探討已開發國家與越南股票市場的業務組合動能之關聯性 The Momentum Portfolio of Stock Market Linkages between Vietnam and Its Counterparties

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摘要

本研究主要目的是同時探討已開發國家與在開發中國家的業務組合動能。本研究討 論六個主要國家的股票市場,包括美國,英國,法國和日本為已開發的市場,以及越南 為開發中的市場。資料是從2000年8月到2013年5月。透過使用向量自回歸模型(VAR), 本研究探討已開發國家與開發中國家股票市場之間的關聯性,同時也透過探討業務組合 動能的系列指數,動態相依性和領先落後關係找出最佳的關係連結。

關鍵詞:越南股市、關聯性、動量組合

Abstract

In this paper, interaction between momentum portfolios of developed country and that of emerging countries is examined. Stock market of six countries (UK, US, France, Japan and Vietnam) and their relationships are introduced. The stock markets of the U.S, the U.K, France and Japanese are considered as developed countries; the Vietnamese stock market is considered as an emerging country. Data have been collected from 8/2000 to 5/2013.A Vector Auto-regression (VAR) model is employed to investigate bilateral relations between the stock market of Vietnam and that of the developed countries. The study also examines the relations among the momentum portfolios of index series, the dynamic dependence and lead-lag relations in the first and second conditional moments of the index return series to find out the bestlinkages relation.

Keywords: Vietnam Stock Market, Linkages, Momentum Portfolios

I. INTRODUCTION

Many empirical studies examine the various aspects of stock market linkages when the integration of international stock markets is developing day by day. There are many evidences showing that stock markets have significant co-movement internationally and regionally. According to Phylaktis and Ravazzolo (2005),the Asian crisis makes economy and finance of some countries collapsed. However, Chan et al. (1997) argue that although common economic and geographic factors were considered as crucial factors, but there are not main causes of national stock markets to run the same way. It is also argued that there is less evidence of stock market integration after major stock market crises and hence international diversification among stock markets can be undertaken more effectively due to the lack of long-run co-movements of international stock prices (Patev et al., 2006).

International capital flows have been developing rapidly after the stock market crash of October 1987 on Wall Street. Susmel and Engle (1994), Fraser and Power (1997), Kanas (1998b) and Fratzscher (2002) examine volatility spill-over across stock markets. Thus, a lot of studies concentrateon supporting for researches of linkages between international capital markets, which has been last until after a decade the financial crisis Asia. After these two shocks, almost of markets in the world has been more and more integrated to help them restrict and overcome financing constraints. The acceleration in integration of international equity markets has some impacts on the economy worldwide. It's not only contributed to promote international capital flow but also the economy.

The studies relating to this subject can be divided into three main groups. The first group of studies focus on developed markets such as the United States, the United Kingdom, Germany, etc. (Kanas, 1998; Hamori and Imamura, 2000; Ahlgren and Antell, 2002). They find that there are interdependent and long-term relationshipsbetween the stock markets of developed markets. The second group researches the stock price linkages of the emerging countries (Sharma and Wongbangpo, 2002; Worthington et al., 2003; Yang et al., 2003). The last group examines the interdependency of stock market among developed and emerging countries. Because this seemsmore complicated and difficult topic when bring two different markets absolutely about economy, culture and geography into analysis. Therefore, the studies on this topicarerare and have conflicting opinions. While Syriopoulos (2004) found some long-term linkages stock markets in developed countries and emerging countries, Ng (2002), Climent and Meneu (2003) affirmed that the linkages does not exist among such markets.

The relation among the stock price momentum is very different and complex. In contrast to the diversity of the research of stock market and stock price, there is a rare of explanations about momentum portfolios of stock.Jegadeeshvà Titman (1993) have contributed result about the momentum portfolios. They found that: past winners on average continue to outperform past losers, there is momentum stock prices. Investment strategies that exploit such momentum, by buying past winners and selling past losers, predate the scientific evidence and have been implemented by many professional investors. Louis K. C. Chan, NarasimhanJegadeesh, and Josef Lakonishok (1996) study the momentum and find that the stocks selected under a momentum strategy, however, carry along a very different set of investor perceptions from stocks selected under a contrarian strategy. Our price momentum strategy identifies low-momentum stocks. Heston and Rouwenhorst (1994), Griffin and Karolyi (1996) showed that, the development in international stock return almost depends on the presence of larger markets. So, Crisis of larger country will potentially affect the momentum portfolio of stock market and international economic. Similarly, the Winners portfolio will be inclined to stock from large past performance and Loser portfolio will be tilted toward stocks from markets with poor past performance.

In this study, interaction of momentum portfolios between emerging country and developed countries will be investigated. In this research, stock market of five countries i.e. U.K, the U.S, France, Japan and Vietnam, and their economic relationship will be studied. We will consider the stock market of the U.S, U.K, France and Japan as developed countries. The Vietnam's stock market will be considered as emerging country.

This study examines whether the Vietnam stock market is linked with the stock markets momentum with Japan. This study employs the Vector Auto-regression test based on evidence of momentum portfolio to investigates the long-run and short-run linkages between the Vietnam stock market and those of its major trading partners (the US, the UK, France and Japan). The data used in this study is from 8/2000 to 5/2013.

This study is following the structure: The next chapter is literature review and hypotheses. The third chapter discusses the data and methodology. There are Vector Auto-regression, unit root and cointegration results, Linear Granger Causality and Hiemstra-Jones Nonlinear Causality Test about these markets of this paper. The fourth chapter presents table for five markets of this study. A conclusion is given in the last section.

II. LITERATURE REVIEW

The relationship among various stock markets seems to be a limitless domain and hot topic no matter place and time. In other words, the main purpose of integration is to cooperate economy. It is not only created a useful comparative environment for international investment activities but also improve the economic relation between the partnerships for each other. On the other hand, it can create a healthy competitive environment for international trade and investment activities. Therefore, the appearance of the stock markets linkages is necessary to build the partnership with each other for developed economic.

The international stock markets linkages have been analysed by Eun and Shim (1989), Park and Fatemi (1993) and B Arshanapalli, J Doukas (1993). The studies focused on the developed countries to examine the interdependence among world equity market. It showed that, integration improves and enriches the global financial markets. In addition it's also tighten the global diplomatic relationship.

Dwyer and Hafer (1993), Geert Bekaert, Campbell R. Harvey(1997), E. Han Kim and Vijay Singal (2000), studied the issue of capital markets in emerging economies. They analysed the relationship about the stock market on the financial markets of this area. They showed that, the similarities in cultural traditions and geographical would make it be easier to create an economic relations, import and export of goods. Base on the global capital movement, economic cooperation and regional policy coordination between countries can make their stock market have a long-term linkages.

The study of Baekin Cha and Sekyung Oh (2000) investigated the relation between large equity markets of developed markets list and small equity markets of emerging markets list. They found that the links between the developed markets and the Asian emerging markets (AEMs) began to increase after the stock market crash in October 1987, and have significantly intensified since the outbreak of the Asian financial crisis in July 1997. Conversely, Hong Li and Ewa (1990) reported that the linkage between the emerging markets and developed market are weak. Malliaris and Urrutia (1992) argued that, there are no lead-leg relationships for the major market indices either before or after the Crash.

Schollhammer and Sand (1987), Dwyer and Harter (1988) employed cross correlation techniques or unit root model (daily or monthly returns) to show a lack of correlation in stock prices among the U.S. Japanese, German, and the U.K. markets.

Most of the research to date on international stock market linkages has been concentrated on the major world stock markets (US, Japan, UK and Germany), although there has also been some work on the emerging countries such as Vietnam, Thailand, MacDonald (2001) studied the CE stock market indices as a group against each of three developed markets (US, Germany, UK), and concluded significant long-run co-movements for each of the groupings.

More recent studies have examined stock market correlations between developed markets and emerging markets. Cheung and Mak (1992) studied the international transmission of stock market fluctuation between the developed markets and the Asian-Pacific markets. They found that, the US market could be considered as a 'global factor'. It leads most of the Asian-Pacific emerging markets with the exception of three relatively closed markets: Korea, Taiwan and Thailand. Beside that, the Japanese market is found to have a less important influence on the Asian-Pacific emerging markets. Phylaktis and Ravazzolo (2002) examined stock market linkages of a group of Pacific-Basin countries with US and Japan by estimating the multivariate cointegration model. Liu and Pan (1997) studied the mean and volatility spillover effects from the U.S. and Japan on the group (Hong Kong, Singapore, Taiwan, and Thailand). Wu and Su (1998) showed that, the large markets will lead to small markets about return. The Japanese market has a strong effect on other markets in cases where the U.S. impact is separately isolated by using the impulse response functions of a VAR model.

Many researchers suggested that the substantially increased use and integration of international stock markets also enhance the efficiency of global financial markets. Bailey (1990) examined the effect of U.S. monetary shocks on the Pacific-rim stock markets and showed that, the stock indices of countries with relatively few barriers to investment flows exhibit stronger reactions than those with strict capital flow controls. Kohers and Kohers (1995) find that 11 European stock markets are linked with both each other and the rest of the world. The presence of these distinct systematic relationships has increased overall market efficiency so that abnormal returns are less common in these markets today.

Kanas (1998) mentioned six largest U.S. and European countries (UK, Germany, France, Switzerland, Italy and the Netherlands) with bilateral cointegration relationship between stock markets, which have been examined. Discussed with the U.S. stock market of European countries concluded that there is a relationship cointegrated.

III. VIETNAM ECONOMIC AND ITS COOPERATION

3.1 Vietnam Economy

For decades, the Vietnam were known as one of poor and backward ones in Asia. Butrecently, Vietnam represents an impressive and respectable development. Vietnam's economy has been one of the strongest and fastest growing countries of Asian. However, its stock market has still a lot of restrict, such as preliminary form, much challenge and high risk. This is a potential market but challenging for foreign investors.

Nowadays, Vietnam is known as a developing country in Southeast Asian. The economy of Vietnam is more and more developed. In recent years, Vietnam's economy has totally changed and it makes a great achievement in all aspects. For instance, the average GDP growth rate is 6.2% from 2000 to 2013. In 2013, Gross Domestic Product in Vietnam expanded 5.54% over the previous year. Vietnam is considered as one of the brightest spots of economic growth in the world of momentum portfolio (The General Statistics Office of Vietnam).

Vietnam has chosen a correctly way to develop economic.In addition, Vietnam also has adjusted its foreign economic policiesto attract foreign investment. Therefore, Vietnam has been gradually became a huge market. Base on the strength of resources, labor, technology and strategic position, Vietnam has more opportunities to develop partnership relations with another countries in the field of agriculture, industrial, energy...

3.2 Relation between Vietnam Its Cooperation

At the beginning of 2008, the perception of risk in financial markets has started to change. That is the U.S. economy fall into recession, many Asian countries experienced the largest decline in the stock market. Losses in other countries outside the United States occurred in higher amounts. The negative impact of the crisis on emerging markets has also affected developed countries like Germany and Japan . S&P 500 index, which fell nearly 12% in January, rising stock value lost an average of 16% , weathering hypothesis value quickly.

U.K, U.S, France and Japan aresome of the largest and major trading partner with Vietnam. These 4 markets were chosen because of their relatively high share of Vietnam, i.e. Japan and the US are Vietnam's two biggest trading partners, while, the UK and France are Vietnam's two long-run relationship of trading partners. The direct investment activity from those countries to Vietnam will be larger if more resources are invested to develop the

financial market and reduce the technology gap among Vietnam economy with foreign.

This study mainly investigates the affect of stock markets linkages between Vietnam and these four stock markets.

In December 2008, Vietnam and Japan signed Vietnam–Japan Economic Partnership Agreement (VJEPA). This is a comprehensive bilateral agreement that will boost trade liberalization of goods, services, economic cooperation and investment. One of the major parts of the Agreement focused on economic cooperation in such areas as agriculture, industry, trade and investment, development of human resources. Acting as a core in the comprehensive relationship between Vietnam and Japan, economic cooperation has been developing very successfully. Currently, Japan is the third largest trade partner of Vietnam. The year 2010 marked the significant recovery of the two countries bilateral trade, turnover reached more than USD 16 billion.

Recently, relationship between Vietnam and the U.K has a good development. In 2013, UK directly invested 3 billion USD into Vietnam. From 2011 up to now,export from Vietnam accounted for 2.44 billion pounds (\$3.9 billion), while import touched 292.17 million pounds (\$467.47 million). In addition, the trade of economy with the U.S has gained a nice figures. Vietnam's economic reforms have resulted in an average annual economic growth of 7.5 percent during the last decade. As Vietnam's third largest trade partner and its largest export market, the United States has benefited from the strong trade relations. In 2007, total two-way trade in goods between the United States and Vietnam was \$12.53 billion. France is now Europe's second biggest investor in Vietnam, with 391 projects valued at \$3.24 billion of direct investment by July 2013. Almost two thirds of French investment is targeted on the service sector, one fifth on industry (water, gas and electricity). The two-way trade between Vietnam and France hit \$3.75 billion in 2012.

VI. Data & Methodology

4.1 Data Description

This study considers the stocks in five countries, the U.K., the U.S., France, Japan, and Vietnam. Sample data for the former four countries are obtained from the Compustat databases while sample data for Vietnam is obtained from Vietnam stock exchange.

The U.K.: FT 30 Index (Financial Times Ordinary Share Index)

The U.S.: S&P 50 Index (Standard and Poor's 500 Index)

Japan: Nikkei 225 (Nikkei-Dow Index)

France: The CAC 40(CotationAssistée en Continu)

Vietnam: Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange(HNX)

This study uses monthly stock index data over the period from August 2000 to May 2013.

4.2 Methodology

4.2.1Vector Auto-regression

This paper uses the vector auto-regression (VAR) method with a proper control for hetero-scedasticity. The VAR model is particularly well suited for our purpose since it avoids the problems inherent in the single equation method yet still yields useful econometric evidence with which to examine the relative importance of the those major markets.

The studies mentioned above have mainly focused on the interdependence among stock markets of the developed countries such as the U.S., UK, Japan, and France. Although the Asian stock markets are currently suffering from the recent financial crisis, the importance of stock markets in the AEMs has still grown tremendously in recent years.

In this paper, we focus on the long-term linkages between Vietnam and some developed countries in view of the recent turmoil in the equity and foreign exchange markets of this region. During our sample period these countries have moved from being relatively isolated from outside influences to their stock markets being opened up and exchange rates floated. In some countries, restrictions on foreign ownership and capital flows continue to remain in place. Further, all the markets examined trade simultaneously during the day so the market linkages can be analysed in a more 'dynamic' setting where shocks in the system are expected to be rapidly transmitted between markets.

We focus on price dynamics of momentum portfolios among these countries' stock

markets. We follow Jegadeesh and Titman (1993) to construct the momentum portfolios for these countries.

Vietnam stock market has developed very strong during in recent times. But in the stock market, profit and risk are parallel with each other. Some theories indicate that: if it get a high profits, investors maybe face to higher risk. Investment in stock is very high risk investment, that why, the investors always want to minimize risk in this investment sector. Nowaday, though cannot remove all risks, but due to the advancement of science and technology, the mathematical tools which allow people to actively prevent, minimize, or default swaps to proactive control the risk. Thus, a series of system and risk evaluation method were born. One of those methods is reliable valuation risk (Value at Risk - VAR). According Due & Pan (1997) and Jorion (1997), VAR used to determine the value of risk in the stock market. It can ensure that the financial institutions are still active after risk by the crisis event.

For example, if a bank announced that the daily VAR for their portfolio trading at about U.S. \$ 30 million with 96 % reliability. It means the probability that the bank maybe lost of 30 million dollars is 4 %. This number shows that the level of risk and the probability of risk of this bank. Based on VAR, shareholders and managers can review and then they can give some idea to accept or not the extent of this risk. They also can find out the source of risk through this VAR value. Under the perspective of an agency management, VAR can be defined as the smallest loss in abnormal conditions of the financial markets.

The method used to analyse the daily market returns involves the vector auto-regression (VAR) model proposed by Sims (1980), which allows us to analyse the transmission of market movements across countries. This method was very useful when it can provide some relationship and influence in the case of world equity markets. The VAR can show the dependent variables for lagged variables, when the VAR has been measured, the assessment of close relationship of an individual market for creating favourable conditions for their own profit and the other markets will become easier. By using the estimated VAR methodology, we can find out the dynamic responses of market in each country and compete with another markets. Thus, this method is really important in describing the linkages between stock markets. There are several different approaches to testing for stationarity, including Phillips and Perron (1988) and Kwiatkowski et al. (1992). The VAR in this study can help us to examine the relative importance of the two major markets on this five markets.

The (VAR) model used in this paper can be expressed in its standard form as:

$$R(t) = C + \sum_{k=1}^{p} A(k)R(t-k) + e(t)$$
 (1)

where: R(t) is a 5×1 column vector of daily returns in the market indices in the time (t). C is a 5×1 column vector of constant terms, A(k) is a 5×5 matrix of coefficients.

4.2.2 Unit root tests

The two most popular unit root tests are the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test. The PP and ADF tests differ mainly in how they treat the serial correlation and heteroscedasticity in the innovations. The PP tests correct for any serial correlation and heteroscedasticity in the errors of the test regression non-parametrically with the help of Newey and West heteroscedasticity and autocorrelation-consistent covariance matrix estimator while the ADF test account for the autocorrelation by the inclusion of lagged terms. However, both of them have their own shortcomings. Cheung and Lai (1997) showed that PP test exhibits poorer performance compared to the ADF test in the presence of positive serial correlation and the proper bandwidth selection can help improve. The literature on the unit root tests has gained another dimension with Perron (1989) who emphasized that ADF test can result in failure to reject the null hypothesis of unit root in the presence of structural breaks even if the series does not contain unit root in fact. Since then, the effect of the structural breaks on the validity of the unit root tests received much attention as a forefront issue. Perron (1989) treated the break date as exogenous while Zivot and Andrews (1992), Perron and Vogelsang (1992), Clemente, Montane and Reyes (1998) let the break date be endogenously determined by the data. Moreover literature review on the unit root tests allowing for structural breaksis provided by Glynn, Perera and Verma (2007).

If the time series yt is well characterized by an AR(1) with white noise errors, the unit root test a described above are valid. Said and dickey (1984) agument the basic autoregressive unit root test to accommodate general ARMA(p,q) models with unknown orders and their test is referred to as the augemented Dickey-Fuller(ADF)test. The ADF test based on estimating the test regression:

$$y_t = \beta'^{D_t} + \phi y_{t-1} + \sum_{j=1}^p \psi_j \Delta y_{t-j} + \varepsilon_t$$
(2)

4.2.3 Testing procedure for linear Granger causality

Granger (1969) defines causality between two stationary series x and y in terms of predictability. Formally, a time series y_t Granger-causes another time series x_t can be predicted better by using past values of y_t than by using only the historical values of x_t . The null hypothesis is Granger non-causality between the two series. In other words, Granger

non-causality occurs when the information set on the first variable does not improve the prediction of the second variable over and above the predictive capacity of the information in the economic policy uncertainty time series. Suppose that x_t and ty_t of length n are equity market uncertainty and economic policy uncertainty, respectively. Testing for causal relations between the two series involves estimating a ρ -order linear vector autoregressive model, VAR(ρ), as follows:

$$\begin{bmatrix} x_t \\ y_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} + \begin{bmatrix} \phi_{11,1} & \phi_{12,1} \\ \phi_{21,1} & \phi_{22,1} \end{bmatrix} \begin{bmatrix} y_{t-1} \\ x_{t-1} \end{bmatrix} + \begin{bmatrix} \phi_{11,p} & \phi_{12,p} \\ \phi_{21,p} & \phi_{22,p} \end{bmatrix} \begin{bmatrix} y_{t-p} \\ x_{t-p} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} (3)$$

Where $\varepsilon = (\varepsilon_{1t}, \varepsilon_{2t})$ is a white noise process with zero mean and covariance matrix Σ and ρ is the lag order of the process. In the empirical section, the Schwarz Information Criteria (SIC) is used to select the optimal lag order ρ . α_1 and α_2 are constants and ϕ' sparameters. In this setting, the null hypothesis that EMU does not Granger cause EPU can be tested by imposing zero restriction $\phi_{12,i} = 0$ for i = 1, 2, ..., p.

4.2.4 Hiemstra-Jones Nonlinear Causality Test

Hiemstra and Jones (1994) proposed a nonparametric statistical method for detecting nonlinear causal relationships based on the correlation integral. To define nonlinear Granger causality, assume that there are two strictly and weakly dependent time series $\{X_t\}$ and $\{Y_t\}$, t = 1,2,2...,T. Let m –length lead vector of X_t be designated by X_t^m and the Lx –length and ly –length vectors of X_t and Y_t , respectively, by X_{t-Lx}^{Lx} and Y_{t-Ly}^{Ly} . For given values of m, Lx and Ly \geq 1 and for all e > 0, $\{Y_t\}$ does not strictly Granger $\{X_t\}$ if:

$$P(||X_{t}^{m} - X_{s}^{m}|| < e |||X_{t-Lx}^{Lx} - X_{s-Lx}^{Lx}|| < e, ||Y_{t-Ly}^{Ly} - Y_{s-Ly}^{Ly}|| < e)$$

= $P(||X_{t}^{m} - X_{s}^{m}|| < e |||X_{t-Lx}^{Lx} - X_{s-Lx}^{Lx}|| < e)$ (4)

V. EMPIRICAL RESULT

Table 1 shows some details on the various indices investigated. It introduces descriptive statistics for monthly market returns of those markets. Base on this table, we can see some variables of the mean and the standard deviation of the rate of return for each market during the sample period. This table indicated that both the United States and the Vietnam markets have the largest standard deviations as well. Likewise, the United States and the France markets have the greatest kurtosis.

	US	UK	JPN	FR	VN
Mean	0.0098	0.0208	0.0038	0.0078	0.0023
Median	0.0119	0.0198	0.0046	0.0068	0.0059
Maximum	0.0926	0.0795	0.0775	0.0772	0.1041
Minimum	-0.1208	-0.0524	-0.0654	-0.0887	-0.1004
Std. Dev.	0.0274	0.0202	0.0205	0.0210	0.0405
Skewness	-1.1953	-0.1825	0.1397	-0.1624	-0.2322
Kurtosis	7.6046	3.7117	3.9312	5.6803	2.9620

Table 1. Basic statistics of 5 stock indices

Note: The indices of Std. Dev. is Standard Deviation. The Kurtosis here computer with S-Plus is the excess kurtosis.US = United Stated, UK = United Kingdom, JPN = Japan, FR = France and VN = Vietnam. Std.Dev. = Standard deviation.

Monthly rate of return for the five stock markets is calculated based on the logarithmic prices:

$$\mathbf{r}_{t,i} = (\log \ \mathbf{p}_{t,i} - \log \ \mathbf{p}_{t-4,i}) \times 100$$
(5)

where: $r_{t,i}$ denotes the rate of return for the ith market on day t and $p_{t,i}$ denotes the corresponding stock price index.

The correlation matrix of *n* random variables $X_1, ..., X_n$ is the $n \times n$ matrix whose *i,j* entry is corr(*Xi, Xj*). If the measures of correlation used are product-moment coefficients, the correlation matrix is the same as the covariance matrix of the standardized random variables Xi / σ (*Xi*) for i = 1, ..., n. This applies to both the matrix of population correlations (in which case " σ " is the population standard deviation), and to the matrix of sample correlations (in which case " σ " denotes the sample standard deviation). Consequently, each is necessarily a positive-semidefinitematrix. The correlation matrix is symmetric because the correlation between *Xi* and *Xj* is the same as the correlation between *Xj* and *Xi*.

	<u>US</u>	<u>UK</u>	JA	<u>FR</u>	<u>VN</u>
<u>US</u>	1				
<u>UK</u>	0.2182	1			
	(0.0601)				
<u>JA</u>	0.2776	0.2278	1		
	(0.0159)	(0.0493)			
<u>FR</u>	0.2315	0.1265	-0.1723	1	
	(0.0457)	(0.2794)	(0.1393)		
<u>VN</u>	-0.2071	-0.2740	0.0217	-0.1045	1
	(0.0746)	(0.0174)	(0.8537)	(0.3724)	

Table 2. Correlation matrices

Note: The number in the parentheses denotes the p-value.

Table 3. The length of the optimal lag based on SIC

	<u>US</u>	<u>UK</u>	JA	<u>FR</u>	
<u>VN</u>	1	1	1	1	

The VARs are simulated using prespecified model parameters and lag length and a random number generator. The alternative lag selection criteria are evaluated by computing the frequency distributions of lag lengths selected by each lag selection criterion. Four different bivariate lag models are considered. The out-of- sample forecasting performance of the models selected by each lag selection criterion are also examined, as is the ability of each lag selection criterion to generate impulse reponse functions that mimic the true impulse response function.

SIC = $ln |\tilde{X}| + \frac{lnT}{T}$ (number of freely estimated parameters) where $\tilde{\Sigma}$ =estimated covariance matrix and T=number

	<u>VN</u>	<u>US</u>	<u>VN</u>	<u>UK</u>	<u>VN</u>	JA	<u>VN</u>	<u>FR</u>
<u>VN(-1)</u>	0.4318	0.0264	0.3365	-0.0190	0.3627	-0.0264	0.3612	-0.0076
	[5.017]	[0.676]	[2.9698]	[-0.5824]	[3.3210]	[-0.9432]	[3.2874]	[-0.2252]
P-value	0.0000	0.2500	0.0019	0.2808	0.0006	0.1740	0.0007	0.4111
	0.0860	0.8376	-0.2907	0.6236	-0.0192	0.8049	-0.0388	0.5255
<u>US(-1)</u>	[0.736]	[15.85]	[-0.813]	[6.059]	[-0.064]	[10.59]	[-0.113]	[5.009]
	0.2316	0.0000	0.2088	0.0000	0.4742	0.0000	0.4548	0.0000
	0.0015	0.0009	0.0068	0.0067	0.0022	0.0024	0.0022	0.0021
<u>C</u>	[0.432]	[0.571]	[0.891]	[3.053]	[0.381]	[1.636]	[0.423]	[1.342]
	0.3334	0.2843	0.1876	0.0014	0.3517	0.0519	0.3364	0.0916
R-squared	0.19831	0.70444	0.14240	0.37408	0.13446	0.61357	0.13456	0.26587
<u>Adj.</u> <u>R-squared</u>	0.183326	0.698924	0.118251	0.356454	0.110079	0.602692	0.110188	0.245197
<u>F-statistic</u>	13.23406	127.5173	5.89498	21.21703	5.51486	56.36822	5.519919	12.85696

Table 4.VAR results

 Table 5.
 Granger causality test results

Dep.	<u>VN</u>	<u>US</u>	<u>VN</u>	<u>UK</u>	<u>VN</u>	JA	VN	<u>FR</u>
Indep.	US	VN	UK	VN	JA	VN	FR	VN
Direction	VN<-/-US	VN-/->US	VN<-/-UK	VN-/->UK	VN<-/-JA	VN-/->JA	VN<-/-FR	VN-/->FR
<u>Chi-sq.</u>	0.5424	0.45 82	0.6622	0.3391	0.0042	0.8896	0.0129	0.0507
<u>Prob.</u>	0.4614	0.4985	0.4185	0.5621	0.9484	0.3488	0.9096	0.8224

-/-> denotes does not Granger-cause. The test procedure is based on the bivariate VAR(k) model. The optimal k is based on the Schwartz Criterion (SC). k = 1 is found in all cases according to the SC.

VI. EMPIRICAL CONCLUSION

This study gives you clearly answer of questions: it is possible diversification gains from international investments, isn't it? It is also important because it may have significant implications for the development of international asset pricing theory, the financial policies of multinational firms, and the regulation of the markets and their mechanisms. Therefore, this paper will base on momentum portfolio to examines the linkages between the stock markets in Asian (Vietnam, Japan) and Europe (The U.S, The U. K, France) by using a vector auto-regression model. And provide evidence of a long-run momentum stock market markets between the stock prices of Vietnam and these countries.

In this highly competitive market case, most important long-term economic relationships linking developed importers with processors in Vietnam are indispensable and helpful for inexperienced business of Vietnam. These linkages have been carefully enlightened and provide mutual benefits to both of them in the form of stability, predictability, and access to necessary information and technical assistance.

This article is designed to address certain gaps and questions of useful linkages in world's economic. Considerable research has been attend to young market issues related to the production of developed market in the world. We believe this article expands the understanding of Vietnam market. It's very useful for investment business activities for by directly or indirectly.

Base on the cointergration result, we found a evidence of momentum stock market linkage between Vietnam and Japan. Unless Japan, there are no evidence of relationships between the momentum portfolios of stock markets indices of Vietnam and its major counterparties.

Finally, we've not only investigated the relations among stock markets, but we also find that certain macroeconomic variables like bilateral trade and foreign exchange may have certain influences on the co-movements of stock markets. Incorporating macro variables into cointegration research would yield insightful results and design a fair business practices.

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