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THE RELATIONSHIP BETWEEN INFLATION AND STOCK MARKET: EVIDENCE FROM MALAYSIA, UNITED STATES AND CHINA.

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ABSTRACT

The study aims to find the relationship between inflation and stock returns. Inflation was distinguished as expected and unexpected inflation. The study revealed that there is long run relationship between expected and unexpected inflation with stock returns but there is no short run relationship between these variables for Malaysia and US but it exists for China.

1.1 PROBLEM STATEMENT

The stock markets cointegration has been subjected to the intensive studies, particularly for the developed countries as argued by Gerrit and Yuce(1999), Pascual (2002), Fraser and Oyefeso(2000). Nevertheless, the study in the emerging markets also gaining popularity among the researchers especially after the incident of the Asian turbulent time of Financial Crisis in 1997 by Masih and Masih (1999), Jang and Sul (2002). Other studies have examined the stock market integration by combining both developed and emerging countries, just name a few, from Moon(2001) and Elyasiani(1998).

There are risks with any financial investments in any country. Investing in U.S., China and Malaysia stock market are no exception and even more risky to foreigners. Although investing in the China ADR on NYSE can be as risky as investing in a US company, investors intend to identify whether portfolio diversification is applied in developing country such as Malaysia and emerging country such as China to compensate risk of investment while gaining profit. Besides that, it is also important for global portfolio managers and global economic policy makers. Once the trend of stock market is known, it is quite easy to make speculation. This study is to re-examine whether the stock return rate in Malaysia, China and U.S are closely related to expected and unexpected inflation in long run. It is very important to note here that the stock market is all about speculations.

In financial theory, inflation rate reflected by consumer price index (CPI) represents an overall upward price movement of goods and services. Inflation happens either when prices go up or when it takes more money to buy the same items. Researchers believe that the rates of inflation will influence the stock market volatility and risk. Most emerging equity markets in Asia have been experiencing sell-downs in recent weeks with foreign funds shifting their money to a more matured market even as inflation in the region becomes more of a concern. Funds will began to flow out from this region largely on the theme of inflation, the worst of which is not over with the increase in the price of oil. In addition extreme weather conditions in most parts of food producing countires such as Russia, Latin America, Australia and China have kept food grain prices at historical high levels globally, pushing inflation levels up. And emerging markets especially those in Asia, where grains are consumed the most, have been most affected.

Low income nations like India and Philipines are the worst hit as it means that the people there now have to spend a huge amount of their limited income on food, living little else to buy other things which can help to spur economic growth. Selling of shares in markets of India and the Philippines was heavy in the whole of last week, compared to their generally low trading volumes and foreign share holdings with an estimated outflow of US$178 million and US$48 million respectively, based on the information compiled by MIDF Research (2011). Foreign funds turned net sellers in both nations in early January. In Malaysia, inflation is still relatively low at

2.2 percent in December 2010. However this has not stopped foreign funds from chasing out of the market following healthy gains last year.

In Malaysia according to data compiled by Maybank Research, foreign funds had turned sellers last week, selling off RM 1.18 billion worth of shares. OSK Research claimed that funds were taking profit following the stellar gains last year made by most emerging markets. In the case of the Malaysian market, it yield a 31 percent return in US dollar term. The profit taking is exacerbated by a host of factors including the fact that developed economics have started to look more attractive, having been under invested since the global financial crisis of 2008/2009 and given their path, albeit a rocky one to a recovery one. Recent Bursa Saham data also revealed that foreign investors participation in the local stock market dropped as early as last month as foreign buyers net purchases took a dip. Net purchases of local stocks by foreigners fell to RM 100 million in January, a steep fall from RM 2.6 billion in December. Thus it confirms that shift of funds can be influenced by the economic growth of the nation where inflation plays a critical role.

Inflation rate can be divided into expected inflation and unexpected inflation. Expected inflation rate is a result that economists and consumers plan on year to year. If inflation is expected, people are less likely to hold cash, over time the money looses value due to inflation. While, the unexpected inflation is beyond what was expected by economics and consumers. In general, the effects of unexpected inflation are much more harmful than the effects of expected inflation. The major effect of unexpected inflation is a redistribution of wealth either from borrowers to lenders or in contrast. Inflation creates a major problem for analyzing stock market returns over a long period of time. In the United States where inflation has averaged between 2 percent and 5 percent for most years since World War II, the inflation creates a natural bias in the performance of the stock market. Almost every country in the world suffered their worst stock market declines as measured in real values, during a period of high inflation or hyperinflation as stocks and the other financial assets failed to keep up with the increases in the prices of goods. In addition, also creates extreme volatility in stock market return. If the government lacks of the power to resolve the inflation, the stock will collapse in value. Stock can be losing over 95 percent of their real value. Moreover, history has shown that in periods of inflation, dividends rarely keep with increase in consumer prices and dividend decline in real term, further reducing investor total return as argued by Taylor (1996).

Inflation and other macroeconomic variables seem to substantially affect the behavior of financial aggregates, such as stock prices. At the same time, there are some literature review have been different arguments on the manner of the variables that have an impact on stock prices. According to economic theory, interest rate movement has a close relationship to inflation movement in order to compensate lender for changes in the real value of nominal interest rate payments. This also explained by the Fisher effect theory. However, interest rates do not always move exactly with inflation because they reflect expectations of future inflation rather than current inflation.

Inflation seems to affect stock prices but the relationship between unexpected inflation and stock prices is unclear. While some studies such as Fama and Schwert (1977), Schwert (1981) and Fama (1981) found a significant negative relationship between stock market and inflation. However, some studies from Pearce and Roley (1985) and Hardouvelis (1988) found no significant relationship between the two variables. Since the relationship between inflation and stock prices is not clear, it is important for researcher to find out the behavior the variables.

However, different period of research may have consistent different findings. Superficially the global securities appeared to resemble at the end of the 20th century the situation that had existed before the First World War. This has led some to see the history of financial markets in the 20th century, where what had existed at the beginning was the same as that at the end but had been radically different in the intervening years. It fails to capture the fact that important differences existed between national securities markets both at the beginning and end of the 20th century, in terms of their own structure, function and organization and the environment within which they operated by Michie (2006).

In addition, stock return represents activeness of the market. Unfortunately, stock return can be influence by other macroeconomic activities and thus create the global phenomenon. Especially the current increasing inflationary pressures, it will result the rising international prices of energy and commodities prices. Nevertheless, the impact on inflation and GDP together would supply the shock to stock market for the country. It also increases the social cost of the country. If unaddressed carefully by the policy-makers, crises may create problems of social instability and thus can lead to political crisis. Potentially important relationships between

macroeconomic variables and stock prices in Malaysia, China and U.S. markets have not been precisely studied in recently.

NBER President Martin Feldstein said in the early 2004: "It is clear that the revised data have made our original March date for the start of the recession much too late. We are still waiting for additional monthly data before making a final judgment. Until we have the additional data, we cannot make a decision." This statement show that how important the data as references to make the decision making for economy. The more data obtain the more information can gain. Meanwhile, this paper also to examine and compare whether exist the different relationship between these variables as experienced by many other economies in the region and major economies including the United States and Europe Union, Malaysia's economy has also experienced similar episodes of high regimes of inflation in year 1973 to 1974 and low regimes of inflation in year 1985 to 1987. The economic advisor of Am Investment Bank Group, Mustafa Mohd Nor (2008) reviewed Malaysian economy had been witnessing an upward inflation trend since the third quarter of 2007. The rate of Malaysia's inflation was rising from 1.5 percent to 1.8 percent in second quarter of 2007. The rate escalated to 2.2 percent before rising to 2.6 percent in 2008. The latest data showed that inflation had increased further in April 2008 to 3 percent arising mainly due to higher food prices. Malaysia's economic prospect would also be affected by the weakening of global demand and rising inflation but the macroeconomic agenda will continue to aim for a balanced growth. In addition, the Bursa Malaysia on March 2008 had suspended the stock exchanges for one hour due to composite index fall by more than 10 percent or 130 points to 1166.32 points. Bursa Malaysia has since then focused on various initiatives aimed at improving its product and service offerings, increasing the liquidity and velocity of its markets, improving the efficiency of its businesses and achieving economies of scale in its operations. Besides that, the Malaysia's Consumer Price Index (CPI) has found reached the highest level from the past of 27 years, following by the dropping in GDP in June 2008, which is increasing of 7.7 percent inflation rate lead the GDP growth rate drop to 5.5 percent. On that news, there are the impact of inflation on output growth is also one of the main issues examined in macroeconomics.

Nevertheless, the study in the emerging markets also gaining popularity among researchers particularly after individual of Asian turbulent time of Financial Crisis in 1997. In Asia, China economy has gained importance in the last few years. The Chinese stock market, as often measured by Shanghai stock exchange composite index has been the best performing stock index in the world so far this year which up to 50 percent and generated a lot of press coverage and speculation on China Stock Market bubble and Chinese stock market crash. Even U.S. Fed chairman Greenspan predicted an upcoming China market downturn. For comparison, the United States has a total market capitalization of about $20 trillion while the GDP of USA is roughly 5 times that of China. There are huge ups and downs in the Chinese stock market prices made many people believe in China's stock market's growth potential.
variables and the inflation in the long run for Malaysia, US and China's economic by examine the data and contribute some policy option for researcher or policy maker to make decision.

1.2 RESEARCH OBJECTIVES

The overall objectives in this study to re-examine the relationship between inflation and the stock market based on the level of economy development of the three countries which are Malaysia, China and US. The specific objectives of the study are to examine whether expected and unexpected inflation has significant relationship and influence to stock market of the nation in the short run and long run for US, Malaysia and China.

2.0 LITERATURE REVIEW

Laopodis (2005) examines the dynamic interaction among the equity market, economic activity, inflation, and monetary policy**.** Researcher looks into the first issue concerning the role of monetary policy. Advance econometrics using cointegration, causality and error-methods using bivariate and multivariate Vector Autoregressive (VAR) or multivariate Vector Error-Correction (VEC) models. With bivariate results, they found that the real stock returns-inflation pair weakly support negative correlation between stock market and inflation, meanwhile stock market can hedge against inflation. On the other hand, bivariate results claims a negative and unidirectional relationship from stock returns to FED funds rate in the 1990s but a very weak one in 1970s. With multivariate, they found strong support of short-term linkages in the 1970s along with the same unidirectional linkage between the two in the 1990s. This showed that stock returns do not respond positively to monetary easing, which took place during the 1990s, or negatively to monetary tightening. There were no consistent dynamic relationship between monetary policy and stock prices. This conclusion seems to contradict Fama's (1981) proxy hypothesis, which said that inflation and real activity were negatively related but real activity and real stock returns were positively related.

Ioannides, Katrakilidis and Lake (2002) were investigating the relationship between stock market returns and inflation rate for Greece over the period 1985 to 2000. There were arguments that stock market can hedge inflation in line with to Fisher's hypothesis. Another argument was that the real stock market was immune to inflation pressures. This study attempted to investigate the three types of relationship whether firstly the stock market had been a safe place for investors in Greece. Empirical evidence classified the relationships into three types. First, there is positive relationship between the stock market returns and inflation. They used ARDL cointegration technique in conjunction with Granger Causality to test the long-run and short-run effects between the involved variables as well as the direction of these effects. There was a long run negative relationship from inflation to stock market returns over the first sub-period. The findings were consistent with Fama (1981). Bidirectional long run causality resulted in second sub-period. There was a causal effect running from stock market returns to inflation. Evidence were also found that a causal effect running from inflation to stock market returns in second sub-period. The second sub-period showed mixed relationship was also consistent with Spyrou (2001).

Madsen (2004) used Fisher's hypothesis to estimates the relationship between share returns and inflation. Numerous papers were found that share returns are not hedged against expected inflation and have interpreted this as evidence against the Fisher hypothesis. Fisher hypothesis were tested for the process governing inflation, measurement of inflation expectations, and the time aggregation of the data. The paper demonstrated theoretically and empirically standard tests of the Fisher hypothesis can be directly misleading and often do not reveal much about the validity of the Fisher hypothesis that would be explained by differences in model specification, time aggregation of the data, inflation persistence in the data sample and whether instruments have been used for expected inflation. The interaction between model specification and inflation persistence was found to be particularly influential. The more persistent was inflation the more favorable were estimates which used nominal share returns as the dependent variable to the Fisher hypothesis. The opposite result applies used real *ex post* share returns as the dependent variable, except in the case where inflation expectations are measured by the actual rate of inflation. Furthermore, tests were more favorable to the Fisher hypothesis when low frequency data and instruments for expected inflation were used under the circumstances where nominal share returns were used as the dependent variable.

Wei (2007) investigates the relation between unexpected inflation and stock returns. The study showed correlations between unexpected inflation and nominal equity return of Fama-French book-to-market and size portfolios across the business cycle. The study found four main finding. Firstly, there was strong evidence that equity returns respond more negatively to unexpected inflation during economic contractions than expansions. Secondly, the equity returns of firms with lower book-to-market ratio and medium size are more negatively correlated with unexpected inflation. These were also portfolios whose correlations with unexpected inflation demonstrate strong asymmetric patterns across the business cycle. Third, the excess return was the only factor responded to changes in expected and unexpected inflation. Meanwhile, the cross-sectional patterns of inflation betas across book-to-market and size portfolios reflect their heterogeneous factor loadings on this common factor. Lastly, the cyclical patterns of inflation beta would not explain based solely on how bond prices react to unexpected inflation. The return on the 30-year government bond declines in response to unexpected inflation and the magnitude of responses does not differ significantly across the business cycle. It appears that information on future growth rates and risk premium were important elements behind the cyclical patterns of inflation beta. The proxy of risk premium raises more in response to unexpected inflation in recessions as compared to expansions, contributing to the asymmetric inflation beta across the business cycle.

Merika and Anna (2006) re-examine Fama's proxy hypothesis which states that inflation was negatively related to real economic activity and the negative relationship between stock returns and inflation reflects the positive impact of real variables on stock returns. The paper tests the hypothesis that stock prices respond negatively to positive real economic activity. The strong economic activity causes inflation and induces policy makers implemented a counter cyclical macroeconomic policy. Negative stock price responded to news of an improving economy was justified if the expected effect of a contractionary policy was greater than the expected output gain the news suggest. By VAR model test, employment appears to be significant while it exerts a strong negative effect on stock returns. The reason for increase in employment forecasts inflation which was expected to erode firms' profits while expressed through falling stock returns.

Al-Rjoub (2003) was investigates the effect of unexpected inflation on stock returns in five MENA countries: Bahrain, Egypt, Jordan, Oman, and Saudia Arabia. The researcher used Threshold GARCH and Exponential GARCH to catch the news affect that unexpected inflation may have on stock returns. The Exponential GARCH resulted the unexpected inflation had a negative impact on stock market returns in all the MENA countries. The impact is high and significant in Bahrain, Egypt, Jordan and Saudia Arabia and Oman. The leverage effect for

Bahrain is negative indicated the existence of the leverage effect in stock market return during the 1999:01 through 2002:07 sample periods. The impact is asymmetric. The leverage effect for Egypt is positive indicated the non existence of the leverage effect in stock market return during the 1999:01 through 2002:07 sample period. Results were similar for Jordan. For Oman and Saudia Arabia there was no news effect of inflation on stock market data. On the other hand, the Threshold GARCH resulted unexpected inflation, a negative effect on Bahraini (-164.74 with P-value of (0.00)), Jordanian (-92.28 with P-value (0.05)), and Saudi stock market return (-292.2 With P-value of (0.00)). The coefficients of unexpected inflation were negative and highly significant. Only Oman and Egypt shown insignificant results where unexpected inflation shows no effect on stock market return data in the sample period. The study found negative and strongly significant relationship between unexpected inflation and stock returns in MENA countries and indicate the stock markets of the listed MENA countries does not feel the high up's and down's movements in the markets. The asymmetric news effect was absent.

Kim and Ravi (2006) were explained the cross-sectional variation in the relation between international security returns and expected inflation based on their sensitivities to world stock and bond factors. The paper shows inflation sensitivities of returns on country indexes and international mutual funds on their sensitivities to world stock and bond indexes. The result from OLS regression coefficient for return sensitivity of stock to the stock market factor was negative and significant at the five percent level. The coefficient for return sensitivity to the bond market factor was positive and significant at the one percent level. Thus, the results support the hypothesis that the inflation sensitivity of a security was negatively related to its stock market return sensitivity and positively related to its bond return sensitivity. Concluded that the inflation sensitivity of a security is positively (negatively) related to its sensitivity to the world bond index (world stock index).

Al-Khazali (2003) investigated the generalized Fisher hypothesis for nine equity markets in the Asian countries: Australia, Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Taiwan, and Thailand. It states that the real rates of return on common stocks and the expected inflation rate were independent and that nominal stock returns vary in a one-to-one correspondence with the expected inflation rate. The results of the VAR model indicate the nominal stock returns seem Granger-causally a priori in the sense that most of the forecast error variances is accounted for by their own innovations in the three-variable system; inflation does not appear to explain variation in stock returns; stock returns do not explain variation in expected inflation. The stochastic process of the nominal stock returns could not be affected by expected inflation. The study fails to find either a consistent negative response of stock returns to shocks in inflation or a consistent negative response of inflation to shocks in stock returns in all countries. The generalized Fisher hypothesis was rejected in all countries.

Another investigation from Al-Khazali (2004) explained the negative relationship between real stock returns and expected inflation in the Jordanian economy. The study examines whether the proxy-effect hypothesis can adequately explain the negative relationship the two variables. The study contributed in validates the Fisherian Hypothesis for stock market returns of the several developed economies. On the other hand, contributed in effectively to hedge against inflation in Jordanian countries. The OLS result show that a negative relationship between expected inflation and expected real stock returns. Meanwhile, the study was not support the proxy-effect hypothesis for Jordanian economy.

Diaz and Jareno (2005) investigate the short run response of daily stock prices in the Spanish market to the announcements of inflation news on a sectorial level. The aim was to study the relationship between unanticipated inflation news and stock returns, focusing our analysis on the sector of activity. The methodology based on time-series event-study methodology included a large number of recent papers used these approach to analyze the repercussion of some macroeconomic announcements on returns of different market indexes, interest rates or stocks. The result shown coefficients of all sectors in the preannouncement period are not statistically significant. No evidence of a significant relationship between abnormal returns and total inflation during this period is found. The proximity to the announcement originates uncertainty in the market but these abnormal returns were independent of the final amount of the total inflation rate. Moreover the coefficients of all sectors are always positive and higher than coefficients corresponding to the pre-announcement period. In contrast to literature and the study was observe a significant positive relationship between stock returns and inflation changes for the Spanish market as a whole and for several sectors. In terms of the "flow-through" theory, most companies seem to have a high capability to transfer the inflation to the prices of products or services. This was the case of the companies from sectors that show an insignificant relationship between abnormal returns and inflation rate, and also from sectors in which this relationship is significant and positive. Lastly, relationship between inflation rate and abnormal returns was negative in the post-announcement period, but the coefficient is statistically insignificant. There was no evidence of a possible adjustment of prices subsequent to an overreaction on the announcement day.

Adrangi, Chatrath, and Sanvicente(2000) investigates the negative relationship between stock returns and inflation rates in markets of industrialized economies for Brazil. It was important because given high inflation rates among these economies, there a rising interest by investors in emerging markets. The study found there was negative relationship between inflation and real stock returns, the finding support Fama's proxy hypothesis framework. The negative relationship between the real stock returns and inflation rate for Brazil persists even after the negative relationship between inflation and real activity is purged. Therefore, real stock returns may be adversely affected by inflation because inflationary pressures may threaten future corporate profits; and nominal discount rates rise under inflationary pressures, reducing current value of future profits and lastly on stock returns. The results support the interesting notion that the proxy effect in the long-run rather than short run.

Schwert(1981) analyzed the reaction of stock prices to the new information about inflation. He stated that the important reason to expect a relationship between stock returns and the unexpected inflation was that unexpected inflation contained new information about future levels of expected inflation. Despite of debtor or creditor hypothesis, it was difficult to predict the distributive effects of unexpected inflation on stock returns. The unexpected inflation have variety of effects on the value of the firm, and unexpected increase in expected inflation could cause government policy-makers to react by changing monetary of fiscal policy in order to counteract higher inflation. He found that the stock market seem not react to unexpected inflation during the period of Consumer Price index was sampled on several weeks before the announcement date.

Geyser and Lowies (2001) attempts study the impact of inflation on stock prices in two SADC countries which were South Africa and Namibia. The study used simple regression analysis. The result was not one of the two selected countries offers a perfect hedge against inflation. The South African experience shows that the companies listed in the mining sector are negatively correlated against inflation. The selected companies in financial services, information technology, and food and beverage sectors show slightly positive correlation between stock price changes and inflation. All the selected companies of Namibia except Alex Forbes show a strong positive correlation between stock price changes and inflation.

Abu (2005) explored the varying volatility dynamic of inflation rates in Malaysia for the period from August 1980 to December 2004. Exponential generalized autoregressive conditional heteroscedasticity (EGARCH) models are used to capture the stochastic variation and asymmetries in the financial instruments. Besides modeling the asymmetric effect of shocks to inflation uncertainty, the EGARCH-Mean model was employed to test whether the effect of inflation uncertainty on inflation rate in Malaysia either positive or negative In this study, the positive and significant value of $\beta 3$ coefficient implies that positive shocks have a greater impact on inflation uncertainty as compared to negative shocks. Another result shows that there was no contemporaneous relationship between inflation uncertainty and inflation level. There was sufficient empirical evidence that higher inflation rate level will results in higher inflation uncertainty.

Saryal (2007) studied the impact of inflation on conditional stock market volatility in Turkey and Canada. He examined the two questions. First, how does inflation stock market volatility estimated by using nominal stock return series. Second, does the relation differ between countries with different rates of inflation. The Canada and Turkey data were selected for comparison on the basis of their inflation level. The reason of selected countries because Turkey was an emerging market country with a high inflation rate and Canada a developed country with a low inflation rate. The results suggests that the higher the rate of inflation, the higher the nominal stock returns consistent with the simple Fisher effect. The result showed the rate of inflation was one of the underlying determinants of conditional stock market volatility particularly in a highly inflated country like Turkey. The variability in the inflation rate had a stronger impact in forecasting stock market volatility in Turkey than in Canada.

Choudhry (1999) investigated the relationship between stock returns and inflation in four high inflation (Latin and Central American) countries: Argentina, Chile, Mexico and Venezuela during 1980s and 1990s. There were two distinct ways to define stocks as a hedge against inflation, First, a stock was a hedge against inflation if it eliminates or at least reduces the possibility that the real rate of return on the security will fall below some specific floor value. Secondly, it was a hedge if and only if its real return is independent of the rate of inflation. The result showed a direct one-to-one relationship between the current rate of nominal returns and inflation for Argentina and Chile. It's indicated that stocks act as a hedge against inflation. Further tests were conducted to check for the effects of the leads and lags of inflation. Evidence of a direct relationship between current nominal returns and one-period inflation was also found. Results also show that significant influence on nominal returns was imposed by lags but not by leads of inflation. This result backs the claim that the past rate of inflation may contain important information regarding the future inflation rate. These significant results presented may show

that a positive relationship between stock returns and inflation is possible during short horizon under conditions of high inflation.

Boucher (2006) considered a new perspective on the relationship between stock prices and inflation, by estimated the common long-term trend in the earning–price ratio and inflation. The study focus on the subjective inflation risk premium explanation by considering a present value model with a conditional time-varying risk premium and estimate the common long-term trend in the earning–price ratio and actual inflation. He investigated the role of the transitory deviations from this common trend for forecasting stock returns (S&P 500). The study found that these deviations exhibit substantial out-of-sample forecasting abilities for excess stock returns at short and intermediate horizons. The results presented indicate that the earning–price inflation ratio has displayed statistically significant out-of-sample predictive power for excess returns over the post-war period at short and intermediate horizons. The results are ambivalent concerning the efficient market hypothesis.

Rapach (2002) measured the long-run response of real stock prices to a permanent inflation shock for 16 individual industrialized countries by using recent developments in the testing of long-run neutrality propositions. Under long-run inflation neutrality, an exogenous increase in the trend rate of inflation (trend rate of money stock growth) will have no long run effect on real stock prices. However, some well-known theories suggested that an increase in trend inflation can bring about a long-run decrease in real stock prices. The result found little plausible evidence for a negative long-run real stock price response to a permanent inflation shock in the countries to assume that the contemporaneous decrease in inflation in response to a productivity shock and the liquidity effect were large. The study also show the evidence that the long-run real stock price response to a permanent inflation shock was positive in a number of industrialized countries. The structural bivariate VAR approach found that a permanent inflation shock significantly increases long-run real output levels in some relatively low-inflation industrialized countries (Austria, Finland, Germany, and the United Kingdom). A long-run increase in real output should permanently increase anticipated earnings and thus real stock prices. The study found evidence against a long-run Fisher effect with respect to nominal interest rates on short-term government bonds for a number of industrialized countries (Belgium, Canada, France, Germany, Ireland, Netherlands, United Kingdom, United States). More specifically, the nominal interest rates typically increase less than one-for-one with inflation in the long run in response to a permanent inflation shock and thereby lowering real interest rates in the long run. Using a trivariate structural VAR framework, Rapach (in press) also finds that the long-run real interest rate typically falls in response to a permanent inflation shock for a large number of industrialized countries. A lower long-run real interest rate on risk-free bonds should also increase long-run real stock prices by lowering the rates at which anticipated earnings were discounted.

Khil and Lee (2000) observed real stock return and inflation relations in the U.S. and 10 Pacific-rim countries for the sample period of 1970 to 1997. In the study, they document a negative real stock return and inflation correlation in nine Pacific-rim countries as well as in the U.S. However, Malaysia was the only country that exhibits a positive relation between real stock returns and inflation. Thus their study provided an empirical framework that attempts to disentangle the sources of these correlations. There were several reasons that they were interested in the stock return and inflation relation in the Pacific-rim countries. First, it was become more important to understand financial markets in Asian countries. Second, while the U.S. and European countries tend to experience mild inflation, Asian countries experience widely different types of inflation. Third, the U.S. experience shows that the stock return and inflation relation may be either positive or negative. Fourth, monetary authorities and their policies in most Asian countries tend to be more prone to political influence than in the U.S. Fifth, one of the hypotheses that explain the negative correlation between stock returns and inflation was the tax hypothesis. But Malaysia experiences a positive correlation between stock returns and inflation. As such, it would be interesting to look into Malaysia's experience to see whether it has a different tax treatment of depreciation compared with other countries. The result show the relationship between real stock returns and inflation appeared to be inconsistent with the predictions of the Fisher hypothesis and common sense that common stocks should be a hedge against inflation but was in line with the post-war experience of the U.S. and European countries. Malaysia was a country that exhibits a positive relation between stock returns and inflation. Second, the identification and decomposition analyses show that the interaction of real and monetary disturbances appears to explain at least nine countries observed stock return and inflation relation. In these countries, the real output disturbances drive a negative between stock return and inflation relation, while monetary disturbances yield a positive in stock return and inflation relation. Third, Indonesia and Malaysia turn out not to follow the above-mentioned pattern of real and monetary disturbances. In Malaysia, both real and monetary components yield a positive relation between stock returns and inflation. In Indonesia, both real and monetary components yield a negative relation between stock returns and inflation.

Kim and In (2005) investigated the Fisher hypothesis and its examination of the relationship between stock returns and inflation by using the wavelet analysis and hence examines nominal and real stock returns and inflation over the different time scales. They also investigate the variances, covariance of nominal and real returns and inflation. Correlations and cross-correlations between nominal and real returns and inflation were calculated for the different time scales. On the other hand, the study also examines the long-run relationship between stock returns and inflation not only in nominal but also in real terms. The results of the regression analysis in the wavelet domain and the wavelet correlation show that the relationship was positive at the short horizon. Another results indicated that in all regression analyses, real returns have a significant negative relationship with inflation except for the shortest time scale (d1) and the longest smooth scale (s7) in wavelet analysis.

Lee (2009) reevaluate whether the stock return and the inflation relation indeed due to inflation illusion by reexamining the hypothesis using longer sample period of the US and international data. The inflation illusion hypothesis explained the post-war relation well; it was not compatible with some features of the pre-war relation. A major problem is that while this hypothesis anticipates underpricing of stock prices with high inflation. Thus, the study observed the overpricing with high inflation in the pre-war period. This implies that although the mispricing component plays an important role in the stock market and inflation relation in both subsample periods. The result found the two types of stock return and inflation relations without imposing a particular permanent and temporary restriction on the two types of shocks. The two regime hypothesis show positive and negative inflation shocks can be easily compatible with both pre- and post-war relations in the US. There were indeed two distinct forces in the economy in each period, and they drive the relation in opposite directions. The observed relations in the pre-war and post-war periods are consistent with the relative importance of these shocks. The bivariate VAR identification found that there are two types of stock return and inflation relations in each developed countries. Researcher considered and the observed negative relations in these countries were again consistent with the relative importance of the two types of inflation shocks.

Hondroyiannis and Papapetrou (2006) studied the dynamic relationship between real stock returns and expected and unexpected inflation utilizing a Markov Switching vector autoregressive model (MS-VAR). A Markov regime-switching model (MS) was employed to capture the structural breaks during the estimation period once the two parts of inflation are determined. Then able investigate the validity of Fama's proxy hypothesis, the permanent parts of inflation were significantly negatively correlated with real stock returns. The Markov regime-switching model has the advantage that it was able to capture the dependence structure of the series both in terms of the mean and the variance. The results suggest that actual inflation does not significantly influence real stock market returns. Inflation was then decomposed into two components, one due to supply shocks (permanent inflation) and one due to demand shocks (temporary inflation).

3.0 METHODOLOGY

3.1 Source of Data and Method Used

The secondary data used in this study consists of monthly time series data from January 2000 to November 2009. The variables of this study are stand from interest rate (U.S. and Malaysia's Treasury bill rate, and China's Bank rate), inflation (CPI), exchange rate, GDP (industrial production) and share prices. These variables data obtained from International Financial Statistical (IFS) database except CPI for China is obtain from National Bureau of Statistic of China. All the data are transformed into logarithms. The variables were initially tested for unit root using the Augmented Dickey Fuller test. This is followed by the Cointegration test to determine the number of cointegrating vectors. After determining the cointegrating vectors that shows the long run relationship between the variables, the short run relationship was determine using the Vector Error Correction Modeling.

4.0 RESULT AND DISCUSSION

4.1 Unit Root Test Results

In this study, Augmented Dickey Fuller (ADF) is use for unit root test. The ADF and statistics for the levels of stock market, expected inflation rate, unexpected inflation rate, interest rate, exchange rate, GDP [SM, EINF, UINF, R, EXC, Y] for Malaysia, United States and China do not exceed the critical values in absolute terms except China's GDP. So, we take the first difference of [SM, EINF, UINF, R, EXC, Y] due to the ADF statistics are higher than their respective critical values in absolute terms. Thus, we select that all the variables are stationary in first difference or integrated of order one at 10% significant level without trend. I~(1).

4.2 Cointegration Test Results – Johansen Test

Table 4.2.1.1(a) and 4.2.1.1(b) shows the Unrestricted Cointegration Ranking test (Trace) for the Malaysia's model. The Cointegration Test in the table shows the variables are co-integrated. The Trace statistic value is lower than critical value at 5 percent significance level, indicating 1 cointegrating equations at 5 percent

significance level. This means that there is a long run relationship between the two equation models above. Table 4.2.1.2(a) and 4.2.1.2(b) shows the Unrestricted Cointegration Ranking test (Trace) for Unites State's model. The Cointegration Test in the table shows the variables are co-integrated. The Trace statistic value is greater than critical value at 5 percent significance level, indicating 1 cointegrating equations at 5 percent significance level. This means that there is a long run relationship between the two equation models above. Table 4.2.1.3(a) and 4.2.1.3(b) shows the Unrestricted Cointegration Ranking test (Trace) for China's model. The Cointegration Test in the table shows the variables are co-integrated. The Trace statistic value is greater than critical value at 5 percent significance level, indicating 3 cointegrating equations at 5 percent significance level. This means that there is a long run relationship between the two equation models above.

Table 4.2.2.1(a) and 4.2.2.2(b) shows the Normalized Cointegrating Coefficients to determine the long run equilibrium for Malaysia between stock market, expected inflation, unexpected inflation, exchange rate, interest rate and GDP. For equation Stock market= f(Expected inflation, Exchange rate, Interest rate and GDP) in table 4.3.2.1(a), the estimated t-value for Expected inflation (-4.541), Exchange rate(-7.367), Interest rate (-5.568) and GDP(10.027) are more than the critical value at 5 percent significance level. This indicates that variables expected inflation, exchange rate, interest rate and GDP are significant in explaining the changes in stock market in the long run. The sign of negative explained that there are found in expected inflation, exchange rate and interest rate to have negative impact on the stock market while GDP has positive impact on the stock market. Based on this result, the expected inflation, exchange rate and interest rate are claimed to be substitute to GDP in influencing the stock market. In addition, from the Coefficient value, it can be claimed that exchange rate has bigger impact than the others variables in influencing the stock market.

For the table 4.3.2.2(b), the equation is Stock market= f(Unexpected inflation, Exchange rate, Interest rate and GDP). the estimated t-value for Expected inflation (-4.478), Exchange rate (-7.333), Interest rate(-5.793) and GDP(10.002) are more than the critical value at 5 percent significance level. This indicates that variables expected inflation, exchange rate, interest rate and GDP are significant in explaining the changes in stock market in the long run. The sign of negative explained that there are found in expected inflation, exchange rate and interest rate to have negative impact on the stock market while GDP has positive impact on the stock market. Based on this result, the expected inflation, exchange rate and interest rate are claimed to be substitute to GDP in influencing the stock market. Same as table 4.3.2.1(a) result, the Coefficient value show that exchange rate has bigger impact than the others variables in influencing the stock market. Table 4.2.3.1(a) show Normalized Cointegrating Coefficients for United States result for equation Stock market= f(Expected inflation, Exchange rate, Interest rate and GDP), the estimated t-value for Exchange rate(7.369), Interest rate (9.212) and GDP(-9.501) are more than the critical value at 5 percent significance level, while Expected inflation (0.887) less than critical value at 5 percent signification level. This indicates that variables exchange rate, interest rate and GDP are significant in explaining the changes in stock market in the long run. The sign of negative in GDP explained negative impact on the stock market while Expected inflation, exchange rate and interest rate have positive impact on the stock market. Based on this result, the GDP are claimed to be substitute to Expected inflation, exchange rate and interest rate in influencing the stock market. From the Coefficient value,it can be claimed that GDP(-60.168) has bigger impact than the others variables in influencing the stock market.

In contrast, Table 4.2.3.2(b) show Normalized Cointegrating Coefficients for United States result for equation Stock market= f(Unexpected inflation, Exchange rate, Interest rate and GDP), the estimated t-value for Unexpected inflation(5.142), Exchange rate(7.287), Interest rate (8.654) and GDP(-9.484) are more than the critical value at 5 percent significance level. This indicates that variables unexpected inflation rate, exchange rate, interest rate and GDP are significant in explaining the changes in stock market in the long run. The GDP explained negative impact on the stock market while unexpected inflation, exchange rate and interest rate have positive impact on the stock market. Based on this result which same as result in table 4.3.3.1(a), the GDP are claimed to be substitute to unexpected inflation, exchange rate and interest rate in influencing the stock market. From the Coefficient value,it can be claimed that GDP (72.465) has bigger impact than the others variables in influencing the stock market.

Table 4.2.4.1(a) shows the Normalized Cointegrating Coefficients for China to determine the long run equilibrium between stock market, expected inflation, unexpected inflation, exchange rate, interest rate and GDP. The estimated t-value estimated from equation of Stock market= f(Expected inflation, Exchange rate, Interest rate and GDP) are Exchange rate(-5.152), Interest rate (5.150) and GDP(9.915) are more than the critical value while Expected inflation(-1.226) is less than critical value at 5 percent significance level. This indicates that variables exchange rate, interest rate and GDP are significant in explaining the changes in stock market in the long run. The sign of negative explained that there are found in expected inflation and exchange

rate to have negative impact on the stock market while interest rate and GDP have positive impact on the stock market. Based on this result, the expected inflation and exchange rate are claimed to be substitute to Interest rate and GDP in influencing the stock market. The coefficient value claimed that exchange rate has bigger impact than the others variables in influencing the stock market.

For the table 4.3.4.2(b), the equation is Stock market= f(Unexpected inflation, Exchange rate, Interest rate and GDP). The estimated t-value for Exchange rate (-4.746), Interest rate (3.468) and GDP(9.772) are more than the critical value at 5 percent significance level. In contrast, Unexpected inflation (-1.479) is less than the critical value at 5 percent significant. This indicates that variables exchange rate, interest rate and GDP are significant, while unexpected inflation is insignificant explaining the changes in stock market in the long run. There are found in exchange rate and interest rate to have negative impact on the stock market while unexpected inflation and GDP have positive impact on the stock market. Based on this result, the exchange rate and interest rate are claimed to be substitute to unexpected inflation and GDP in influencing the stock market. Lastly, the coefficient value shows that exchange rate has bigger impact than the others variables in influencing the stock market.

The error correction term 1 shows that the estimated t value of –0.979 is less than the critical value of t respectively. The F-statistic is 2.094 and log likelihood is 204.1279. As much it can be concluded that the null hypothesis of no short run relationship for the model Stock Market's Malaysia = f (Expected Inflation, Exchange rate, Interest rate, GDP). All variables in lag 1 and lag 2 for t-values, stock market (3.803, -0.965), expected inflation (-1.083, -0.402), exchange rate (0.721, 0.421), interest rate (-0.492, 0.667), and GDP(1.110, 0.969) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t. The error correction term 1 found in Table 4.4.1(b) shows that the estimated t value of –0.995 is less than the critical value of t respectively, R-squared and F-statistic are 0.185 and 2.106 respectively. As much it can be concluded that the null hypothesis of no short run relationship for the model Stock Market's Malaysia = f (Unexpected Inflation, Exchange rate, Interest rate, GDP). All variables in lag 1 and lag 2 for t-values, stock market (3.802, -0.969), unexpected inflation (-1.052, -0.504), exchange rate (0.717, 0.429), interest rate(-0.845, -0.811), and GDP(1.095, 0.967) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t. Table 4.3.2(a) shows that the error correction term 1 estimated t value of –1.299 is less than the critical value of t respectively, R-squared and F-statistic are 0.132 and 1.416 respectively. As much it can be concluded that the null hypothesis of no short run relationship for the model Stock Market's Malaysia = f (Expected Inflation, Exchange rate, Interest rate, GDP). All variables in lag 1 and lag 2 for t-values, stock market (2.988, -1.707), expected inflation (-0.779, 0.413), exchange rate (0.684, -0.24), interest rate(-0.487, -0.176), and GDP(0.755, 0.694) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t. Table 4.3.2(b) shows that the error correction term 1 estimated t value of –1.061 is less than the critical value of t respectively, R-squared and F-statistic are 0.126 and 1.347 respectively. As much it can be concluded that the null hypothesis of no short run relationship for the model Stock Market's Malaysia = f (Unexpected Inflation, Exchange rate, Interest rate, GDP). All variables in lag 1 and lag 2 for t-values, stock market (2.929, -1.687), unexpected inflation (-0.68, 0.494), exchange rate (0.751, -0.134), interest rate(-0.584, -0.035), and GDP(0.611, 0.605) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t. Because the Unrestricted Cointegration Test indicated 3 cointegrating equations, there are 3 error correction term. Table 4.4.3(a) shows that the error correction term 1, 2 and 3 estimated t value of 0.808, -1.509 and 0.618 are less than the critical value of t respectively, R-squared and F-statistic are 0.215 and 1.69 respectively. As much it can be concluded that the null hypothesis of 1 short run relationship for the model Stock Market's Malaysia = f (Expected Inflation, Exchange rate, Interest rate, GDP), which is between the expected inflation rate with the stock market. All variables in lag 1 and lag 2 for t-values, stock market (-0.799, 0.159), expected inflation (1.814, 2.265), exchange rate (0.903, 2.21), interest rate(-2.043, -0.982), and GDP(-0.164, 0.059) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t.

Same as the Table 4.3.3(a), there are 3 error correction term in Table 4.4.3(b) which shows that the error correction term 1, 2 and 3 estimated t value of 0.618, -1.154 and 0.445 are less than the critical value of t respectively, R-squared and F-statistic are 0.198 and 1.600 respectively. As much it can be concluded that the null hypothesis of 1 short run relationship for the model Stock Market's Malaysia = f (Unexpected Inflation, Exchange rate, Interest rate, GDP), which is between the exchange rate and stock market. All variables in lag 1 and lag 2 for t-values, stock market (-0.366, 0.445), unexpected inflation (1.756, 1.875), exchange rate (0.649. 2.456), interest rate(-1.620, -0.715), and GDP(-0.377, -0.45) are found to be insignificant especially in lag 2 in explaining changes in stock market because the estimated t value is less than the critical value of t.

5.0 CONCLUSION & RECOMMENDATION

This study mainly to reinvestigate the relationship between stock market, expected inflation rate, unexpected inflation rate, exchange rate, interest rate and GDP in the case of Malaysia, US and China. In this study, to test for the stationary and the order of integration of all the series, the ADF was conducted and show that all the variables are integrated in the same order, which are first difference without trend, I(1). From here can conclude that these three countries are stationary. The Johansen test for cointegration result indicates that there is a long run equilibrium relationship between the variables. With the big sample, the optimal lag structure for each of the VAR models was selected by minimizing Akaike's Information criteria. In the final analysis lag of 2 are used. Johansen test procedure confirmed that there is at least 1 cointegration equation at 5 percent significant value for the Malaysia and US. On the other hand, China have 3 cointegration equation at 5 percent significant value. This means that there are long run relationships between the variables within the three countries. The result of VEC show no short run relationship between the stock market, expected inflation, exchange rate, unexpected inflation, interest rate and GDP for Malaysia and US. However, China's VEC result show there is a short run relationship between expected inflation rates with China's stock market.

Overall from these findings, some recommendations are suggested. Since the result show there is long run cointegration relationship between stock markets and those variables in Malaysia, US and China. A word of caution, the investors who invest in these three countries stock markets might take risk in gaining benefit from the portfolio diversification because the macroeconomics linked to share prices which lead to stock market. Therefore, stock market returns may be adversely affected by inflation because of the inflationary pressures may threaten future corporate profits and nominal discount rates rise under inflationary pressures, reducing current value of future profits and thus to stock market. Meanwhile, Malaysia, US and China should revise and improve their monetary policy which consistent with low inflation and inflation expectations.

On the other hand, some evidence are found this study show where first is there is a significant short-run relationship in between stock market and expected inflation rate of China. Second, there is significant relationship between exchange rate and stock market in China. Thus, investors may not gain any portfolio diversification benefits in the short-run. This study has highlighted the importance of macroeconomic variables in influencing the stock market as well as the inflation which once again becomes an important issue and the focus of the government in macro management. From the result, recommended that Malaysia, US and China should utilizing the information on expected inflation, unexpected inflation, exchange rate, interest rate and GDP to forecast the movement of stock market.

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APPENDIX

Table 4.2.1.1(a): Stock Market of Malaysia= f (Expected inflation of Malaysia, Exchange rate of Malaysia, Interest rate of Malaysia, Interest Rate of Malaysia)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.4009	88.952	69.818	0.007
r=1	0.1334	30.529	47.856	0.691
r=2	0.0764	14.199	29.797	0.829
r=3	0.0385	5.127	15.494	0.795
r=4	0.0056	0.65	3.841	0.419

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.2.1.1(b): Stock Market of Malaysia= f (Unexpected inflation of Malaysia, Exchange rate of Malaysia, Interest rate of Malaysia, Interest Rate of Malaysia)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.3992	88.727	69.818	0.0008
r=1	0.1341	30.645	47.856	0.6855
r=2	0.0766	14.229	29.797	0.8275
r=3	0.0385	5.137	15.494	0.7941
r=4	0.0056	0.651	3.841	0.4195

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.2.1.2(a): Stock Market of US= f (Expected inflation of US, Exchange rate of US, Interest rate of US, Interest Rate of US)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.4658	108.5982	69.818	0.0000
r=1	0.1730	37.119	47.856	0.3419
r=2	0.0955	15.464	29.797	0.7492
r=3	0.0346	4.020	15.494	0.9019
r=4	6.73E-08	7.67E-06	3.841	0.9993

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.3.1.2(b): Stock Market of US= f (Unexpected inflation of US, Exchange rate of US, Interest rate of US, Interest Rate of US)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.4667	109.5152	69.818	0.0000
r=1	0.1826	37.8410	47.856	0.3090
r=2	0.0917	14.847	29.797	0.7899
r=3	0.0322	3.8767	15.494	0.9132
r=4	0.0012	0.1387	3.841	0.7096

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.3.1.3(a): Stock Market of China= f (Expected inflation of China, Exchange rate of China, Interest rate of China, Interest Rate of China)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.5689	139.759	69.818	0.0000
r=1	0.5234	60.664	47.856	0.0020
r=2	0.2091	33.191	29.797	0.0196
r=3	0.1017	11.1337	15.494	0.034
r=4	0.111	1.051	3.841	0.3052

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.3.1.3(b): Stock Market of China= f (Unexpected inflation of China, Exchange rate of China, Interest rate of China, Interest Rate of China)

Null	Eigen.Value	Trace	5% Critical Value	Prob.**
r=0	0.5562	141.855	69.8189	0.0000
r=1	0.2463	62.224	47.856	0.0133
r=2	0.2174	34.510	29.797	0.0133
r=3	0.0950	10.483	15.494	0.2454
r=4	0.007	0.6979	3.8414	0.4035

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.2.2: Normalized Cointegrating Coefficients for Malaysia:

Variable	SMM	EINFM	EXCM	RM	YM
Coefficient	1.000	-3.844	-8.281	-1.814	6.2972
Std Error		(-0.851)	(-1.124)	(-0.266)	(-0.628)
T-value		-4.541	-7.367	-5.568	10.027
Log Likelihood	1338.297				

Table 4.2.2.1(a)

Variable	SMM	UINFM	EXCM	RM	YM
Coefficient	1.000	-3.757	-8.221	-1.57	6.261
Std Error		(-0.839)	(-1.121)	(-0.271)	(-0.626)
T-value		-4.478	-7.333	-5.793	10.002
Log Likelihood	1343.777				

Table 4.2.2.1(b): 4.2.3 Normalized Cointegrating Coefficients for United States

Variable	SMUS	EINFUS	EXCUS	RUS	YUS
Coefficient	1.000	2.778	28.009	2.386	-60.168
Std Error		(3.131)	(3.801)	(0.259)	(6.333)
T-value		0.887	7.369	9.212	-9.501
Log Likelihood	1268.434				

Table 4.2.3.1(a)

Variable	SMUS	UINFUS	EXCUS	RUS	YUS
Coefficient	1.000	3.862	32.842	2.925	-72.465
Std Error		(3.751)	(4.507)	(0.338)	(7.641)
T-value		5.142	7.287	8.654	-9.484
Log Likelihood	1251.278				

Table 4.2.3.2(b) : 4.2.4 Normalized Cointegrating Coefficients for China:

Variable	SMC	EINFC	EXCC	RC	YC
Coefficient	1.000	-10.36	-19.805	6.036	6.048
Std Error		(8.451)	(3.844)	(1.712)	(0.610)
T-value		-1.226	-5.152	5.150	9.915
Log Likelihood	815.6405				

Table 4.2.4.1(a)

Variable	SMC	UINFC	EXCC	RC	YC
Coefficient	1.000	-12.898	-19.329	5.895	6.254
Std Error		(8.719)	(4.073)	(1.700)	(0.640)
T-value		-1.479	-4.746	3.468	9.772
Log Likelihood	846.5216				

Table 4..4.2(b) : 4.3 VECTOR ERROR CORRECTION MODEL (VEC) RESULTS

Table 4.3.1(a): The VEC for Malaysia

Variable	**Coefficient**	**Standard Error**	**t-Statistic**
EC term 1	-0.0177	0.018	-0.979
D(LOG(SMM(-1)))	0.376	0.099	3.803
D(LOG(SMM(-2)))	-0.097	0.1	-0.965
D(LOG(EINFM(-1)))	-0.989	0.913	-1.083
D(LOG(EINFM(-2)))	-0.368	0.914	-0.402
D(LOG(EXCM(-1)))	0.234	0.325	0.721
D(LOG(EXCM(-2)))	0.134	0.319	0.421
D(LOG(RM(-1)))	-0.027	0.055	-0.492
D(LOG(RM(-2)))	-0.036	0.053	0.667
D(LOG(YM(-1)))	0.146	0.132	1.11
D(LOG(YM(-2)))	0.108	0.111	0.969
C	0.003	0.005	0.629
R-squared	0.184		
F-statistic	2.094		
Log likelihood	204.1279		

Table 4.3.1(b): The VEC for Malaysia

Variable	Coefficient	Standard Error	t-Statistic
EC term 1	-0.018	0.018	-0.995
D(LOG(SMM(-1)))	0.375	0.098	3.803
D(LOG(SMM(-2)))	-0.097	0.1	-0.969
D(LOG(UINFM(-1)))	-0.938	0.892	-1.052
D(LOG(UINFM(-2)))	-0.451	0.892	-0.505
D(LOG(EXCM(-1)))	0.233	0.325	0.718
D(LOG(EXCM(-2)))	0.137	0.319	0.429
D(LOG(RM(-1)))	-0.005	0.058	-0.846
D(LOG(RM(-2)))	-0.046	0.057	-0.811
D(LOG(YM(-1)))	0.145	0.132	1.096
D(LOG(YM(-2)))	0.108	0.111	0.967
C	0.003	0.004	0.656
R-squared	0.185		
F-statistic	2.106		
Log likelihood	204.187		

Table 4.3.2(a): The VEC for United States

Variable	Coefficient	Standard Error	t-Statistic
EC term 1	-0.014	0.011	-1.299
D(LOG(SMUS(-1)))	0.294	0.099	2.988
D(LOG(SMUS(-2)))	-0.175	0.102	-1.707
D(LOG(EINFUS(-1)))	-1.409	1.807	-0.779
D(LOG(EINFUS(-2)))	0.759	1.838	0.413
D(LOG(EXCUS(-1)))	0.349	0.509	0.684
D(LOG(EXCUS(-2)))	-0.12	0.501	-0.24
D(LOG(RUS(-1)))	-0.014	0.029	-0.487
D(LOG(RUS(-2)))	-0.005	0.03	-0.176
D(LOG(YUS(-1)))	0.365	0.483	0.755
D(LOG(YUS(-2)))	0.27	0.388	0.694
C	-0.006	0.007	-0.735
R-squared	0.132		
F-statistic	1.416		
Log likelihood	153.741		

Table 4.3.2(b): The VEC for United States

Variable	Coefficient	Standard Error	t-Statistic
EC term 1	-0.009	0.009	-1.061
D(LOG(SMUS(-1)))	0.29	0.099	2.929
D(LOG(SMUS(-2)))	-0.175	0.103	-1.687
D(LOG(UINFUS(-1)))	-1.051	1.545	-0.68
D(LOG(UINFUS(-2)))	0.769	1.554	0.494
D(LOG(EXCUS(-1)))	0.382	0.509	0.751
D(LOG(EXCUS(-2)))	-0.067	0.502	-0.134
D(LOG(RUS(-1)))	-0.016	0.028	0.584
D(LOG(RUS(-2)))	-0.001	0.029	-0.035
D(LOG(YUS(-1)))	0.296	0.485	0.611
D(LOG(YUS(-2)))	0.232	0.384	0.605
C	-0.006	0.007	-0.834
R-squared	0.126		
F-statistic	1.347		
Log likelihood	153.3737		

Table 4.3.3(a): The VEC for China

Variable	Coefficient	Standard Error	t-Statistic
EC term 1	0.03	0.037	0.808
EC term 2	-1.173	0.777	-1.509
EC term 3	0.189	0.305	0.618
D(LOG(SMC(-1)))	-0.112	0.14	-0.799
D(LOG(SMC(-2)))	0.0226	0.142	0.159
D(LOG(EINFC(-1)))	1.449	0.798	1.814
D(LOG(EINFC(-2)))	3.83	1.691	2.265
D(LOG(EXCC(-1)))	0.625	0.692	0.903
D(LOG(EXCC(-2)))	1.565	0.708	2.21
D(LOG(RC(-1)))	-0.491	0.24	-2.043
D(LOG(RC(-2)))	-0.308	0.314	-0.982
D(LOG(YC(-1)))	-0.006	0.038	-0.164
D(LOG(YC(-2)))	0.001	0.03	0.059
C	-0.004	0.008	-0.531
R-squared	0.215		
F-statistic	1.69		
Log likelihood	115.841		

Table 4.3.3(b): The VEC for China

Variable	Coefficient	Standard Error	t-Statistic
EC term 1	0.022	0.036	0.618
EC term 2	-0.829	0.718	-1.154
EC term 3	0.133	0.299	0.445
D(LOG(SMC(-1)))	-0.049	0.134	-0.366
D(LOG(SMC(-2)))	0.062	0.137	0.445
D(LOG(UINFC(-1)))	1.272	0.724	1.756
D(LOG(UINFC(-2)))	2.297	1.225	1.875
D(LOG(EXCC(-1)))	0.435	0.67	0.649
D(LOG(EXCC(-2)))	1.627	0.66	2.456
D(LOG(RC(-1)))	-0.383	0.236	-1.62
D(LOG(RC(-2)))	-0.225	0.314	-0.715
D(LOG(YC(-1)))	-0.013	0.039	-0.377
D(LOG(YC(-2)))	-0.013	0.02	-0.45
C	-0.004	0.007	-0.535
R-squared	0.198		
F-statistic	1.6		
Log likelihood	120.6788		