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Impact of Foreign Portfolio Investments on Select Advanced Economies

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Abstract
Advanced economies or developed countries are the ones at the top of all developmental, economic and social indicators. They have post-industrial economies, they were the first ones to have reaped the benefits of industrialization. According to the International Monetary Fund, advanced economies comprise 60.8% of global nominal GDP and 42.9% of global GDP (PPP) in 2014.

Since advanced countries were the first one to develop and prosper after industrialization, they also possess the most mature and developed financial markets too. In this paper we examine the relationship between Foreign Portfolio Investment (FPI) and major stock market indices of the selected advanced nations, viz. US, UK, Japan and Germany. We used net flows of foreign portfolio investments received by these advanced countries and their major stock market indices to establish the relationship. The stationarity of the data series are checked using Augmented Dickey Fuller (ADF) Test and tested for the autocorrelation, regression analysis is undertaken and Vector Autoregression (VAR) is applied.
Keywords: foreign portfolio investments, advanced countries, stock market

1. Introduction

Advanced economies is a term used by the International Monetary Fund to describe developed countries. “While there is no established numerical convention to determine whether an economy is advanced or not, advanced economies have a high level of gross domestic product per capita, as well as a very significant degree of industrialization.”A developed country, industrialized country, or "more economically developed country" (MEDC), may be described as a sovereign state that boasts of a highly developed economy and advanced technological infrastructure as compared to other less industrialized nations. The developed countries attained the status of being well developed as they reaped the benefits of industrialization long before other countries. Most commonly, the criteria for evaluating the degree of economic development of a country are - gross domestic product (GDP), gross national product (GNP), the per capita income, level of industrialization attained, amount of widespread technological as well as brick and mortar infrastructure and general standard of living. Which criteria are to be used and which countries can be classified as being developed have always been subject of debate. Developed countries have post-industrial economies, they were the first ones to have reaped the benefits of industrialization, and hence were in a position to attain a high standard of living for their citizens. According to the International Monetary Fund, advanced economies comprise 60.8% of global nominal GDP and 42.9% of global GDP (PPP) in 2014. In 2014, the ten largest advanced economies by GDP in both nominal and PPP terms were Australia, Canada, France, Germany, Italy, Japan, South Korea, Spain, the United Kingdom, and the United States.

Since advanced countries were the first one to develop and prosper after industrialization, they also possess the most mature and developed financial markets too. In the era of global business and finance, the role and importance of financial markets is immense. Financial markets are typically adjudged using the criteria like transparent pricing, basic regulations on trading, costs and fees and market forces determining the prices of securities that are traded therein. A stock market or equity market is the aggregation of buyers and sellers (a loose network of economic transactions, not a physical facility or discrete entity) of stocks (also called shares); these may include securities listed on a stock exchange as well as those only traded privately.”[4] Stock markets and stock exchanges act as facilitating organisations which bridges the gap between buyers and sellers of securities and brings them together. The coming together of buyers and sellers and the resultant interaction leads to discovery of fair price. Market participants include individual retail investors, large business houses, institutional investors such as mutual funds, banks, insurance companies, pension funds, university endowment funds and hedge funds, and also publicly traded corporations trading in their own shares. Some studies have

suggested that institutional investors and corporations trading in their own shares generally receive higher risk-adjusted returns than retail investors.

The rise of the institutional investor has led to many improvements in operations of the stock market as the participation of institutional investors have increased the volumes significantly, which in turn leads to reduction of administrative and operations cost per transaction. The increased participation of such investors also results in better corporate governance standards and transparency being observed.

The **stock market** is one of the most important ways for companies to raise money. Globally the stock market is considered as the primary indicator of a country's economic strength and development. An economy which experiences the stock market rise is usually considered to be an up-and-coming economy. Rising prices of stock tend to be associated with increased business investment and vice versa.

A brief idea of the development indicators with respect to the four of the most advanced countries is presented in Table 1.

Table 1 Development Indicators

Indicator	**United States of America**	**United Kingdom**	**Germany**	**Japan**
Population (2015, in million)	322	64	81	128
GDP (US$, 2014)[1]	17,348,075	2,950,039	3,874,437	4,602,367
Rank by GDP	1st	5th	4th	3rd
Major stock exchange	NYSE	LSE	Deutsche Borse	Tokyo SE
Market capitalization of major SE[3]	19,223	6,187	1,762	4,485
Monthly trade volume[3]	1,520	165	142	402
GDP growth rate (2014)[2]	2.4%	3.2%	1.4%	1.3%

1. Source: IMF
2. CIA world factbook
3. As on 31st January, 2015 (in billion USD), source: monthly reports, World Federation of Exchanges

2. Review of Literature

The review of literature on the topic of foreign institutional investments and their impact on the stock markets of advanced countries is carried out in this section. The linkages of advanced countries stock markets with developing stock markets has also been discussed.

Singh (2010) investigated Chinese and Indian stock market linkages with a few developed stock markets. The researcher concluded that both Chinese and Indian markets are correlated with the selected developed markets based on the analysis of Granger causality. Ramona and Antonescu (2014) investigated long-term dynamic causal linkages between Hungarian and Romanian stock markets. Their analysis is based on daily returns of selected stock markets major indices during the sample period between January 2000 and January 2014. The financial econometrics framework includes descriptive statistics, Unit Root Test, Augmented Dickey-Fuller stationary test, BDS test and Granger causality test. Alvi et al (2015) investigated the Co-movement of Pakistan stock market (KSE-100) with the stock market of developed countries (US, UK, Canada, Australia, Germany, Japan, France and Neither land). Froot, O'connell, and Seasholes (2001) explored daily international portfolio flows into and out of 44 countries from 1994 through 1998. They found evidence that flow of funds get influenced by past returns, and inflows have positive impact on future equity returns specially in the case of emerging economies. Abhyankar, Copeland and Wong (1997) tested for nonlinear dependence and chaos in real-time returns on the world's four most important stock-market indexes viz- the S&P 500, the DAX, the Nikkei 225, and the FTSE-100. Due to the sensitivity of the results to the estimation parameters, they concluded that the

data are dominated by a stochastic component. Booth, Lee and Tse (1996) analyzed the linkages and information transmission of similar Nikkei stock index futures contracts traded on three international exchanges, the OSE, SIMEX, and CME. They found Granger-causality ran from the market(s) that is placed in the last trading order within 24 hours in the vector error correction model but this causal relationship is shorter than one day. They concluded that the three markets are informationally efficient on a daily basis. Poshakwale and Thapa (2007) examined the influence of foreign institutional investments in explaining the short and long run relationship of the Indian equity market with the main developed equity markets of the US and the UK. They observed that the mobility of foreign portfolio flows carry important information in explaining the short and long term co-movements of the Indian equity market with that of the US and the UK equity markets. They concluded that the rapid growth in the flow of the foreign portfolio investments has led to greater integration of the Indian equity market with the main developed markets. Click and Plummer (2005) examined the degree to which the five stock markets in the original Association of Southeast Asian Nations countries (ASEAN-5) are correlated in order to find out the feasibility of policy initiatives to enhance ASEAN stock market integration and the implications for portfolio investors. They concluded that the ASEAN-5 stock markets are cointegrated - ASEAN-5 stock markets are integrated in the economic sense, but that integration is far from complete. Nath and Verma (2003) examined the interdependence of the three major stock markets in South Asia -India (NSE NIFTY), Singapore (STI) and Taiwan (Taiex). They found no cointegration between the stock market indices for the entire period and hence no long run equilibrium. Kang (1997) studied stock ownership in Japanese firms by non-Japanese investors from 1975 to 1991. It was observed that foreign investors hold disproportionately more shares of firms in manufacturing industries, large firms, and firms with good accounting performance, low unsystematic risk, and low leverage, and firms that have ADRs have greater foreign ownership. French and Poterba (1991) examined the benefits of international diversification. They found more than 98% of the equity portfolio of Japanese investors is held domestically; the analogous percentages are 94% for the U.S., and 82% for Britain. They concluded that investors in each nation expect returns in their domestic equity market to be several hundred basis points higher than returns in other markets. This lack of diversification appears to be the result of investor choices, rather than institutional constraints.

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There exists a number of studies on co-integration and co-movement of both advanced country stock market indices and emerging economies stock indices, but there is a need to identify and analyze the relationship between foreign portfolio investments (also termed as foreign institutional investments and foreign equity stock holdings) and the stock markets of main advanced countries. For the purpose of our study we have identified four advanced stock markets, viz- US, UK, Germany and Japan. Further we have chosen the most significant stock market indices- S&P500, FTSE100, DAX and Nikkei 225 respectively for these advanced countries.

3. Data and Variables

The data for topic under research has been collected from secondary sources, as the data is of macroeconomic

nature. The month end indices values have been collected from investing.com for all the five indices under study, i.e. S&P500, FTSE100, DAX, Nikkei 225 and Nifty. The data has been collected for a period of ten years from 1st January 2005 to 31st December 2014 on a monthly basis. Similarly, data for foreign portfolio investments for these four advanced countries and India has been collected from Bloomberg database on a monthly basis, except for German stock market index DAX, in which case the data for foreign portfolio investments was only available on a quarterly basis.

4. Analysis and Findings

The current section presents an analysis of relationship between foreign institutional investments and the four selected advanced countries using econometric tools of Unit Root Test, Auto Correlation, VAR and Wald Test.

4.1. Foreign Institutional Investments and United States Stock Market

United States financial market is the most advanced, dynamic, developed and diverse financial market in the world. It is also among the oldest and most sought after and looked up to financial market in the world. The direction and pace of US stock markets determine the fate of all major and minor stock markets in the world. Any news, event or happening in US financial market affects not just US but the entire world.

The U.S. financial markets consist of many separate markets for diverse products offered on a range of trading platforms and exchanges. Among the many products traded are fixed-income securities, equities, foreign exchange and derivatives.

US stock markets are global in nature and attract huge influx of foreign money by way of investments. In recent years, US markets have hit a 69 year old high in terms of foreign investment from the rest of the world. In terms of international equity flows in US, Europe and UK account for almost 70% of total flows.

Analysis of the monthly data has been done using the statistical and econometric tools such as ADF unit root test, Vector Auto Regression (VAR) estimate, Wald Test. For that purpose, Microsoft excel and E views have been used.

The results of ADF unit root test have been reported in the Table 2. Results indicate that international equity flows or FII is stationary at level as their ADF test statistic is within critical value.

Table 2 Unit Root Test result using ADF test for US-FII

Series	None	Constant	With Constant Linear Trend
US- FII	-7.623313 (0.0000)	-7.649839 (0.0000)	-8.449764 (0.0000)

The monthly values attained by the chosen US stock market index – S&P 500,have been taken into consideration, for the same period of ten years. While it rose to a maximum value of about 2100 points in year 2013-2014, it slumped to the lowest values during the period of sub-prime crisis, that is, near 2008-2009.

The results of ADF unit root test for S&P500 have been reported in Table 3. Results indicate that the index is non-stationary as their ADF test statistic is not within critical value.

Table 3 Unit Root Test result using ADF test for S&P 500

Series	None	Constant	With Constant Linear Trend
At level	1.384521 (0.9581)	-0.039186 (0.9525)	-1.104141 (0.9237)
Modified*	-9.527385 (0.0000)	-9.565230 (0.0000)	-9.583687 (0.0000)

Since the US index series is not stationary, the return of the index is calculated. This conversion of the index series is required to make it stationary. The first differenced or modified series has also been presented in the above table, which is stationary and hence will be utilised for the purpose of further econometric analysis.

Table 4 Results for S&P500

Dependent Variable Return of S&P500 Method: Least Squares				
Variable	Coefficient	Std Error	T-Statistic	Probability
C	0.003880	0.003780	1.026554	0.3066
US-FII	-3.34E-07	2.19E-07	-1.521436	0.1306
R-squared	0.017900	Durbin-Watson stat		1.633627
Adjusted R-squared	0.010167	F-statistic		2.314766
		Prob (F-statistic)		0.130637

The results of ADF unit root test for modified S&P500, that is, Return have been reported in the Table 4. Results indicate that the series is stationary as their ADF test statistic is within critical values.

As depicted by the results of the table 4, there doesn't exist a clear positive relation between the returns of the US stock index and foreign institutional investments.

In order to analyse the lead and lag relationship between US-FII and S&P 500, Vector Auto Regression (VAR) model is applied on the modified stationary data, that is, on Returns of S&P 500 and US-FII.

Table 5 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Return of S&P 500

Excluded	Chi-sq	df	Prob.
US-FII	1.450771	2	0.4841
All	1.450771	2	0.4841

Table 6 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: US- FII

Excluded	Chi-sq	df	Prob.
Return	1.486113	2	0.4757
All	1.486113	2	0.4757

The results depicted in table 5 indicate that there is an absence of causality between US-FII and S&P 500, as p value of Chi-sq statistics in both the cases is more than five percent level of significance. The reason can be the extent and magnitude of capital availability in US and the investments made by US based institutions throughout the globe. The results of Block Exogenity Wald Test fail to reject the null hypothesis that US-FII and S&P 500 do not have a causal relationship between them.

New York is regarded as the financial capital of the world, the world markets follow the path and direction it takes. Similarly, NYSE is the biggest stock exchange in the world having market capitalisation of over USD 19000 billion by the end of December 2015. The US stock exchanges receive investible funds from around the world, and also at the same time, US financial institutions are also the biggest funds investing around the world- whether its European markets, or the emerging markets of Asia and Africa. Pertaining to its sheer size and magnitude, the kind of techniques and research undertaken by these fund managers are also the best in the world. Generally, the US based fund managers are followed by the fund managers across the world both in the times of boom and depression.

It has been observed in the present research that US-FII and S&P 500 do not have a causal relationship, and it may be attributed to the fact that the movement of S&P 500 is a result of various domestic factors like Fed rate change, huge portfolios managed by domestic fund managers and larger economic scenarios.

4.2. Flows of International Portfolio Funds and German stock market

Germany is one of the largest countries of Europe and it also ranks amongst the most developed and advanced countries of the world. Frankfurt stock exchange is the world's 10th largest stock exchange by market capitalization. The market capitalisation of Frankfurt stock exchange stood at USD 1.776 trillion in July 2015. DAX is the most popular stock market index traded at Frankfurt stock exchange and hence been chosen as the representative index of German economy.

The German economy experiences huge flows of foreign capital. The international or foreign portfolio flows in the German economy are studied on a monthly basis for a period of about 130 months. While the average flow of funds has been close to USD 5040 million, the maximum for any month reached USD 156568 million.

Table 7 indicates the results of unit root test applied on the foreign portfolio flows in Germany using ADF test. The result of the ADF unit root test indicates that the FII series is stationary and doesn't have a unit root.

Table 71 Unit Root test result using ADF test (Germany-FII)

Series	None	Constant	With Constant Linear Trend
At level	-4.552688 (0.0000)	-4.784789 (0.0001)	-5.361012 (0.0001)

The range of values for DAX for the period of 130 months is between 3800 to almost 12000. During this time period, the index has experienced many ups and downs, most significant is the downfall in 2008-2009. In the recent years 2013-2014, DAX has attained new heights.

Table8 indicates the results of unit root test applied on DAX using ADF test. The result of the ADF unit root test indicates that index series is not stationary and unit root is present. However at first difference the series is found

to be stationary. Thus for further analysis where stationary series are required, the modified stationary series are used.

Table 8 Result of Unit Root Test for DAX

Series	None	Constant	With Constant, Linear Trend
At level	1.294994 (0.9502)	-0.734665 (0.8332)	-1.642302 (0.7707)
Modified*	-9.574274 (0.0000)	-9.684955 (0.0000)	-9.640615 (0.0000)

- *Return

Since the index series was not stationary, the first difference is calculated and is termed as Return.

Table 9 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Return of DAX

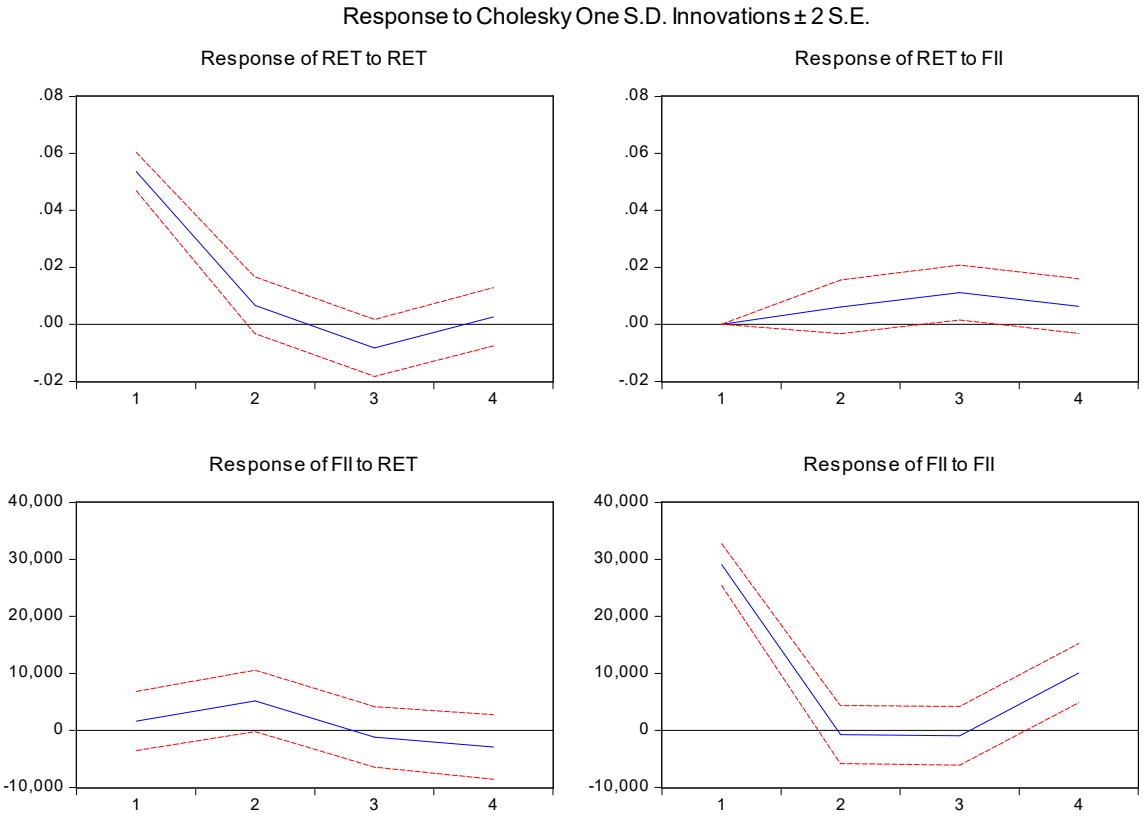
Excluded	Chi-sq	df	Prob.
Ger-FII	7.615061	3	0.0547
All	7.615061	3	0.0547

Table 10 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Ger - FII

Excluded	Chi-sq	df	Prob.
Return	5.204463	3	0.1574
All	5.204463	3	0.1574

The results of regression indicate that Germany –FII have a borderline impact on Return or the modified DAX series. The impulse response function explains the responsiveness of the endogenous variable in the system to shocks to each of the other endogenous variables. So, for each endogenous variable in the system, a unit shock is applied to the error, and the effects over time are noted. Figure 1 represents the response of Return to FII flows.

Figure 1 Response to Cholesky One S.D. Innovations



Impulse response functions show the effects of shocks on the adjustment path of the variables. Response of stock market return to FII is positive in the case of Germany.

German economy inspires confidence even in risk averse investors as it has the reputation of being rock solid. Similarly German stock market has positive response to the inflows of foreign money.

Hence, it has been observed that investments by foreign institutional investors affect the return on DAX.

4.3. Foreign Institutional Investments and Stock Market in Japan

The economy of Japan is the biggest and most developed in Asia. Tokyo Stock Exchange is the fourth largest stock exchange in the world by aggregate market capitalization of its listed companies. It had 2,292 listed companies with a combined market capitalization of US$4.09 trillion as of April 2015.

The foreign institutional investments known as stock investment by foreigners in Japan, has been depicted graphically for the period of 130 months. As observed from the graph below, Japan FII had been fluctuating over this time period, and even has seen massive outflows in recent time periods.

Table 11 indicates the results of unit root test applied on the foreign portfolio flows in Japan using ADF test. The result of the ADF unit root test indicates that the FII series is stationary and does not have a unit root.

Table 112 Unit Root test result using ADF test (Japan-FII)

Series	**None**	**Constant**	**With Constant Linear Trend**
At level	-3.988080 (0.0001)	-4.405444 (0.0008)	-4.375268 (0.0049)

As Nikkei 225 is the most popular stock market index at Tokyo stock exchange it may be regarded as the

representative of the Japanese economy. The range of index has been between 8400 to 20500 points for the aforesaid period.

Table 12 indicates the results of unit root test applied on Nikkei 225 using ADF test. The result of the ADF unit root test indicates that index series is not stationary and unit root is present. However at first difference the series is found to be stationary. Thus for further analysis where stationary series are required, the modified stationary series are used.

Table 12 Unit Root test result using ADF test – Nikkei 225

Series	None	Constant	With Constant Linear Trend
At level	1.760605 (0.9801)	0.111411 (0.9640)	-2.607172 (0.2788)

Table below indicates the results of unit root test applied on Nikkei 225 using ADF test. The result of the ADF unit root test indicates that index series is not stationary and unit root is present in it. However at first difference the series is found to be stationary. Thus for further analysis where stationary series are required, the modified stationary series are used.

Table 133 Result of Unit Root Test for Nikkei 225 Modified (Return)

Series	None	Constant	With Constant, Linear Trend
At level	1.760605 (0.9801)	0.111411 (0.9640)	-2.607172 (0.2788)
Modified*	-6.338262 (0.0000)	-6.526391 (0.0000)	-6.594734 (0.0000)

- *Return

The return is stationary as depicted by the table above at the level of confidence of 5%.

The results of regression using the method of least squares, are depicted in Table 14, with return as dependent variable and Japan FII as independent variable. The results indicate a negative causal relationship with return as the dependent variable.

Table 14 Regression Results - Japan

Dependent Variable: Return of Nikkei225 Method: Least Squares				
Variable	Coefficient	Std Error	T-Statistic	Probability
C	0.011439	0.007433	1.538962	0.1294
Japan-FII	-1.40E-08	3.69E-07	-0.037967	0.9698
R-squared	0.000026	Durbin-Watson stat		1.735178
Adjusted R-squared	-0.017831	F-statistic		0.001441
		Prob (F-statistic)		0.969849

Table 15 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Return of Nikkei

Excluded	Chi-sq	df	Prob.
Nikkei	1.565595	2	0.4571
All	1.565595	2	0.4571

Table 16 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Japan- FII

Excluded	Chi-sq	df	Prob.
Return	22.81728	2	0.0000
All	22.81728	2	0.0000

For the purpose of establishing lead and lag relationship, Vector Auto Regression (VAR) model is applied. The table 16 represents the results of the Block Exogeneity Wald Test in Vector Auto Regression (VAR) model.

The causal relationship is not found between dependent variable return and independent variable FII as can be observed from Table 4, but a significant uni-variate relationship exists between the dependent variable of foreign institutional investments and independent variable of stock market return.

The impulse response function explains the responsiveness of the endogenous variable in the system to shocks to each of the other endogenous variables. So, for each endogenous variable in the system, a unit shock is applied to the error, and the effects over time are noted. Figure 2 Response to Generalised One S.D. Innovations represents the response of Nikkei 225 on the shocks in the series of FII investments.

4.4. Foreign Institutional Investments and the Stock Market in United Kingdom

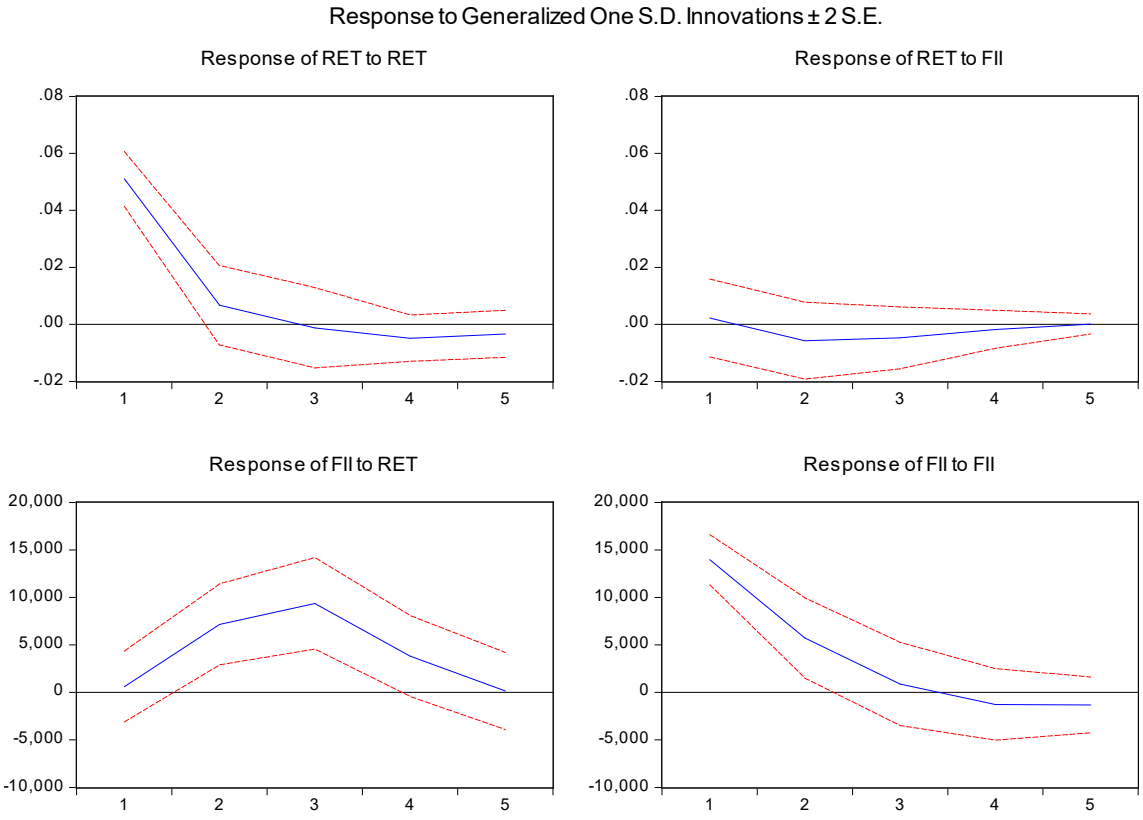
The financial system of United Kingdom is one of the oldest and most developed in the world. The London Stock Exchange (LSE) is the premier stock exchange which was founded in 1801. The Exchange had a market capitalisation of US$6.06 trillion in December 2014, making it the third-largest stock exchange in the world by this measurement (the largest in Europe, ahead of Euronext).

Like all other developed countries, United Kingdom also experiences huge inflows and outflows of foreign capital in various forms and categories. Since the foreign institutional investments data was available on quarterly basis for UK, the analysis of causal relationship between FII and stock market index- FTSE 100, has been done on quarterly basis for the period of 2005 to 2014.

Foreign institutional investments in UK trends indicate that the flows nosedived in the years 2008-2009 during the period of sub-prime crisis, when the world economy saw the signs of depression.

Table 17 shown below indicates the results of unit root test applied on UK FII using ADF test. The result of the ADF unit root test indicates that foreign institutional investments series is not stationary and unit root is present in it.

Figure 2 Response to Generalised One S.D. Innovations



Response of stock market return to foreign portfolio investments is positive.

Table 17 Results of Unit Root Test of UK-FII

Series	None	Constant	With Constant Linear Trend
At level	-2.671570 (0.0090)	-2.560932 (0.1103)	-2.723407 (0.2338)
Modified			

The Financial Times Stock Exchange 100 Index, also called the FTSE 100 Index, is a share index of the 100 companies listed on the London Stock Exchange with the highest market capitalization. It is seen as a gauge of prosperity for businesses regulated by UK company law. The index began in 1984 at the base level of 1000; the highest closing value reached 7103.98 in 2015. After falling during the financial crisis of 2007-2010 to below 3500 in March 2009, the index recovered steadily.

Table 18 shown below indicates the results of unit root test applied on FTSE 100 using ADF test. The result of the ADF unit root test indicates that the index series is not stationary and unit root is present in it. The first differencing of the index series FTSE 100 is calculated, termed as return or modified series, and ADF test applied to get a stationary time series. At first difference of the index series, it is found to be stationary. Henceforth, modified series is used for the purpose of analysis.

Table 18 Results of Unit Root test for FTSE 100

Series	None	Constant	With Constant Linear Trend
At level	0.646422 (0.8520)	-1.560707 (0.4934)	-1.729133 (0.7205)
Modified*	-5.126314 (0.0000)	-5.132328 (0.0001)	-5.065829 (0.0010)

The regression analysis is done in order to analyse the impact of independent variable foreign institutional investors on the dependent variable FTSE 100, considered in the research study.

Table 19 Regression Results - UK

Dependent Variable: Return of FTSE100 Method: Least Squares				
Variable	Coefficient	Std Error	T-Statistic	Probability
C	0.006143	0.009235	0.665149	0.5098
UK-FII	1.89E-07	9.81E-08	1.925189	0.0613
R-squared	0.084801	Durbin-Watson stat		1.751534
Adjusted R-squared	0.061921	F-statistic		3.706353
		Prob (F-statistic)		0.061337

Table 20 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: Return of FTSE100

Excluded	Chi-sq	df	Prob.
FTSE100	6.235768	5	0.2839
All	6.235768	5	0.2839

Table 21 VAR Granger Causality/Block Exogeneity Wald Tests Dependent variable: UK- FII

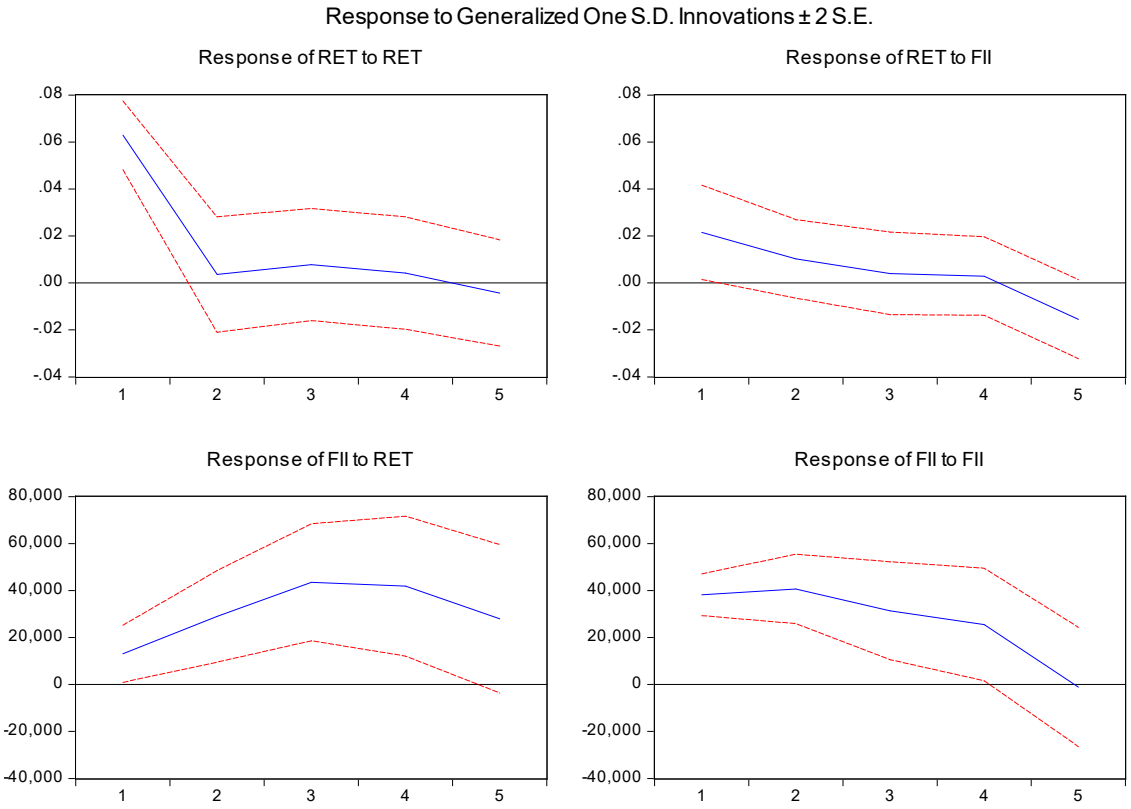
Excluded	Chi-sq	df	Prob.
FTSE100 Ret	15.04212	5	0.0102
All	15.04212	5	0.0102

In order to analyse the lead and lad relationship between dependent variable of index series return and independent variable of foreign institutional investments of UK, Vector Auto Regression (VAR) model is applied on the modified stationary series. The Table above represents the results of the Block Exogeneity Wald Test in Vector Auto Regression (VAR) model. The results indicate that there exists the significant unidirectional causality in direction of FII from return series. The unidirectional causality exists between return and FII in case of United Kingdom.

VAR Exogenity Wald test results indicate that the relationship exists between foreign institutional investments and FTSE 100, with return of FTSE 100 as the independent variable and FII to UK as dependent variable. Hence, a univariate relationship exists as return leads to attracting foreign portfolio investments at 5% level of confidence.

The impulse response function explains the responsiveness of the endogenous variable in the system to shocks to each of the other endogenous variables. For endogenous variable in the system, a unit shock is applied to the error, and the effects over time are noted. Figure 3 represents the response of return to FII. The results indicate the significant response.

Figure 3 Response to Generalised One S.D. Innovations



Response of stock market return to FII is significant but declining with increasing lags.

5. Conclusions

In the era of global financial markets, the free flow of capital is an integral part of any financial system. It is even more relevant in the cases of developed or advanced countries, who have always been proponents of globalisation and openness of economy. These advanced countries are capital abundant and are themselves big investors in other countries- including the emerging countries, but their stock markets have always attracted global fund managers. The portfolio fund managers aim to have a balanced and well diversified portfolio for their investors, and to attain that objective they invest in a number of markets – both developed and emerging. The proportion of funds entering in the emerging markets and products depend on the risk appetite and preference of respective funds.

The advanced countries have been simultaneous exporters and importers of foreign capital, as international portfolio managers keep investing in a variety of financial products available in such markets. The maturity, width and depth of financial markets of advanced countries is symbol of their strength and development. The sheer size and volume of transactions that take place in the stock markets of advanced countries can't be matched by emerging countries' stock markets. Moreover, biggest chunk of advanced countries' portfolio investments has gone into other advanced countries.

The analysis of relationship between advanced countries stock indices viz. United States, United Kingdom, Germany and Japan, and foreign portfolio investments received by them for a period of ten years has not given uniform results. The results may be summarised as:

a) There doesn't exist any significant relationship between S&P 500 and foreign portfolio investments.
The reason may be that the United States is the biggest investor the world over. The quantum of finances available within the country are so huge that it has limited or no reliance on the external flows entering into the market. Moreover, various other factors play quite a significant role, like primarily the movement of Fed rate, in driving the stock markets. Of late, discovery of shale gas, reduced oil prices and reduced reliance of US on oil imports has driven the securities markets in the US and its effects are felt around the world stock markets too.
Poshakwale and Thapa (2007) examined the influence of foreign institutional investments in explaining the short and long run relationship of the Indian equity market with the main developed equity markets of the US and the UK. They observed that the mobility of foreign portfolio flows carry important information in explaining the short and long term co-movements of the Indian equity market with that of the US and the UK equity markets. They concluded that the rapid growth in the flow of the foreign portfolio investments has led to greater integration of the Indian equity market with the main developed markets.
Singh (2010) investigated Chinese and Indian stock market linkages with a few developed stock markets. The researcher concluded that both Chinese and Indian markets are correlated with the selected developed markets based on the analysis of Granger causality.

b) Response of stock market return to FII is borderline positive in the case of Germany.
The German stock market is also one of the biggest in Europe and depicts the business sentiment of European markets. It boasts of being home to a large number of multi-national companies (MNCs). German economy has been performing well since a long time and despite having low GDP growth rate, its reputation is rock solid. German stock markets also receive huge amounts of FII money – largely from other advanced countries' funds. A large portion of portfolio investments belong to pension funds, retirement funds, etc., which expect stable and less risky returns. For such investors German stock market is a good bet. Moreover, in the aftermath of BREXIT, the investors preference for Germany is bound to enhance further.
The results of the current analysis also confirm the notion that return on German stock market does have a positive influence on FII investments.

c) In the case of Japan, response of stock market return to foreign portfolio investments is positive. It is unidirectional from return to FII.
Studies by Booth, Lee and Tse (1996), Kang (1997), French and Poterba (1991) examined the benefits of international diversification with respect to Japanese markets. Japan is world's third largest economy and has one of the highest purchasing power in the world. It's a leader in matters of high technology, research and development thereby attracting foreign investments. Entering the Japanese market is also seen as facilitating entry to other Asian markets. But also at the same time international business faces challenges like over-regulation, highly insular business culture that prefers to do business (especially

M&A transactions) with familiar corporate partners. Its cultural and linguistic challenges also limit the success of international collaborations, which at times affects the foreign institutional investments too.

d) For United Kingdom, response of stock market return to FII is significant but declining with increasing lags. A univariate relationship exists between FII and returns. \
So far, UK has been the biggest recipient of US money and also has been the biggest investor in US stock markets (as per Department of Treasury, USA). The confidence reposed in UK equity market is soon be put to test in the aftermath of Brexit.

The findings of the current study are in line with the conclusions drawn by Froot, O'connell, and Seasholes (2001) that flow of funds get influenced by past returns, and inflows have positive impact on future equity returns.

Abhyankar, Copeland and Wong (1997) tested for nonlinear dependence and chaos in real-time returns on the world's four most important stock-market indexes viz- the S&P 500, the DAX, the Nikkei 225, and the FTSE-100.

Booth, Lee and Tse (1996) analyzed the linkages and information transmission of similar Nikkei stock index futures contracts traded on three international exchanges, the OSE, SIMEX, and CME.
Poshakwale and Thapa (2007) examined the influence of foreign institutional investments in explaining the short and long run relationship of the Indian equity market with the main developed equity markets of the US and the UK. They concluded that the rapid growth in the flow of the foreign portfolio investments has led to greater integration of the Indian equity market with the main developed markets.

When we compare these results for the selected advanced countries with those of India, certain similarities as well as dissimilarities may be pointed out. Since the selected advanced countries are amongst the most advanced countries in the world and rank from first to fifth according to their GDP, they were also the first ones to reap the fruits of industrialisation. While India has started experiencing growth only since last two decades, these countries are quite mature economies and are now facing stagnant growth. India is now seen as one of the few fast developing and emerging economy, possessing high GDP growth rate on a consistent basis. One common observation that can be made is that generally a response has been observed from FII to stock market return in almost all the countries. Though the nature and extent of response may differ from country to country depending upon its individual macroeconomic profile and the challenges it faces internally as well as externally. In the case of India, an additional observation that the analysis of FII and Nifty depicted was the impact of FII on market volatility. This kind of response in case of India can be attributed to the fact that since the Indian stock market is not as huge and developed as the stock markets of the advanced or developed countries, it has fewer (when compared to these developed countries) domestic institutional investors and retail investors, and hence entry and exit of FII is lot more significant for the markets as well as all the players in the stock market. The Indian stock return in recent times is definitely led by major stock index returns in the United States, Japan, as well as other Asian markets, such as Hong Kong, South Korea, and Singapore. More important, returns on the Indian market are also seen to exert considerable influence on stock returns in major Asian markets.

6. Policy Implications

Advanced countries are the biggest players in international financial markets – both on the supply as well as demand side. The largest foreign portfolio investments are received by these countries as the returns generated by these markets are stable and less susceptible to unsystematic risk, when compared to economies whose financial markets are still developing. While advanced or developed countries are capital surplus, they still attract foreign investments. The reason behind it is that international fund managers always strive to attain a balanced portfolio, and hence invest in variety of assets and markets. United States being the biggest financial market itself is less affected by such foreign flows, while other developed countries viz. United Kingdom, Germany and Japan are affected by such foreign portfolio flows. Hence, the role and importance of foreign institutional investments is reinforced and cannot be ignored for any financial market.

7. Scope for Further Research

Further research may be undertaken in the following areas:

- Relationship between stock market indices and FPI/FII investments of advanced countries for a different time frame

- Relationship between advanced markets' returns and FPI/FII investments
- Comparative analysis of impact of FPI/FII investments advanced economies stock markets vs. emerging economies
- Study of relationship between FII and developed countries stock markets may be undertaken for a different set of countries
- Multiple regression may be carried out between foreign institutional investments, crude prices, foreign exchange reserves, etc. and indices of advanced countries.

8. Limitations of the Study

There are certain variations in the data collected.

The data for topic under research has been collected from secondary sources, as the data is of macroeconomic nature. The month end indices values have been collected from investing.com for all the five indices under study, i.e. S&P500, FTSE100, DAX, Nikkei 225 and Nifty. The data has been collected for a period of ten years from 1st January 2005 to 31st December 2014 on a monthly basis. Similarly, data for foreign portfolio investments for these four advanced countries has been collected from Bloomberg database on a monthly basis, except for German stock market index DAX, in which case the data for foreign portfolio investments was only available on a quarterly basis. For UK the foreign institutional investment data was available only on quarterly basis. Therefore, analysis has been based on the quarterly data in case of United Kingdom (FTSE 100).

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Annexure

Bi-directional Granger Causality between BSE Sensex and FII Flows has been observed in a recent study. Thus FII Flows are Granger Caused by BSE Sensex and BSE Sensex is Granger Caused by FII Flows. There also is evidence that existence of a significant impact of foreign institutional investors is on the volatility experienced on Nifty. It may be observed by variance equation that, inflows of FII/FPI (i.e. FII purchases) leads to a decline in volatility of Nifty, while on the other hand, FII selling or outflow of FII money enhances the extent of volatility significantly.

Since it is an acknowledged fact that in case of India, investments in stock markets are not lagging behind the developed countries by a huge margin, the knowledge and information availability to small, retail investors is still dependent on the sentiments expressed by financial media and brokers. And these medium of information get quite influenced by the flows of FII. Negative information is more contagious and spreads like wild fire, creating the situation of panic, as has been observed in case of FII and Nifty analysis – that FII withdrawals lead to volatility in the stock market.

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