
		(12.1437)	(12.1437)
19	0.376673	3.765750	96.23425
		(12.1447)	(12.1447)
20	0.376673	3.765750	96.23425

		(12.1455)	(12.1455)
21	0.376673	3.765750	96.23425
		(12.1462)	(12.1462)
22	0.376673	3.765750	96.23425
		(12.1468)	(12.1468)
23	0.376673	3.765750	96.23425
		(12.1474)	(12.1474)
24	0.376673	3.765750	96.23425
		(12.1478)	(12.1478)

Cholesky Ordering: Y D(X)
Standard Errors: Monte Carlo (100 repetitions)

Variance Decomposition for stock return and inflation during post-Asian Financial Crisis

Variance Decomposition of Y:			
Period	S.E.	Y	D(X)
1	6.369801	100.0000	0.000000
		(0.00000)	(0.00000)
2	6.391596	99.96434	0.035656
		(1.52760)	(1.52760)
3	6.391695	99.96135	0.038646
		(1.64366)	(1.64366)
4	6.391717	99.96094	0.039063
		(1.67525)	(1.67525)
5	6.391720	99.96088	0.039115
		(1.68420)	(1.68420)
6	6.391720	99.96088	0.039122
		(1.68743)	(1.68743)
7	6.391720	99.96088	0.039123
		(1.68864)	(1.68864)
8	6.391720	99.96088	0.039123
		(1.68914)	(1.68914)
9	6.391720	99.96088	0.039123
		(1.68935)	(1.68935)
10	6.391720	99.96088	0.039123
		(1.68945)	(1.68945)
11	6.391720	99.96088	0.039123
		(1.68949)	(1.68949)
12	6.391720	99.96088	0.039123
		(1.68951)	(1.68951)
13	6.391720	99.96088	0.039123
		(1.68952)	(1.68952)
14	6.391720	99.96088	0.039123
		(1.68952)	(1.68952)
15	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
16	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
17	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
18	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
19	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
20	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
21	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
22	6.391720	99.96088	0.039123

		(1.68953)	(1.68953)
23	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
24	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
25	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
26	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
27	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
28	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
29	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
30	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
31	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
32	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
33	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
34	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
35	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
36	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
37	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
38	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
39	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
40	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
41	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
42	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
43	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
44	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
45	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
46	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
47	6.391720	99.96088	0.039123

		(1.68953)	(1.68953)
48	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
49	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
50	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
51	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
52	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
53	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
54	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
55	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
56	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
57	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
58	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)
59	6.391720	99.96088	0.039123
		(1.68953)	(1.68953)

Variance Decomposition of D(X):

Period	S.E.	Y	D(X)
1	0.287394	3.420751	96.57925
		(4.97765)	(4.97765)
2	0.315122	8.870896	91.12910
		(8.06026)	(8.06026)
3	0.318156	9.257312	90.74269
		(8.51037)	(8.51037)
4	0.318549	9.309837	90.69016
		(8.62325)	(8.62325)
5	0.318600	9.316437	90.68356
		(8.65196)	(8.65196)
6	0.318606	9.317284	90.68272
		(8.66092)	(8.66092)
7	0.318607	9.317392	90.68261
		(8.66392)	(8.66392)
8	0.318607	9.317406	90.68259
		(8.66505)	(8.66505)
9	0.318607	9.317408	90.68259
		(8.66550)	(8.66550)
10	0.318607	9.317408	90.68259
		(8.66569)	(8.66569)
11	0.318607	9.317408	90.68259

		(8.66577)	(8.66577)
12	0.318607	9.317408	90.68259
		(8.66581)	(8.66581)
13	0.318607	9.317408	90.68259
		(8.66582)	(8.66582)
14	0.318607	9.317408	90.68259
		(8.66583)	(8.66583)
15	0.318607	9.317408	90.68259
		(8.66583)	(8.66583)
16	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
17	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
18	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
19	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
20	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
21	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
22	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
23	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
24	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
25	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
26	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
27	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
28	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
29	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
30	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
31	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
32	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
33	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
34	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
35	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
36	0.318607	9.317408	90.68259

		(8.66584)	(8.66584)
37	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
38	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
39	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
40	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
41	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
42	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
43	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
44	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
45	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
46	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
47	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
48	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
49	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
50	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
51	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
52	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
53	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
54	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
55	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
56	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
57	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
58	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)
59	0.318607	9.317408	90.68259
		(8.66584)	(8.66584)

Cholesky Ordering: Y D(X)
Standard Errors: Monte Carlo (100 repetitions)

Variance Decomposition for stock return and inflation during pre-Global Financial Crisis

Variance Decomposition of Y:			
Period	S.E.	Y	D(X)
1	3.601426	100.0000	0.000000
		(0.00000)	(0.00000)
2	3.609742	99.87458	0.125416
		(3.40307)	(3.40307)
3	3.609755	99.87454	0.125456
		(3.88443)	(3.88443)
4	3.609755	99.87454	0.125457
		(3.92281)	(3.92281)
5	3.609755	99.87454	0.125457
		(3.92265)	(3.92265)
6	3.609755	99.87454	0.125457
		(3.92866)	(3.92866)
7	3.609755	99.87454	0.125457
		(3.93052)	(3.93052)
8	3.609755	99.87454	0.125457
		(3.93056)	(3.93056)
9	3.609755	99.87454	0.125457
		(3.93059)	(3.93059)
10	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
11	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
12	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
13	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
14	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
15	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
16	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
17	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
18	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
19	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
20	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
21	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
22	3.609755	99.87454	0.125457

		(3.93063)	(3.93063)
23	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
24	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
25	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
26	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
27	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
28	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
29	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
30	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
31	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
32	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
33	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
34	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
35	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
36	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
37	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
38	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
39	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
40	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
41	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
42	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
43	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
44	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
45	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
46	3.609755	99.87454	0.125457
		(3.93063)	(3.93063)
47	3.609755	99.87454	0.125457

		(3.93063)	(3.93063)

Variance Decomposition of D(X):

Period	S.E.	Y	D(X)
1	0.443251	5.713937	94.28606
		(6.77310)	(6.77310)
2	0.443471	5.716204	94.28380
		(7.26872)	(7.26872)
3	0.443471	5.716203	94.28380
		(7.38619)	(7.38619)
4	0.443471	5.716203	94.28380
		(7.39884)	(7.39884)
5	0.443471	5.716203	94.28380
		(7.40266)	(7.40266)
6	0.443471	5.716203	94.28380
		(7.40437)	(7.40437)
7	0.443471	5.716203	94.28380
		(7.40464)	(7.40464)
8	0.443471	5.716203	94.28380
		(7.40466)	(7.40466)
9	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
10	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
11	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
12	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
13	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
14	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
15	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
16	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
17	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
18	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
19	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
20	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
21	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
22	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
23	0.443471	5.716203	94.28380

		(7.40468)	(7.40468)
24	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
25	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
26	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
27	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
28	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
29	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
30	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
31	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
32	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
33	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
34	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
35	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
36	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
37	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
38	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
39	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
40	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
41	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
42	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
43	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
44	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
45	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
46	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)
47	0.443471	5.716203	94.28380
		(7.40468)	(7.40468)

Variance Decomposition for stock return and inflation during post-Global Financial Crisis

Variance Decomposition of Y:			
Period	S.E.	Y	D(X)
1	3.126634	100.0000	0.000000
		(0.00000)	(0.00000)
2	3.330465	88.16046	11.83954
		(9.22894)	(9.22894)
3	3.365373	86.47601	13.52399
		(10.6768)	(10.6768)
4	3.374548	86.02657	13.97343
		(11.2961)	(11.2961)
5	3.376822	85.91636	14.08364
		(11.6108)	(11.6108)
6	3.377393	85.88867	14.11133
		(11.8046)	(11.8046)
7	3.377536	85.88173	14.11827
		(11.9161)	(11.9161)
8	3.377572	85.87999	14.12001
		(11.9830)	(11.9830)
9	3.377581	85.87956	14.12044
		(12.0247)	(12.0247)
10	3.377584	85.87945	14.12055
		(12.0517)	(12.0517)
11	3.377584	85.87942	14.12058
		(12.0696)	(12.0696)
12	3.377584	85.87941	14.12059
		(12.0820)	(12.0820)
13	3.377584	85.87941	14.12059
		(12.0909)	(12.0909)
14	3.377584	85.87941	14.12059
		(12.0973)	(12.0973)
15	3.377584	85.87941	14.12059
		(12.1022)	(12.1022)
16	3.377584	85.87941	14.12059
		(12.1059)	(12.1059)
17	3.377584	85.87941	14.12059
		(12.1089)	(12.1089)
18	3.377584	85.87941	14.12059
		(12.1111)	(12.1111)
19	3.377584	85.87941	14.12059
		(12.1130)	(12.1130)
20	3.377584	85.87941	14.12059
		(12.1144)	(12.1144)
21	3.377584	85.87941	14.12059
		(12.1156)	(12.1156)
22	3.377584	85.87941	14.12059

		(12.1166)	(12.1166)
23	3.377584	85.87941	14.12059
		(12.1173)	(12.1173)
24	3.377584	85.87941	14.12059
		(12.1180)	(12.1180)
25	3.377584	85.87941	14.12059
		(12.1185)	(12.1185)
26	3.377584	85.87941	14.12059
		(12.1189)	(12.1189)
27	3.377584	85.87941	14.12059
		(12.1192)	(12.1192)
28	3.377584	85.87941	14.12059
		(12.1195)	(12.1195)
29	3.377584	85.87941	14.12059
		(12.1197)	(12.1197)
30	3.377584	85.87941	14.12059
		(12.1199)	(12.1199)
31	3.377584	85.87941	14.12059
		(12.1201)	(12.1201)
32	3.377584	85.87941	14.12059
		(12.1202)	(12.1202)
33	3.377584	85.87941	14.12059
		(12.1203)	(12.1203)

Variance Decomposition of D(X):

Period	S.E.	Y	D(X)
1	0.752564	0.003872	99.99613
		(4.31729)	(4.31729)
2	0.822367	0.961495	99.03850
		(6.79315)	(6.79315)
3	0.839653	1.077256	98.92274
		(6.98384)	(6.98384)
4	0.843901	1.108128	98.89187
		(7.19833)	(7.19833)
5	0.844965	1.115620	98.88438
		(7.24392)	(7.24392)
6	0.845231	1.117501	98.88250
		(7.27484)	(7.27484)
7	0.845298	1.117972	98.88203
		(7.28720)	(7.28720)
8	0.845315	1.118090	98.88191
		(7.29475)	(7.29475)
9	0.845319	1.118120	98.88188
		(7.29881)	(7.29881)
10	0.845320	1.118127	98.88187
		(7.30132)	(7.30132)
11	0.845320	1.118129	98.88187
		(7.30285)	(7.30285)
12	0.845320	1.118129	98.88187

		(7.30381)	(7.30381)
13	0.845320	1.118129	98.88187
		(7.30442)	(7.30442)
14	0.845320	1.118129	98.88187
		(7.30481)	(7.30481)
15	0.845320	1.118129	98.88187
		(7.30506)	(7.30506)
16	0.845320	1.118129	98.88187
		(7.30523)	(7.30523)
17	0.845320	1.118129	98.88187
		(7.30533)	(7.30533)
18	0.845320	1.118129	98.88187
		(7.30540)	(7.30540)
19	0.845320	1.118129	98.88187
		(7.30545)	(7.30545)
20	0.845320	1.118129	98.88187
		(7.30548)	(7.30548)
21	0.845320	1.118129	98.88187
		(7.30551)	(7.30551)
22	0.845320	1.118129	98.88187
		(7.30552)	(7.30552)
23	0.845320	1.118129	98.88187
		(7.30553)	(7.30553)
24	0.845320	1.118129	98.88187
		(7.30554)	(7.30554)
25	0.845320	1.118129	98.88187
		(7.30554)	(7.30554)
26	0.845320	1.118129	98.88187
		(7.30555)	(7.30555)
27	0.845320	1.118129	98.88187
		(7.30555)	(7.30555)
28	0.845320	1.118129	98.88187
		(7.30555)	(7.30555)
29	0.845320	1.118129	98.88187
		(7.30555)	(7.30555)
30	0.845320	1.118129	98.88187
		(7.30556)	(7.30556)
31	0.845320	1.118129	98.88187
		(7.30556)	(7.30556)
32	0.845320	1.118129	98.88187
		(7.30556)	(7.30556)
33	0.845320	1.118129	98.88187
		(7.30556)	(7.30556)

Cholesky Ordering: Y D(X)
Standard Errors: Monte Carlo (100 repetitions)