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Stock Price Dynamic Behavior in Selected Global and Korean Capital Markets

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Abstract
The dynamic price movement of stocks in major global stock exchanges has gained a *considerable attent*ion *from portfolio managers, international mutual funds and other financial institutions as these exchanges have become increasingly internationalized. This research aspires on new findings into the dynamic nature of major global stock exchanges and the Korean stock exchange since it has received relatively less attention despite its liberalization and sound financial development in addition to continued growth in its economy. The linkage of stock price movements between major global and Korean capital markets are investigated by employing a monthly sample from January 1987 to October 2018. The Johansen test for cointegration indicates that the equilibrium relationship among global and Korean stock exchanges exist in a long-run. Further, the analysis of a vector error correction model reveals that stock exchange price movements of the U.S. DOW and Japan are not significant, but are highly significant at 0.01 levels for Hong Kong and NASDAQ. Additionally, the impulse responses of KOSPI to other innovations of global stock exchanges confirms that KOSPI's impulse response is determined by its own shock, Hong Kong and NASDAQ stock exchange, and exchange rates while crude oil prices, the U.S. federal funds rate and Korea money supply M2 display no impact on KOSPI.*

Keywords: Stock Prices; Stock Exchange Linkage; Oil Prices; Exchange Rates; Federal Funds, NASDAQ; DOW; Nikkei Index; Hang Seng Index; Korea; VEC Model

JEL Classification: E44, E49, F30, F37, F39, G17, G19

1. Introduction

Acroamatic price movement of stocks in major global stock exchanges such as the National Association of Securities Dealers Automated Quotations (NASDAQ), the New York Stock Exchange (NYSE), the Hong Kong (Hang Seng or HSI) and Tokyo (NIKKEI) stock exchanges has gained a considerable attention from portfolio managers, international mutual funds and other financial institutions as these exchanges have become increasingly internationalized. Inquiring into the degree and nature of interdependence among these stock markets and regional/national stock exchanges, in particular, the Korea Stock Exchange is of significant interest and crucial undertaking for institutional as well as private investors. A plethora of researches have examined the mechanisms of stock price movements that are transmitted across global stock exchanges and how these transmissions may evolve over time. Specifically, a high degree of stock exchange co-movements generally occurred in highly developed stock

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exchanges (Friedman and Shachmurove, 1997; Westermann, 2004; Quan and Huyghebaert, 2006).

Up until the present, regional/national stock exchanges in emerging economies appear to be less integrated globally due to their economic growth, financial exchange development, monetary policy and regulatory controls may influence the integration stock exchanges to some extent (Korajczyk, 1996). Besides, the literature shows that the stock exchange segregation of regional/national stock exchanges from global stock exchanges has unlikely declined over time, for example, before and after 1997-1998 Asian financial crisis (Huyghebaert and Wang, 2010) and during 1969-1992 (Bekaert and Harvey, 1995). Although some regional/national stock exchanges become more integrated over time, others are less so (Bahang and Shin, 2003; Huang et al., 2000). So far, empirical studies on the stock exchange co-movement between global stock exchanges and regional/national stock exchanges yield mixed results (e.g. Hsiao et al., 2003; Masih and Masih, 1999, 2001; Yang, Kolari, and Min, 2003).

In the context of existing findings, this research aspires on new findings into the dynamic nature of major global stock exchanges and the Korean stock exchange since the Korean stock exchange has received relatively less attention in the literature despite the liberalization of the Korean stock exchange and its sound financial development in addition to continued growth in its economy. Thus, it is important to explore on these research questions: Is there a time-dependent causal association major global stock exchanges and the Korea stock exchange? What are the direction and degree of this association?

2. Literature Review

This section reviews existing literature on stock exchange linkages, and the association of prices of stocks and macroeconomics variables. Hinged on these reviews, eight hypotheses are constructed.

2.1. Stock Exchange Linkages

Faced with the growing globalization, there has been a significant development in stock exchange linkages. Many literatures state that global stock exchange co-movement is increasingly strengthened, leading to a closer relationship between stock price and their volatilities. In addition, liberalization of financial exchange and relaxation of the restrictions contribute on the growing financial integration (Phylaktis and Ravazzolo, 2005). However, a high degree of financial integration between national exchanges is risky as it makes global diversification more difficult and affects the exchange efficiency (Bessler and Yang, 2003). Currently, the stock exchange linkages are dynamic in different regions. The linkages with global stock exchanges are more solid and efficient in developed countries than in emerging exchanges (Mollah and Mobarek, 2009). A research on stock returns over 24 national exchanges indicates the market segmentation is more intense in emerging exchanges than in developed exchanges (Korajczyk, 1996). While strong linkages enhance the predictability of stock exchange, the stock exchange forecasts are more accurate in developed countries that in developing nations (Chatterjee, 2016).

Thereupon, the effect on stock exchange linkages are determined by common factors, instead of country-specific ones (Mobarek and Li, 2014). Those common factors are more visible in Western countries than in Asia-Pacific regions. Also, due to the weak linkages with global stock exchange, the expected investment returns in emerging stock exchanges are mainly forecasted by country-specific factors (Li and Majerowska, 2008). In fact, a number of studies investigates country-specific factor by focusing some specific regional stock exchanges. Nevertheless, the results about these exchange linkages are mixed. In the case of Korean exchange, the relationship between Korean stock exchange and global stock exchanges are random (Kim, 2015). Japan and the U.S. pose the largest effect on Korean exchange returns.

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On the other hand, Taiwan affects the Korean stock exchange the most in terms of exchange volatility. Korean stock exchange is largely affected by the U.S. stock exchange while it has only small effect on the US (Jeon and Jang, 2004). After the 1997 financial crisis, Korean stock prices are found to be increasingly responsive to the U.S. stock prices. Likewise, US stock exchange plays an important role over many stock exchanges around the globe. Being the leading equity exchange the US stock exchange has the strongest linkages with both the developed and developing exchanges in the world (Rezayat and Yavas, 2006).

2.2. Stock Prices and Macroeconomics Variables

Apart from stock exchange linkages, relationship between stock price and macroeconomics variables is another popular research topic. Nevertheless, there is still no consensus on the usage of appropriate macroeconomic variables in investigating stock exchange influence (Rahman and Mustafa, 2008). The most frequently used variables are inflation rate, GDP growth rate, interest rate, industrial production rate, exchange rate, unemployment rate and fiscal balance. Although research studies tend to focus on diverse regions, from developed countries to emerging countries, or from Western countries to Asian countries, findings consistently report that there are relationships between macroeconomics variable and stock price. For emerging market studies, money supply, exchange rate and the world exchange return exert the most significant effect on stock returns (Bilson, Brailsford and Hooper, 2001). World production, inflation, GDP growth, money supply and interest rate are the key factors to explain the equity change in 13 emerging stock exchanges (Fifield, Power and Sinclair, 2002). In sum, these variables affect different markets in varying degrees.

For Asian market studies, Singapore's stock exchange is mainly affected by exchange rates, supply of money, rates of interest, price indexes and industrial production in both short and long terms (Boucher, 2006). Stock prices in major ASEAN countries are positively affected by the GDP growth in the long run while they are more likely affected by past values of macroeconomic variables in the short run (Wongbangpo and Sharma, 2002). In Taiwan stock exchange, exchange rate and GDP pose great effect on stock returns but employment rate and money supply do not have any significant effect (Singh, Mehta and Varsha, 2011). By now, stock prices in South Korea are affected by various macroeconomic variables in the long run while they may not be adapted to changes immediately in the short run (Fang, 2002). On top of that, the relationships between stock prices and macroeconomics variables become weak during financial crisis (Narayan and Narayan, 2012).

Based on the aforementioned literature, this study postulates that global stock exchanges, regional/national stock exchanges, oil prices and exchange rates are related to each other. To determine the existence of a time-dependent causal relationship between major global stock exchanges and the Korean stock exchange and the degree and direction of this causal relationship, the hypotheses are proposed as follows:

Hypothesis 1: There is an equilibrium association among global stock exchanges and the Korean stock exchange in the long-run.
Hypothesis 2: United States stock exchanges are likely to affect the Korean stock exchange in the short-run.
Hypothesis 3: The Japan stock exchange is likely to influence the Korean stock exchange in the short-run.
Hypothesis 4: The Hang Seng stock exchange of Hong Kong is likely to impact the Korean stock exchange in the short-run.
Hypothesis 5: Crude oil prices are likely to affect the Korean stock exchange in the short-run.
Hypothesis 6: Korean won exchange rate per U.S. dollar is likely to influence the Korean stock exchange in the short-run.

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Hypothesis 7: The federal funds rate is likely to impact the Korean stock exchange in the short-run.
Hypothesis 8: Korea money supply M2 is likely to have an effect on the Korean stock exchange in the short-run.

3. Data

All collected and retrieved data are monthly time series provided by the Bank of Korea, and the Yahoo Finance historical stock prices database. The sample is limited to availability of monthly data in duration of January 1987 and October 2018 with a total of 382 observations.

The models to investigate the long-run and short-run effects among the variables includes data from the Korea stock exchange index (KOSPI), the Dow Jones Industrial Average (DJI) and the NASDAQ Composite Index from the U.S. stock exchange markets, the NIKKEI 225 of Japan stock exchange index, the Hang Seng Index of Hong Kong stock exchange, crude oil prices (i.e. the West Texas Intermediate), the federal funds rate, Korea money supply M2 and exchange rates (Korean won exchange rate to U.S. dollar) in

The Composite Price Index of Korea Stock Exchange (KOSPI). KOSPI index consists of each and every common stocks traded on the Korea Stock Exchange. This index was established in 1983 with 100 base indexed on January 4, 1980 calculating from exchange capitalization. Thus, KOSPI represents stock exchange index of South Korea much the same as the DJI in the U.S.

The Composite Index of the National Association of Securities Dealers Automated Quotations (NASDAQ). NASDAQ Index is an across-the-board exchange index and the weighted index capitalized about 3,300 common equities listed on the NASDAQ stock exchange in the US. This index includes securities such as common stocks, real estate investment trusts, American depositary receipts (ADR), and limited partnership interests. What sets the NASDAQ apart from other indexes is that it is not limited to companies that just have the U.S. headquarters.

Dow Jones Industrial Average Index (DJI). The Dow Jones Industrial Average, commonly known as the Dow index, is a stock exchange index for the New York Stock Exchange. DJI is the sum of the price of one share of stock for each company from 30 large publicly owned companies based in the U.S. during a standard trading session in the stock exchange.

Japan Nikkei Index (NIKKEI). The NIKKEI 225 of the Tokyo Stock Exchange is a price-weighted index in Japanese Yen. It is the most widely quoted average of Japanese equities equidistant to the DJI. NIKKEI's components are currently reviewed once a year.

Hong Kong Hang Seng Index (HSI). HSI is the main indicator of the overall exchange performance representing an index of a free float adjusted exchange capitalization in Hong Kong. Daily changes of the largest 50 constituent companies consisting 58% capitalization of the Hong Kong stock exchange are employed to record and monitor.

West Texas Intermediate Crude Oil Prices (OIL). This benchmark in oil pricing is particularly a grade of crude oil. West Texas intermediate crude oil prices are listed as commodity on the New York Mercantile Exchange. While U.S. Energy Information Administration provides this data, the next three data sets--Korean Won Exchange Rate to U.S. Dollar, the U.S. federal funds rate and Korea money supply M2 are retrieved from the International Monetary Fund's International Financial Statistics.

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Korean Won Exchange Rate to U.S. Dollar (KRW/USD). Exchange rates are established in the market for foreign exchange. An exchange rate is the rate at which one currency will be exchanged for another or the value of one country's currency in relation to another currency. For example, an interbank exchange rate of 1000 Korean won (KRW) per USD (U.S. dollar) means that KRW1000 will be exchanged for each US$1, vice versa.

Federal funds rate. This negotiated rate between two banks is paid to the lending institution by borrowing institution. While the market generally determines federal funds rate, the Federal Reserve influences it through open market operations to reach the target rate.

Korea money supply M2. Money supply is the quantity of currency available within the economy to purchase goods and services. In brief, M2 includes currency in circulation, private sector's demand deposits and time and savings deposits. This variable is also employed in a similar model by Brahmasrene and Jiranyakul (2007). All latter four variables are included in this study to avoid exclusion bias.

All data are essentially normalized to transform their values to the same unit of measurement because KOSPI and global stock exchange indexes are presented in different scales and exchange rate per U.S. dollar is presented in Korean won. Table 1 presents the results of Pearson correlation analysis.

Table 1: Results of Pearson Correlation Analysis

Variables	KOSPI	Fed Funds	Korea M2	KRW/USD	Oil Price (WTI)	HK-HSI	JP-Nikkei	US-DJI
Fed Funds	-0.691**							
	[-18.648]							
Korea M2	0.747**	-0.720**						
	[21.953]	[-20.275]						
KRW/USD	0.245**	-0.526**	0.765**					
	[4.928]**	[-12.080]	[23.181]					
Oil (WTI)	0.820**	-0.720**	0.776**	0.413**				
	[27.929]	[-20.249]	[24.008]	[8.863]				
HK-HSI	0.737**	-0.625**	0.952**	0.671**	0.740**			
	[21.314]	[-15.615]	[60.652]	[17.677]	[21.495]			
JP-Nikkei	-0.193**	0.579**	-0.616**	-0.724**	-0.497**	-0.538**		
	[-3.843]	[13.866]	[-15.272]	[-20.514]	[-11.168]	[-12.443]		
US-DJI	0.690**	-0.601**	0.967**	0.767**	0.712**	0.940**	-0.499**	
	[18.611]	[-14.661]	[74.852]	[23.311]	[19.813]	[54.201]	[-11.243]	
US-NASDAQ	0.695**	-0.590**	0.941**	0.738**	0.671**	0.932**	-0.424**	0.985**
	[18.853]	[-14.264]	[54.648]	[21.321]	[17.644]	[50.408]	[-9.147]	[111.382]

Note: The p-value at the 0.05 is established to reject the null hypothesis.
** denotes that the correlation coefficient is significant at p-value < 0.001.
The numeric values in square brackets [ ] are t-statistics.

4. Results and Discussion

Selected unit root, cointegration, Granger causality tests and multivariate vector autoregressive model are standard procedures. Detailed explanation can be found in most econometric textbooks, EViews User's Guide and listed references/citations in this paper.

4.1. Unit Root Test

Table 2 revealed the results of three unit root tests: (1) the ADF Test or the augmented Dickey-Fuller Test from Dickey and Fuller in 1979 and 1981, (2) the PP Test or the Phillips-

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Perron Test proposed by Phillips and Perron in 1988, and (3) the KPSS Test introduced by Kwiatkowski, Phillips, Schmidt and Shin in 1992.

Table 2: Results of Unit Root Tests

Tests	ADF[0]	ADF[1]	PP[0]	PP[1]	KPSS[0]	KPSS[1]
KOSPI	-0.962	-14.965**	-0.899	-13.564**	1.775**	0.070
US-NASDAQ	1.111	-18.055**	1.102	-18.031**	2.148**	0.035
US-DJI	1.256	-18.597**	1.337	-18.569**	2.070**	0.105
JP-Nikkei	-1.634	-18.712**	-1.719	-18.704**	1.279**	0.115
HK-HSI	-1.360	-18.662**	-1.428	-18.661**	1.962**	0.145
Oil Price (WTI)	-2.132	-13.056**	-1.419	-12.769**	1.903**	0.078
KRW/USD	-2.006	-14.909**	-2.209	-11.086**	1.336**	0.054
Fed Funds	-1.616	-7.727**	-1.685	-10.924**	1.673**	0.062
Korea M2	-0.284	-14.232**	2.936	-20.187**	2.277**	1.088**

Note: The t-statistic values are shown in cells.
The p-value at the 0.05 is established to reject the null hypothesis.
(**, p-value < 0.001).
[0] denotes level and [1] denotes 1st difference.

4.2. Cointegration Test

To identify a long-run relationship, two test methods (1) by Engle and Granger in 1987, aka the test method of a single equation by Engle-Granger, and (2) by Johansen in 1988 or the Johansen conintegration test are undertaking. The maximum likelihood procedure in the Johansen approach has useful large and finite sample properties (Cheung and Lai, 1993). Thus, it is more efficient than the Engle-Granger method. Table 3 reports the results of the Johansen cointegration test by the method of least squares. Based on the MacKinnon, Haug and Michelis (1999) p-values, the results of both Trace test and Maximum Eigenvalue test indicate that there exists at most 2 cointegrating equations at the 0.05 level. The results support Hypothesis 1 that equilibrium relationship between major global stock exchange price movements and the Korea stock exchange price movement exists in a long-run. In other words, there exists a long-run equilibrium relationship between global stock exchange price movements and the Korea stock exchange price movement.

Table 3: Results of the Johansen Cointegration Test

Number of cointegration (r)	Trace statistic	Maximum eigenvalue statistic
$r = 0$	245.851***	73.375**
	[197.370]	[58.433]
$r \leq 1$	172.475**	52.468*
	[159.529]	[52.362]
$r \leq 2$	120.007	37.051
	[125.615]	[46.231]
$r \leq 3$	82.955	25.859
	[95.753]	[40.077]
$r \leq 4$	57.095	23.162
	[69.818]	[33.876]
$r \leq 5$	33.932	14.194
	[47.856]	[27.584]
$r \leq 6$	19.737	9.363
	[29.797]	[21.131]
$r \leq 7$	10.373	6.560
	[15.494]	[14.264]
$r \leq 8$	1.813	1.813
	[3.841]	[3.841]

Note: The critical values at the 0.05 level are displayed in square brackets [ ].
The p-value at the 0.05 is established to reject the null hypothesis.
(*, p-value < 0.05; **, p-value < 0.01; ***, p-value < 0.001).

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4.3. Vector Error Correction Estimates

Table 3 shows the Johansen cointegration test. In view of the results, an unrestricted multivariate vector autoregressive model (VAR) would not be a viable method to test short-run dynamics because there exists a cointegrating equation in the model. Table 4 reports the results of vector error correction model (VECM) estimates, which testing hypotheses 2, 3 and 4 that U.S. stock exchange price movements (NASDAQ and DJI), the Japan stock exchange price movement (NIKKEI) and the Hong Kong stock exchange price movement (HSI) are related to a change in the Korea stock exchange index in the short-run. The U.S. stock exchange price movement of DJI and the Japan stock exchange price movement (NIKKEI) are not significant at the 0.05 level, while the NASDAQ and Hong Kong stock exchange price movements are significant at the 0.01 level. Recall hypothesis 5, 7 and 8 that crude oil prices, the U.S. federal funds rate and Korea money supply M2 are related to the Korea stock exchange price movement in the short-run, Table 4 shows that these three variables are not significant at the 0.05 level. In testing hypothesis 6 that foreign exchange rates are related to the Korea stock exchange in the short-run, Table 4 reports that Korean won exchange rate per U.S. dollar is significant at the 0.01 level.

4.4. Impulse Responses

The shock effects of the current and future values of the endogenous variables on one of the innovations are identified as impulse responses estimation. By way of the vector autoregressive in form of the lag structure, a shock is transmitted to all endogenous variables. The results of the impulse responses of KOSPI to one S.D. (standard deviation) innovations of Cholesky are shown in Figure 1 with four significant variables: its own, exchange rate (KRW/USD), and Hong Kong-HSI and NASDAQ stock exchange price movements. The impact of KOSPI on its own, exchange rate (KRW/USD), and Hong Kong-HSI in the short run is positive for the duration, rising in the first few months before a drop and plateau out for its duration. The response of KOSPI on NASDAQ shows insignificant brief positive impact then gradually deteriorates into a negative zone. Hence, the impulse response of KOSPI is primarily influenced by its own shock, NASDAQ at lagged period 2, Hong Kong-HSI and exchange rate shocks.

5. Contributions and Implications

Turning to contribution and managerial implications, this study contributes to six main strands of literature as highlighted below:

(a) The previous literature indicates the relationship between Korean stock exchange and global stock exchanges are random (Kim, 2015). Japan and the U.S. pose the largest effect on Korean market returns. Consequently, Korean stock exchange is largely affected by the U.S. stock exchange while it has only small effect on the US (Jeon and Jang, 2004). To add empirical evidence to the literature, the current research discovers that a long-run equilibrium relationship between global stock exchange price movements (NASDAQ, DJI, NIKKEI and HIS) and the Korea stock exchange price movement (KOSPI) exists. Thus, the most important caveat in investment decisions would be to diversify into these stock exchanges that may reduce systematic risk. Importantly, further investigating the short-term dynamic effects of selected global stock exchange price movements and macroeconomic variables on KOSPI generates the next four contributions:

(b) For KOSPI itself, its lagged period incurs a highly significant positive effect on one current period (0.331). This should precipitate investors to figure in timely manner the likelihood of impermanence or what goes up must come down.

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Table 4: Results of Vector Error Correction Estimates

	Variables Lags order in ( )	Model 1 (+ Fed Funds) t-statistics in [ ]	Model 2 (+Korea M2) t-statistics in [ ]	Model 3 (+Fed Funds + M2) t-statistics in [ ]
Cointegrating Equation (Long-run dynamics)	ECT	0.001 [0.946]	0.001 [0.479]	0.001 [0.355]
Short-run dynamics	KOSPI(t-1)	0.322*** [5.394]	0.331*** [5.561]	0.331*** [5.549]
	KOSPI(t-2)	0.003 [0.060]	0.001 [0.020]	0.001 [0.028]
	Fed Funds(t-1)	0.002 [0.093]		0.001 [0.066]
	Fed Funds(t-2)	0.006 [0.236]		0.012 [0.465]
	Korea M2(t-1)		-0.526 [-1.542]	-0.551 [-1.604]
	Korea M2(t-1)		0.586 [1.732]	0.572 [1.681]
	Exchange Rate against USD(t-1)	0.508*** [4.201]	0.493*** [4.115]	0.488*** [4.043]
	Exchange Rate against USD(t-2)	-0.068 [-0.534]	-0.077 [-0.633]	-0.072 [-0.584]
	Oil Price: WTI(t-1)	-0.268 [-0.709]	-0.023 [-0.629]	-0.025 [-0.669]
	Oil Price: WTI(t-2)	-0.032 [-0.863]	-0.033 [-0.919]	-0.036 [-0.998]
	HK-HSI(t-1)	0.199*** [3.991]	0.186*** [3.719]	0.186*** [3.703]
	HK-HSI(t-2)	0.115* [2.245]	0.113* [2.205]	0.112* [2.192]
	JP-Nikkei(t-1)	0.055 [0.971]	0.053 [0.953]	0.052 [0.924]
	JP-Nikkei(t-2)	0.039 [0.697]	0.026 [0.465]	0.026 [0.459]
	US-DJI(t-1)	0.033 [0.298]	0.052 [0.472]	0.051 [0.469]
	US-DJI(t-2)	0.008 [0.079]	0.006 [0.059]	0.006 [0.063]
	US-NASDAQ (t-1)	0.021 [0.296]	0.021 [0.306]	0.022 [0.311]
	US-NASDAQ (t-2)	-0.301*** [-4.185]	-0.284*** [-4.006]	-0.284*** [-3.986]
	Intercept(C)	0.003 [1.080]	0.002 [0.403]	0.002 [0.477]
R-squared		0.278	0.288	0.288
Adjusted R-squared		0.244	0.254	0.251
F-statistic		8.202	8.605	7.674

Note: Dependent variable: KOSPI(t)
Sample (after adjusted): 1987M04-2018M10
The p-value at the 0.05 is established to reject the null hypothesis.
(*, p-value < 0.05; ***, p-value < 0.001).

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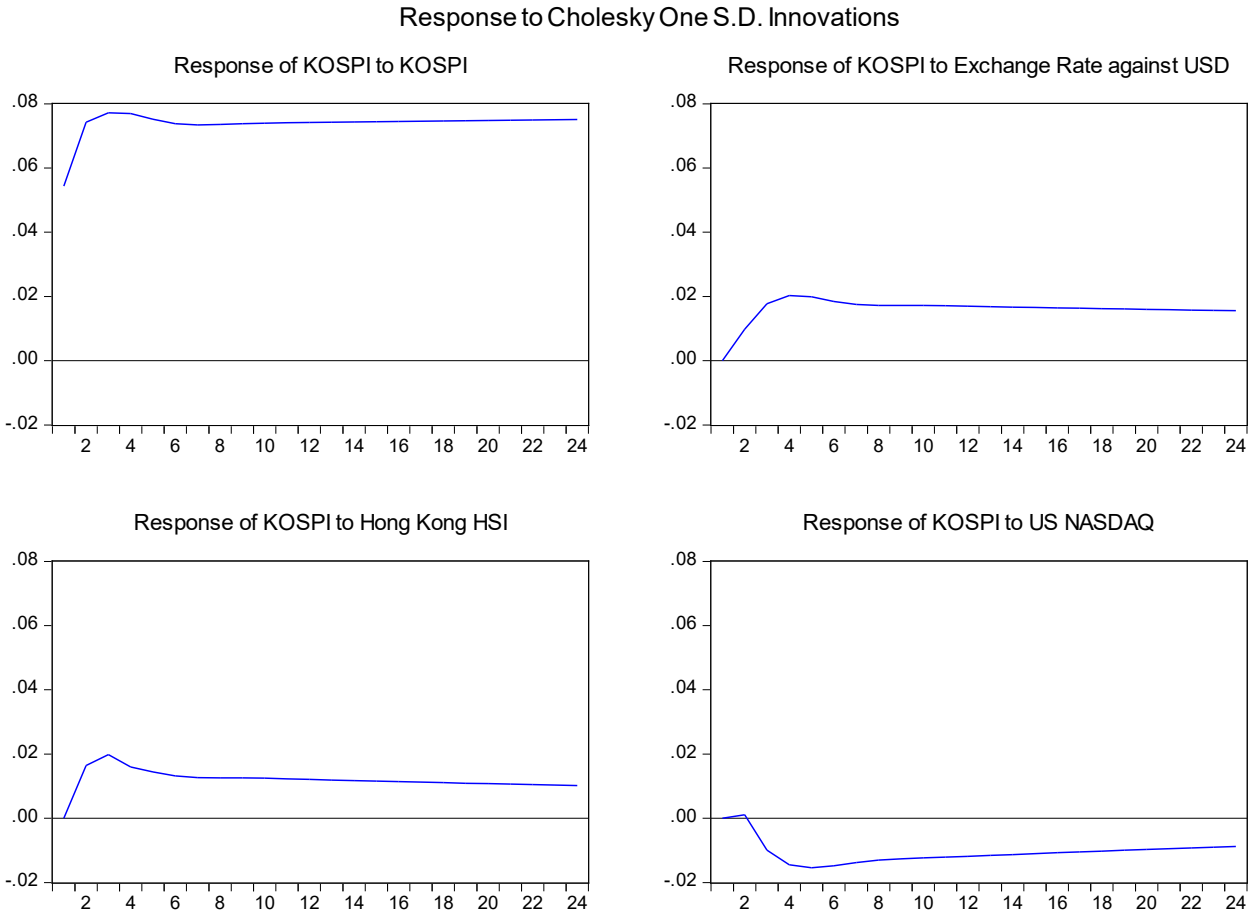

Figure 1: Impulse Responses of KOSPI to Innovations of International Stock Market Indices

(c) The Hong Kong stock exchange price movement (HSI) is related to KOSPI in the short-run. Both two lagged periods for HSI yields a highly significant positive effect on KOSPI. Regarding the HSI coefficient, its first-order lag of 0.186 is positive while the lag coefficient of second-order is smaller, 0.112 in absolute term, but positive resulting in a total positive impact of 0.298. Therefore, high HSI growth raises KOSPI in the early stage, eventually tumbles down and levelling off positively in the remaining periods. So, investors beware that nothing is permanent.

(d) The NASDAQ stock exchange price movement is related to KOSPI in the short-run in the second-order lag. The lagged two period of NASDAQ yields a highly significant negative influence on KOSPI. With respect to the HSI coefficient, its first-order lag is not significant and the second-order lag coefficient varies from 0.301 in Model 1 to 0.284 in models 2 and 3 in absolute values, respectively. It seems that larger capitalized NASDAQ stock exchange may later entice investors to diverge funds from KOSPI stock exchange.

(e) The exchange rate (KRW/USD) affects KOSPI in the short-run. This finding validates some existing literature that various macroeconomics variables exert different degree of influence on Korean stock price (Maysami and Sim, 2002). Among various factors, dividend yield, foreign exchange rate, oil price and money supply are the most significant (Kwon, Shin, and Bacon, 1997). This current study reveals that the Korea stock exchange operates apart from crude oil prices, the U.S. federal funds rate and Korea money supply M2 in global commodity exchanges.

(f) Finally, the lagged period of this exchange rate manifests a highly significant positive impact on KOSPI with its first lagged period. The first-order lag of the KRW/USD coefficient is positive 0.508, 0.493 and 0.488 in models 1, 2 and 3, respectively. The depreciation of domestic currency can encourage both foreign direct investment and portfolio investment that stimulate stock prices.

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6. Conclusions

While the major stock exchanges have become increasingly globalized, the results show that major global stock exchanges are unlikely linked with the Korean stock exchange. The findings suggest that the Korea stock exchange operates largely independent from major global stock exchanges such as the U.S. DOW stock exchanges and the Japan stock exchange, despite having linked to the Hong Kong stock exchange and the U.S. NASDAQ somewhat. The Korean stock exchange and the Hong Kong stock exchange seem to operate in concert. Additionally, the Korea stock exchange behaves separately from crude oil prices, the U.S. federal funds rate and Korea money supply M2. As the Korean won to U.S. dollar exchange rates have positive impact on Korea stock exchange prices, the inflow of foreign investment may surge as Korean won depreciates against U.S. dollar.

Recommendation. So far, more remain to be done even after having highlighted the contributions. Still, future research may include more stock exchanges in other regions that are growing in influence on the global stage such as the Stock Exchange of London, the Stock Exchange of Thailand (SET), the Bombay Stock Exchange in India, Sao Paulo Stock Exchange in Brazil and the Australian Stock Exchange, to name but a few. Besides Macroeconomic fundamentals that affect an economy at large, the volatility of stock exchanges in response to the major news and how they are transmitted from one market to another could be examined in future studies.

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