The Interaction between the Stock Market, Monetary Policy and Inflation in Singapore and Malaysia

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Abstract:

This paper investigates and compares the interactions among the stock market, monetary policy, and inflation in both Singapore and Malaysia from 2005 through 2007 using bivariate and multivariate vector autoregressive cointegrating specifications. The Granger-causality test shows that for Malaysia there significant unidirectional relationships of inter-bank loan rates to inflation, and inflation to Kuala Lumpur stock returns. For Singapore there is only one significant marginal unidirectional Granger-causality relationship of inflation to Straits Times stock returns. There are no reciprocal relationships in either country. Based on changes in the stock market, the multivariate results show negative changes on the interbank interest rates in Malaysia and positive changes on inflation except for during the third lag, where changes are negative. In Singapore, multivariate results show that changes in the stock market lead to negative changes in interbank interest rates, and negative changes in inflation for two lags before the changes turn positive during the third lag. Changes in interbank interest rates and inflation have no significant effect on any of the three variables.

JEL Classifications: E52, E44, G10

Keywords: stock market returns, monetary policy, inflation, Granger-causality, VAR, impulse response function, Malaysia, Singapore

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1.0 Introduction

The performance of the stock market corresponds with a perception of the overall state of an economy. Equity prices are watched closely because they are considered to be very sensitive to economic conditions. One of the most important challenges among economists is understanding how monetary policy affects the stock market and other economic issues. Monetary policy is looked at as one of the main tools for stabilizing the economy. In the United States the Federal Reserve has the ability to set the discount rate in order to influence the country's money supply. Monetary authorities in other countries have different levels of control concerning economy-wide interest rates. A country's rate of inflation is also expected to have an effect upon the performance of the stock market.

Theories have been developed which look to explain how monetary policy and inflation interact with the stock market. The traditional view is that expansionary monetary policy will increase the demand for assets and will stimulate the economy. Expansionary monetary policy is used to increase the size of the money supply in a nation, which is achieved indirectly by decreasing interest rates. When there is a favorable interest rate in a country, asset prices will increase, leading inflation to increase. Once this occurs the central bank must contain the inflationary pressure through monetary policy.

This study aims to enhance the understanding about how changes in interbank interest rates and inflation affect the stock market of Malaysia and Singapore, and the differences between the two countries. It will look at whether any significant interdependencies exist among the three variables in each country.

Malaysia is considered to be a newly industrialized country which has recently been experiencing growth rates of 5 to 7% a year. At various times the KLSE was the most active exchange in the world, with trading volume exceeding even the NYSE. During the Asian Financial Crisis, however, the Kuala Lumpur Stock Exchange fell from 1300 to only 400 points in just a few weeks. Malaysia refused help from the IMF, which resulted in the country not being affected nearly as much as others in the area. In 1998 the country's GDP contracted 7.5%, but rebounded again in 1999. Malaysia began a plan of increased government spending in order to stimulate the economy. For years after the crisis they recorded budget deficits which were led by increased exports. Pressure of inflation has remained low since, and because of this the Bank Negara Malaysia has been able to implement low interest rates.

Singapore's economy is highly developed capital mixed economy which exhibits open business practices, stable prices, and one of the highest per capita GDPs in the world. Between 1960 and 1999 Singapore experienced average real growth of 8%. Different factors, including the Asian Financial Crisis, the worldwide electronics slump, and the SARS outbreak had in the past led to reductions in economic growth, however the country continuously managed to make significant recoveries following each crisis. Singapore has also been able to keep inflationary pressures low, allowing the central bank to be able to implement low interest rates

The decision to test for the interactions between the stock market, monetary policy, and inflation in these countries is because they are two quickly emerging and developing Asian economies which have both experienced significant growth in wake of the financial crisis. During the years that this paper examines, these two countries have both experienced their highest growth rates. The goal of this research is to see if monetary policy in Malaysia has had different effects on Malaysia's stock market than monetary policy implemented in Singapore has had there.

This paper examines whether or not changes in the stock markets of Malaysia and Singapore are caused by interest rates and inflation or vice versa, whether the changes are positive or negative, how long these changes remain significant, and how long after the change it takes the variable to return to normal. A multivariate cointegration test is used to determine the number of cointegrating vectors, which is then used to determine the general VEC model. After running a unit root test, the Granger-causality test is run to examine the relationships between variables in each country. Before running a multivariate test, bivariate VAR/VEC estimates are first attained between stock returns and inflation, and stock returns and interbank rates. These results examine how inflation and interbank rates interact upon the stock market independent of each other. Impulse response graphs are used for both bivariate and multivariate tests to determine how long shocks in the economy have an effect upon the different variables.

The paper is organized as follows: Section 2 is the literature review which examines the results of past studies dealing with the interactions of the same variables; Section 3 discusses data and empirical methodology which includes construction of the data, the multivariate cointegration test, definition of the variables, the unit root test, the Granger-causality test, and bivariate VAR/VEC estimates; Section 4 presents and discusses the empirical results of the tests,

consisting of the multivariate VAR/VEC estimates; Section 5 offers a conclusion, and is followed by Appendix A.

2.0 Literature Review

Studies have been conducted examining the interactions between the stock market, interbank rates, and inflation however none have tested the linkages of these three variables for Malaysia or Singapore. In regards to studies conducted examining the interactions in the United States, Lee (1992) has found using the VAR/VEC estimate that stock returns explain little variation in inflation while interest rates explain a large portion of the variation in inflation. Titman and Warga (1989), however, did find a statistically significant positive relation between stock returns and interest rate changes. Laopodis (2006) reports finding no relationship between monetary policy and stock prices.

Negative relationships between inflation and stock market returns have been found by several studies which include Fama (1981), Geske and Roll (1983), and Kaul (1987).

Cozier and Rahman (1988) find that in both the United States and Canada there is an inverse relationship between stock returns and inflation, however the Granger-causality test shows that inflation does not cause stock returns.

These studies have shown that there is no conclusive relationship between the stock market, monetary policy, and inflation. The aim of this research is to develop a model to explain the impact changes in interbank interest rates and inflation have on the stock markets of Malaysia and Singapore, and to compare the findings between the two countries.

3.0 Data and Empirical Methodology

3.1 Data Construction and Preliminary Statistical Investigation

Monthly data for 2005 to 2007 on the returns of the Kuala Lumpur and Straits Times stock exchanges comes from Econstats.com. Interbank overnight interest rates for Malaysia and Singapore were retrieved from each country's central bank website (www.bnm.gov.my and www.mas.gov.sg, respectively). Inflation rates based on the CPI come from the IMF database for the close of 2004. Monthly changes were calculated from data collected from the Reuters

database showing the monthly percentage change from the previous month for January 2005 through 2007. Table 1 summarizes all variable acronyms, their descriptions, and their sources.

Table 1: Variable Description and Data Source

Acronym	Description	Data Source
KLSM	Close for the Kuala Lumpur stock exchange on the last day of each month	Econstats.com
STSM	Close for the Straits Times stock exchange on the last day of each month	Econstats.com
KLIB	Singapore's interbank overnight interest rates on the last day of each month	Malaysia Central Bank Website www.bnm.gov.my
STIB	Malaysia's interbank overnight interest rates on the last day of each month	Singapore Central Bank Website www.mas.gov.sg
KLINF	Inflation based on Singapore's CPI; base = 100 in 2002	Reuters Database
STINF	Inflation based on Malaysia's CPI; base = 100 in 2002	Reuters Database

Table 2 reports descriptive statistics for the sample period for both Malaysia and Singapore.

Table 2: Summary Statistics

Descriptive statistics of monthly stock returns, interest rates, and inflation in Malaysia and Singapore, 2005-2007

Variable	Mean	SD	Skewness	Kurtosis	Min	Max
KLSM	1063.666	198.105	.725946	1.851828	860.73	1445.03
KLIB	3.21111	.368338	-0.593078	1.479094	2.67	3.56
KLINF	111.0955	2.742826	-0.378262	1.894236	106.27	115.4149
STSM	2746.449	547.6147	.539957	1.787898	2096.32	3805.7
STIB	2.348056	.762491	-0.425137	2.369497	.5	3.5
STINF	103.7077	1.776262	1.282517	4.209011	101.1841	108.6326

3.1.1 Cointegration Tests and Results

Table 3: Multivariate Cointegration Tests

CE(s) indicate cointegrating equations; 'none' means there is one cointegrating relationship binding all variables

Hypothesized number of CE(s)	Trace statistics	5% Critical Value	Max-Eigenvalue statistic	5% Critical Value
Malaysia				
None*	32.56104*	24.27596	23.47169*	17.79730

At most one	9.080347	12.32090	8.484029	11.22480
At most two	0.605318	4.129906	0.605318	4.129906
Singapore				
None*	29.53352*	24.27596	10.70479	17.79730
At most one	9.828724	12.32090	6.626326	11.22480
At most two	3.202398	4.129906	3.202398	4.129906

*Statistical significance at the 0.05 level

Multivariate cointegration was checked for using the Johansen Cointegration Test, which produces statistics for the number of cointegrating vectors. The lag interval as determined by a unit root test was in second differences. Table two presents the results of this procedure. It is reported that by looking at both the trace statistic and max-eigenvalue statistic in both Malaysia and Singapore, that one statistically significant trend exists that binds stock market returns, interbank interest rates, and inflation. For Malaysia this trend was significant under both the trace statistic and max-eigenvalue statistic, while for Singapore it was significant only under the trace statistic.

3.1.2 Definition of Variables

With the observed existence of one cointegrating relationship among the variables in X_t, the casual relationship among the three variables can be determined by estimating the following general VEC model:

$$\Delta X_t = \alpha + \gamma\beta X_{t-1} + \sum_{j=1}^{k} \tau_j \Delta X_{t-j} + \varepsilon_t \qquad (1)$$

where α is a constant vector representing a linear trend, and γ and β represent the speed of adjustment and the cointegration vector, respectively. The vector X_t consists of stock returns, $KLSR_t$ and $STSR_t$, overnight interbank interest rates, $KLIB_t$ and $STSR_t$, and inflation, $KLINF_t$ and $STINF_t$. The three cointegrated variables have the following joint VEC integration under a single cointegrating relationship:

$$\Delta IR_{t,t} = \alpha_1 + \gamma_1 e_{t-1} + \sum_{t=1}^{n1} \beta_{1,t} \Delta IR_{t,t} + \sum_{t=1}^{n2} \beta_{2,t} \Delta SM_{t,t} + \sum_{t=1}^{n3} \beta_{3,t} \Delta INF_{t,t} + e_{1,t}$$

(2)

$$\Delta SM_{j,t} = \alpha_2 + \gamma_2 e_{t-1} + \sum_{t=1}^{m1} \delta_{1,t} \Delta IR_{t,t} + \sum_{t=1}^{m2} \delta_{2,t} \Delta SM_{j,t} + \sum_{t=1}^{m3} \delta_{3,t} \Delta INF_{t,t} + e_{2,t}$$

(3)

$$\Delta INF_{i,t} = \alpha_3 + \gamma_3 e_{t-1} + \sum_{t-1}^{l1} \square \emptyset_{1,t} \Delta IR_{i,t} + \sum_{t-1}^{l2} \square \emptyset_{2,t} \Delta SM_{j,t} + \sum_{t-1}^{l3} \emptyset_{3,t} \Delta INF_{i,t} + e_{3,t}$$

(4)

where Δ is the first difference operator, and e_1, e_2, and e_3 are stationary random error terms. The n's m's and l's are the orders of the autoregressive process for a given variable. The e_{t-1} magnitudes are the EC terms from the cointegrating equations so that changes in the variables are partly based on past values of e_t. Equations (2) – (4) are used to evaluate the short- and long-run interactions among the three variables. The short-run interactions between two variables are exhibited by the $\beta_{1,i}$, $\delta_{2,t}$, or $\emptyset_{2,i}$ terms. If one or more of these coefficients is nonzero and significant, then there is a short-run effect on the variable. The existence of a long-run relationship between variables depends on the significance of the γ_1 and γ_2 coefficients.

3.2 Data

3.2.1 Unit Root Tests

The ADF Fisher Unit Root test uses an autoregressive model to test whether a time series is non-stationary by determining whether a unit root is present. In the case of this test, for both countries the second difference must be taken before the data is considered to be stationary. Stationary data must be achieved before the Granger-causality test can be run and prior to determining VAR/VEC estimates.

Table 4: ADF Fisher Unit Root Test

Malaysia		
Method	Statistic	Probability
ADF – Fisher Chi-Square	87.9737	0.0000
ADF – Choi Z-stat	-8.4082	0.0000
Intermediate ADF Test Results: **Second Difference**		
Series	Probability	
KLIB	0.0001	
KLINF	0.0000	
KLSM	0.0000	

Singapore		
Method	Statistic	Probability
ADF – Fisher Chi-Square	89.4968	0.0000
ADF – Choi Z-stat	-8.51665	0.0000
Intermediate ADF Test Results: **Second Difference**		
Series	Probability	
STIB	0.0000	
STINF	0.0000	
STSM	0.0001	

3.2.2 Granger-Causality Test Results

Before estimating the multivariate VAR/VEC models among the three variables, the bivariate estimates for pairs of variables are first examined. The Granger-causality estimates appear in table four.

Table 5: Granger-Causality Test

Arrows show the direction of Granger causality tested; t-statistics are in parentheses

Country	Granger Causality Test		
Malaysia	KLINF→ KLIB	F-stat = 0.54161	(0.8032)
	KLIB → KLINF	F-stat = 3.13569**	(0.0414)
	KLSM → KLIB	F-stat = 1.18253	(0.3880)
	KLIB → KLSM	F-stat = 1.88898	(0.1622)
	KLSM → KLINF	F-stat = 0.79871	(0.6163)
	KLINF → KLSM	F-stat = 2.60849**	(0.0714)
Singapore	STINF → STIB	F-stat = 1.15285	(0.3298)
	STIB → STINF	F-stat = 0.91186	(0.4130)
	STSM → STIB	F-stat = 1.32596	(0.2812)
	STIB → STSM	F-stat = 1.14381	(0.3326)
	STSM → STINF	F-stat = 2.36701	(0.1116)
	STINF → STSM	F-stat = 3.61680**	(0.0396)

**Statistical significance at the 0.01 level

The optimal lag length for Malaysia is two months, and for Singapore it is three months. For Malaysia the significant unidirectional relationships are KLIB to KLINF, and KLINF to KLSM. For Singapore there is only one significant marginal unidirectional Granger-causality relationship of STINF to STSM. There are no reciprocal relationships in either country.

3.2.3 Bivariate VAR/VEC Estimates

Table 6: Bivariate VAR/VEC Estimates

Estimates of two-equation systems based on Equations (1) through (4). t-statistics are in parentheses

Panel A: Stock returns and inflation

	Malaysia		Singapore	
	$\Delta KLSM_t$	$\Delta KLINF_t$	$\Delta STSM_t$	$\Delta STINF_t$
Constant	44.16361 (2.12439)	0.321324 (1.84593)	58.91450 (1.26839)	.504142 (2.06045)
ΔSM_{t-1}	-0.125850 (-.60122)	0.000492* (0.28074)	0.073909 (0.27895)	-0.001749* (-1.25278)
ΔSM_{t-2}	-0.006719 (-0.03296)	0.001652* (0.96785)	-0.50349 (-0.19102)	-0.000883* (-0.63612)
ΔSM_{t-3}	0.173933 (0.86548)	-0.002095* (-1.24521)	-0.295712 (-1.10707)	-0.00815* (-0.57945)
ΔSM_{t-4}	-0.259187 (-1.20404)	-0.002038* (-1.13053)	0.259939 (0.94383)	-0.002077* (-1.43151)
ΔINF_{t-1}	-26.74194 (-1.10332)	-0.219347 (-1.08080)	-55.08434 (-1.43700)	-0.241093 (-1.19397)
ΔINF_{t-2}	-20.36029 (-0.82461)	-0.015764 (-0.07625)	65.33357 (1.52849)	-0.180160 (-0.80014)
ΔINF_{t-3}	-27.66862 (-1.14932)	-0.020617 (-0.10228)	-42.39851 (-0.97115)	0.339398 (1.47535)
ΔINF_{t-4}	-11.55920 (-0.48646)	0.080268 (0.40343)	-52.99225 (-1.22999)	-0.031884 (-0.14049)
Adjusted R^2	-0.092601	-0.82997	0.146380	0.167805

*Statistical significance at the .05 level

Panels A and B of Table 5 display the bivariate VAR/VEC estimates between the stock market paired with interbank interest rates and inflation.

The results of the bivariate VAR/VEC test shows that for four lags the changes in the Kuala Lumpur stock returns predict changes in Malaysia's inflation. The changes start out small after the first lag (which has a coefficient of 0.000492) and then becomes stronger during the second lag. However, by the third and fourth lag the changes become negative, with a stronger coefficient during the third lag (-0.0002095) than the fourth lag (-0.002038). The estimates for stock returns do not reveal an impact of either variable's past changes on the stock returns, nor does past changes in inflation have any impact on present inflation.

The bivariate estimates for Singapore show that for four lags the changes in the Straits Times stock returns predict changes in the country's inflation. Unlike the results for Malaysia, however, the changes begin negative (-0.001749) during the first lag and then become less strongly negative through the second and third lags before turning more strongly negative again during the fourth lag. Similarly to the results for Malaysia, the estimates for stock returns do not reveal an impact of either variable's past changes on stock returns, nor do past changes in inflation have any impact on present inflation.

Panel B: Stock returns and interbank rates

	Malaysia		Singapore	
	$\Delta KLSM_t$	$\Delta KLIB_t$	$\Delta STSM_t$	$\Delta STIB_t$
Constant	34.26658 (2.92015)	0.017819 (.79511)	41.88649 (1.05455)	0.156971 (0.82192)
ΔSM_{t-1}	-0.17560 (-0.86472)	-0.000106* (-0.28104)	-0.52613 (-0.23343)	-0.000300* (-0.27654)
ΔSM_{t-2}	-0.061249 (-0.30916)	-0.000120* (-0.31647)	-.280344 (-1.03752)	-0.002050* (-1.57822)
ΔSM_{t-3}	0.124295 (0.64025)	-4.90E-05* (-0.13218)	0.044281 (0.15250)	-0.001031* (-0.73815)
ΔSM_{t-4}	-0.278187 (-1.38381)	-0.000286* (-0.74449)	0.306559 (1.06320)	0.000278* (0.20035)
ΔIB_{t-1}	-37.10213 (-0.34737)	-0.144267 (-0.70722)	-20.34380 (-0.43845)	-0.461835 (-2.07011)
ΔIB_{t-2}	-99.52809 (-0.94479)	0.512994 (2.54976)	36.24685 (0.71227)	-0.496089 (-2.02745)
ΔIB_{t-3}	-165.7910 (-1.41014)	0.144945 (0.64551)	20.12884 (0.40008)	-0.377604) (-1.56092)
ΔIB_{t-4}	-86.03998 (-0.73900)	0.124406 (0.55948)	31.51636 (0.72058)	-0.272138 (-1.29405)
Adjusted R^2	-0.013118	0.201362	-0.216179	0.240118

*Statistical significance at the .05 level

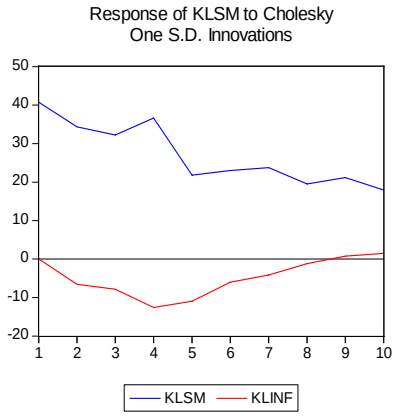
The results of the bivariate VAR/VEC test for Malaysia show that for four lags the mutual, short-run relationships between changes in the stock market affecting interbank rates are statistically significant and negative for Malaysia. From the first lag to the second lag the changes become more strongly negative (-0.000106 to -0.000120), the third lag becomes less strongly negative ($-4.90E^{-5}$), and during the fourth lag the changes become the most strongly negative (-0.000286). However, the estimates for changes in stock returns do not have a significant impact on interbank interest rates or on the Kuala Lumpur's stock returns. Past changes in interbank rates also have no impact on present rates.

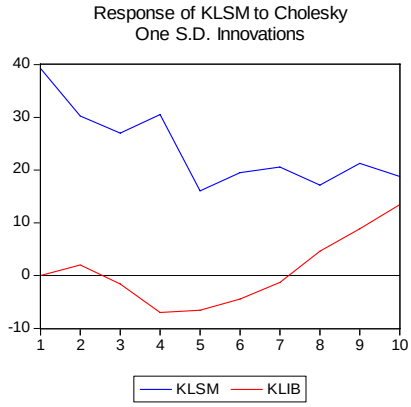
The bivariate estimates between the Straits Times stock return and interbank interest rates in Singapore show negative, statistically significant results for four lags for the changes in the stock market predicting changes in the interbank rates. The changes become more strongly negative from the first to the second lag (-0.000300 to -0.002050), and then become gradually less strongly negative during the third and fourth lags. The test shows no statistically significant impact of stock returns on interbank rates or on the stock market itself, and also there is no impact of changes in interbank rates upon present rates.

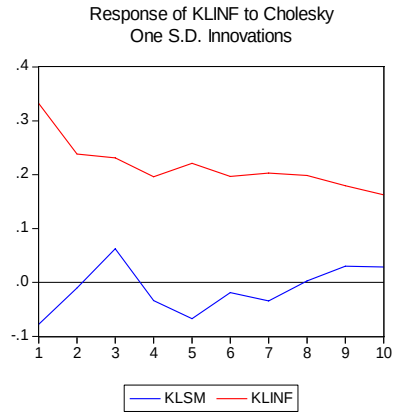
3.2.4 Impulse Response Graphs

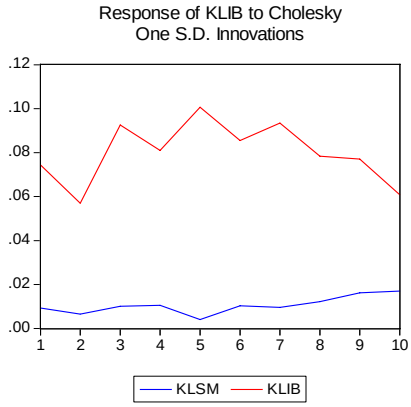
Figure 1: Impulse Response Graphs

Panel A: Malaysia



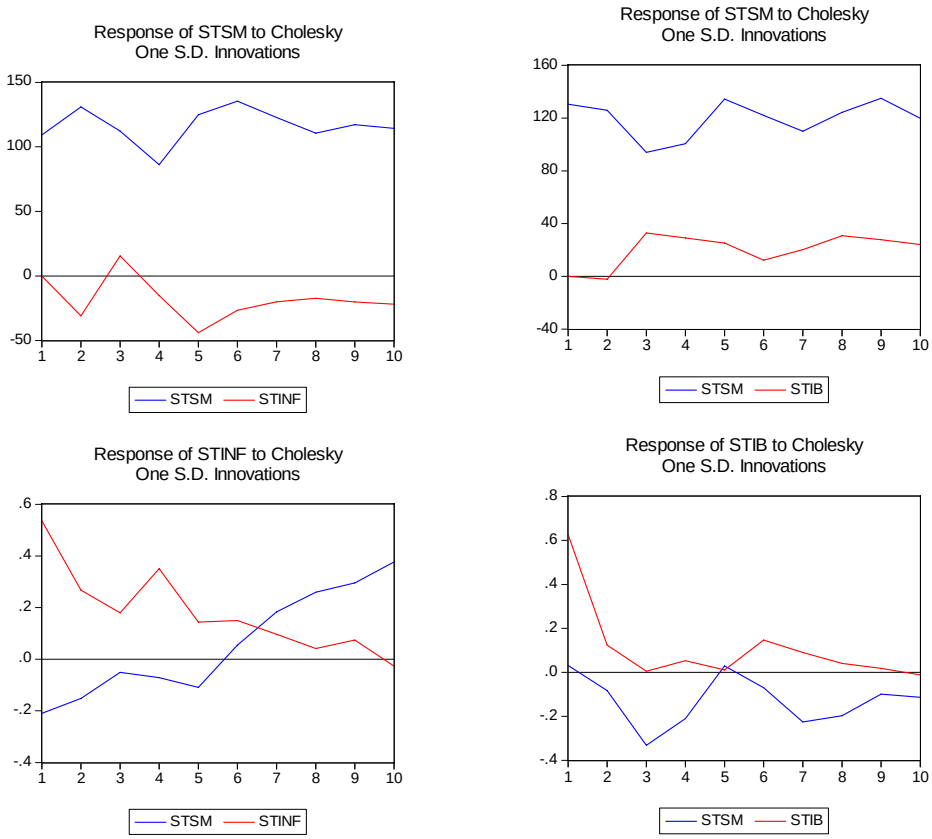






The impulse response graphs show the response of the Kuala Lumpur stock returns to a one standard deviation shock in inflation. The result is positive, and although after ten months it has still not died out, it slowly has less of a response over time. The response of the Kuala Lumpur stock returns to a shock in interbank interest rates is also positive and slowly becomes less positive over the ten month period. However, this response also has not died out by the end of the observed period.

Panel B: Singapore



The response of the Straits Times stock index to a one standard deviation shock in inflation is strongly positive. The impact varies over an eight month time, but continues to stay positive. After the eighth month the response then dies out. The response of the stock index to a one standard deviation shock in the interbank interest rates is also initially strongly positive. Over the ten month period the impact varies, however by the end of the period the response still has not died out.

4.0 Empirical Results

4.1 Multivariate VAR/VEC Estimates

Table 6 presents the multivariate estimates from the VEC model for both Malaysia and Singapore. Kuala Lumpur returns in Malaysia for the first three lags return negative impacts on the country's interbank loan rates. The changes grow more strongly negative from the first to second lag, and then again become less negative during the third lag. The stock market returns positively affect inflation rates in Malaysia for the first and second lags, but during the third lag

the impact becomes negative. Kuala Lumpur returns have no impact upon themselves at any lag. Also, changes in neither interbank interest rates nor inflation have any statistically significant impact on the stock returns, interbank interest rates, or inflation.

Table 7: Multivariate VAR/VEC Estimates

	Malaysia			Singapore		
	$\Delta KLSM_t$	$\Delta KLIB_t$	$\Delta KLINF_t$	$\Delta STSM_t$	$\Delta STIB_t$	$\Delta STINF_t$
Constant	33.67378 (1.98304)	0.017970 (0.58555)	0.276943 (2.74989)	74.50307 (1.87644)	0.289865 (1.10219)	0.286607 (1.32940)
ΔSM_{t-1}	-0.167981 (-0.81927)	-0.000157* (-0.42416)	0.000762* (0.62651)	0.113677 (0.46059)	-0.001401* (-0.85696)	-0.001522* (-1.13591)
ΔSM_{t-2}	-0.006814 (-0.03526)	-0.000256* (-0.73163)	0.001227* (1.07072)	-0.150496 (-0.56271)	-0.002941* (-1.66034)	-0.00308* (-0.21197)
ΔSM_{t-3}	0.171475 (0.85050)	-0.000187* (-0.51348)	-0.001975* (-1.65142)	-.351034 (-1.40660)	-0.000471* (-0.28490)	0.000262* (0.19348)
ΔIB_{t-1}	-13.94252 (-0.11780)	-0.079759 (-0.37288)	1.247146 (1.77671)	-29.87748 (-0.90639)	-0.608116 (-2.78523)	0.176650 (0.98695)
ΔIB_{t-2}	-77.43331 (-0.62705)	0.526864 (2.36077)	-0.247367 (-0.33776)	38.41194 (1.03000)	-0.529476 (-2.14347)	0.003761 (0.01857)
ΔIB_{t-3}	-130.7026 (-1.13288)	0.065006 (0.31177)	2.496058 (3.64788)	-36.69107 (-0.90046)	-0.236640 (-0.95176)	0.254190 (1.24712)
ΔINF_{t-1}	-13.93420 (-0.52836)	0.065008 (1.36393)	-0.045051 (-0.28803)	-86.05422 (-2.40554)	-0.053618 (-0.22628)	-0.229921 (-1.18366)
ΔINF_{t-2}	-4.903865 (-0.17997)	-0.014708 (-0.29866)	-0.427785 (-2.64710)	65.76075 (1.57235)	-0.224283 (-0.80962)	-0.198700 (-0.87496)
ΔINF_{t-3}	-19.31979 (-0.68075)	-0.040840 (-0.79626)	0.100230 (0.59548)	-39.83637 (-0.93500)	-0.046439 (-0.16456)	0.372451 (1.60995)
Adjusted R^2	-0.094489	0.461450	0.658274	0.188638	0.040417	0.168883

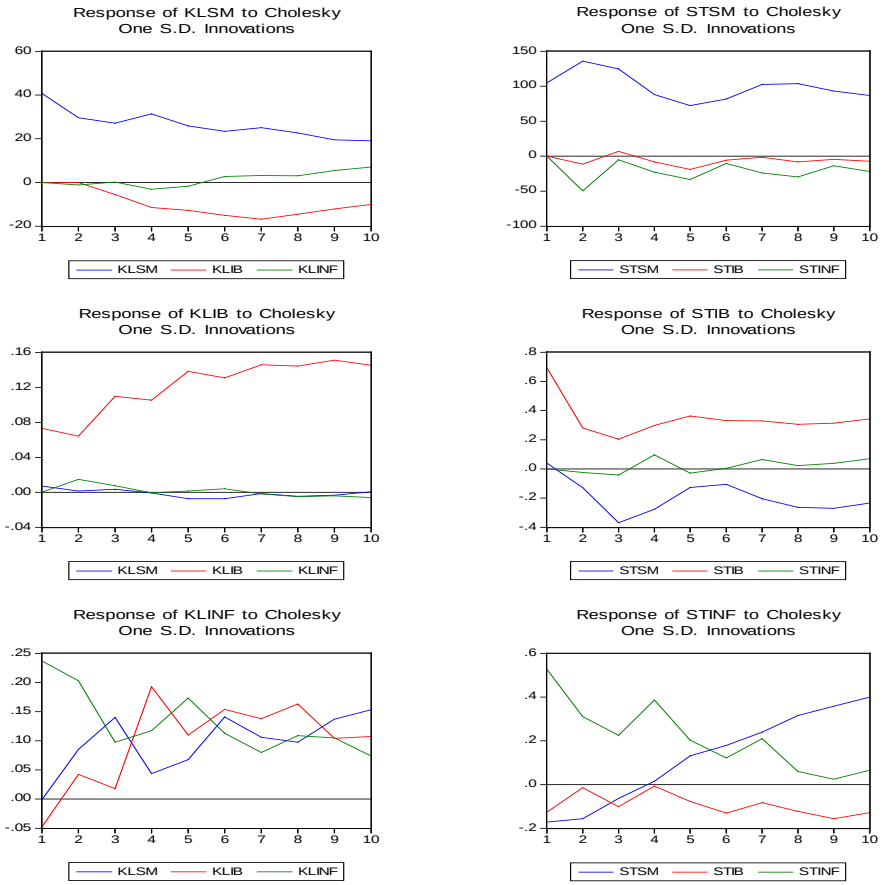
*Statistical significance at the .05 level

Results for Singapore show that Straits Times returns negatively affect interbank loan rates for three lags. The changes grow more strongly negative from the first to third lag. Also, returns on the stock market have a statistically significant impact on inflation rates. During the first lag the impact is strongly negative, and becomes less strongly negative during the second lag. However, during the third lag the impact is positive. These estimates also show that changes in Singapore's interbank loan rates and inflation both have no impact on Straits Times returns, interest rates, or inflation. Straits Times returns have no impact upon themselves at any lag.

4.2 Impulse Response Graphs

In response to a one standard deviation shock in both interbank rates and inflation, the Kuala Lumpur stock index has a positive reaction initially of about 40 points. Over an eight month period the reaction becomes less positive, and dies out around the ninth month. The

response to the same situation on the Straits Times index is an initial positive response of about 100 points. Over the observed ten months period the response varies, always staying positive, and at the end of the period the response still has not died out.



5.0 Conslusion

This paper examines the interactions among the stock market, monetary policy, and inflation in Malaysia and Singapore. The analysis uses bivariate and multivariate VAR/VEC models to test for statistical significant changes among variables. The bivariate results for the Kuala Lumpur stock index returns and inflation show initial positive changes which become negative during the third lag, and between the Straits Times stock index returns and inflation the changes are negative through four lags. In Malaysia there is a negative change on interest rates based on changes in the Kuala Lumpur stock index. However, in Singapore there is a negative change in interest rates based on changes in the Straits Times stock index through three lags, and then a positive change during the fourth lag. Based on changes in the stock market, the multivariate results show negative changes on the interbank interest rates in Malaysia and

positive changes on inflation except for during the third lag where changes are negative. In Singapore, multivariate results show that changes in the stock market lead to negative changes in interbank interest rates, and negative changes in inflation for two lags before the changes turn positive during the third lag. Changes in interbank interest rates and inflation have no significant effect on any of the three variables.

It is not possible to say that there is a consistent relationship between monetary policy and the stock markets in Malaysia and Singapore since changes in variables have different effects in one country than in the other. According to the Granger-causality test, there are two significant unidirectional relationships (KLIB to KLINF, and KLINF to KSM) in Malaysia, while there is only one (STINF to STSM) in Singapore.

Bibliography

Cozier, B.V. and Rahman, A.H., 1988. Stock Returns, Inflation, and Real Activity in Canada. *The Canadian Journal of Economics* 21(4), 759 – 774.

Fama, E.F., 1981. Stock Returns, Real Activity, Inflation and Money, *American Economic Review* 71(4), 545 – 565.

Geske, R. and Roll, R, 1983. The Fiscal and Monetary Linkage between Stock Returns and Inflation, *Journal of Finance* 38(1), 1 – 33.

Kaul, G., 1987. Stock Returns and Inflation: The Role of Monetary Sector, *Journal of Financial Economics* 18, 253 – 176.

Laopodis, N.T, 2006. Dynamic Interactions among the Stock Market, Federal Funds Rate, Inflation, and Economic Activity, *The Financial Review 41*, 513 – 545.

Lee, B.S., 1992. Casual Relations among Stock Returns, Interest Rates, Real Activity, and Inflation, *Journal of Finance* 47(4), 1591 – 1603.

Titman, S. and Warga, A, 1989. Stock Returns as Predictors of Interest Rates and Inflation, *The Journal of Financial and Quantitative Analysis* 24(1), 47 – 58.