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The Effect of Foreign Direct And Portfolio Investments on Stock Market Returns in E7 Countries

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ABSTRACT

As a result of financial liberalization boundaries between financial markets have been disappeared and capital movements have accelerated which leads to rise of financial flows from developed to developing countries. Foreign investments can be realized as foreign direct investments indicating the ownership of physical assets in another country or as portfolio investments in assets for the sake of maximum return at minimum risk. The aim of this paper is to investigate the effects of foreign direct and portfolio investments on stock returns in E7 countries (Brazil, China, Indonesia, India, Mexico, Russia, Turkey) for the time period from 2005 to 2016 using panel data analysis. Results indicate a significant and positive relation between foreign portfolio investments and stock market returns whereas a negative relation between foreign direct investment and stock market returns. It is concluded that foreign portfolio investments have very crucial effect in increasing the stock returns in E7 countries.

Keywords: *Foreign Direct Investment, Portfolio Investment, Stock Returns, E7 Countries, Panel Data Analysis.*

Jel Classification*: G11, G15, C33.*

Doğrudan ve Portföy Yabancı Yatırımlarının E7 Ülkelerinde Borsa Getirisine Etkisi
ÖZET

Küreselleşmenin ekonomik boyutlarından finansal liberalizasyon neticesinde, piyasalar arasındaki sınırlar kalkmış ve sermaye hareketlerinin hızlanmasıyla gelişmiş ülkelerdeki tasarruf fazlası, gelişmekte olan ülkelere doğru yabancı yatırımlar şeklinde yönelmiştir. Yabancı yatırımlar, doğrudan yabancı yatırım olarak diğer ülkedeki varlıkların sahiplerine yapılan fiziki yatırımlara veya portföy yatırımları olarak minimum risk düzeyinde maksimum getiri sağlanabilecek mali nitelikteki varlıklara yapılabilmektedir. Çalışmada, doğrudan yabancı yatırımlar ve portföy yatırımları ile endeks getirisi arasındaki ilişki incelenmiştir. En hızlı gelişen ve E7 ülkeleri olarak adlandırılan Brezilya, Çin, Endonezya, Hindistan, Meksika, Rusya ve Türkiye'nin 2005-2016 dönemindeki yabancı yatırım ve borsa endeks verileri, panel veri analizi kullanılarak değerlendirilmiştir. Analiz sonucunda, doğrudan yabancı yatırım ile endeks getirisi arasında anlamlı ve negatif ilişki tespit edilirken, yabancı portföy yatırımları ile endeks getirisi arasında anlamlı ve pozitif ilişki tespit edilmiştir. E7 ülkelerinde, yabancı portföy yatırımlarının borsa endeks getirisini artırmada çok büyük bir öneme sahip olduğu ve yatırımcıların uzun vadeli yatırımlar yerine kısa vadeli yatırımları tercih ettikleri belirlenmiştir.

Anahtar Kelimeler: *Doğrudan Yabancı Yatırım, Yabancı Portföy Yatırımları, Borsa Getirisi, E7 Ülkeleri, Panel Veri Analizi.*

JEL Sınıflandırması: *G11, G15, C33.*

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1. INTRODUCTION

Foreign investment has become a crucial source of financing with the rise of globalization in recent years especially for the emerging countries. Increasing financial market fluctuations and inadequate market depth lead investors to diversify their portfolios across countries. These fluctuations in the financial markets can be seen more in developing markets and economies. In this manner, foreign capital investments have become extremely important for developing countries with increasing financial liberalization and globalization. The narrowing profit margins in developed countries are driving investors away from making investments in their own countries and directing them towards emerging countries where risk hence the returns are much higher.

FDI which is a long term investment can be realized through the establishment of new firms, acquisition of an existing company in operation or participation in that company. Countries willing to benefit from the capital provided by foreign investments develop incentive policies in order to attract FDI in their countries since these investments benefits to promote economic growth in that country. Contrary to FDI, foreign portfolio investments are short term capital investments which may boost economic growth implicitly by increasing financial development. In other words, it is expected that portfolio investments trigger economic growth via increased level of financial development especially in emerging economies. In this manner, foreign portfolio investments can affect the stock markets and economies directly whereas it may affect real sector in an economy indirectly. As the foreign capital enters the market, the confidence in the local stock market increases, financing costs decrease and the cost of capital declines in that market. The companies willing to benefit from this capital flows contribute to the development of the markets by offering new shares to the market. The FDI inflows and portfolio investments in E7 for the time period from 2005 to 2016 is given in Table 1.

Table 1. Foreign Investments in E7 Countries

FPI (‘000 US$)							
	Brazil	China	Indonesia	India	Mexico	Russia	Turkey
2005	6.451.252	20.569.000	-165.274	12.151.207	3.352.931	-163.270	5.669.000
2006	7.715.813	42.861.200	1.897.590	9.509.115	2.805.153	7.234.450	1.939.000
2007	26.217.336	18.478.120	3.558.960	32.862.817	-482.084	18.399.240	5.138.000
2008	-7.565.367	8.464.028	322.476	-15.030.005	-3.503.265	-15.383.090	716.000
2009	37.071.238	29.116.669	787.279	24.688.930	4.155.326	3.762.720	2.827.000
2010	37.671.283	31.357.094	2.131.563	30.442.226	373.100	-4.885.280	3.468.000
2011	7.173.947	5.308.428	-326.105	-4.048.294	-6.565.900	-9.795.690	-985.000
2012	5.601.757	29.902.702	1.697.642	22.809.105	9.876.744	1.162.400	6.276.000
2013	11.636.336	32.594.971	-1.855.985	19.891.607	-942.800	-7.625.040	842.000
2014	11.773.000	51.915.789	3.259.252	12.369.281	4.833.440	-12.966.280	2.559.000
2015	9.811.286	14.964.497	-1.546.735	1.932.581	3.601.070	-5.538.270	-2.395.000
2016	10.585.914	18.945.313	1.318.560	13.416.234	9.517.850	-1.788.020	823.000
Total	164.143.796	304.477.810	11.079.222	160.994.803	27.021.565	-27.586.130	26.877.000
FDI (‘000 US$)							
	Brazil	China	Indonesia	India	Mexico	Russia	Turkey
2005	15.459.982	104.108.694	8.336.257	7.269.407	26.018.160	15.508.050	10.031.000
2006	19.378.093	124.082.036	4.914.201	20.029.119	21.147.599	37.594.770	20.185.000
2007	44.579.492	156.249.335	6.928.480	25.227.741	32.457.166	55.873.680	22.047.000
2008	50.716.403	171.534.650	9.318.454	43.406.277	29.381.454	74.782.910	19.851.000
2009	31.480.932	131.057.053	4.877.369	35.581.373	18.111.810	36.583.100	8.585.000
2010	88.452.079	243.703.435	15.292.009	27.396.885	27.262.840	43.167.780	9.099.000
2011	101.157.818	280.072.219	20.564.938	36.498.655	24.706.235	55.083.630	16.182.000
2012	86.606.503	241.213.868	21.200.779	23.995.685	21.060.806	50.587.560	13.628.000
2013	69.181.423	290.928.431	23.281.742	28.153.031	47.536.864	69.218.890	12.896.000

2014	96.894.981	268.097.181	25.120.732	34.576.644	27.507.944	22.031.320	12.828.000
2015	74.693.633	242.489.332	19.779.128	44.009.492	33.181.270	6.852.970	17.550.000
2016	78.928.533	170.556.526	3.761.972	29.649.483	26.738.610	32.976.220	12.303.000
Total	757.529.872	2.424.092.760	163.376.062	355.793.792	335.110.755	500.260.880	175.185.000

Source: World Bank Data (www.worldbank.org).

It is seen in Table 1 that China is the country with the highest foreign direct investment and portfolio investment among the E7 countries. The country with the least foreign direct investment is Indonesia, while the country with the lowest foreign portfolio investment is Russia. Hence, it is seen that there is more foreign portfolio investment outflow than inflow in Russia for the time period analyzed. In other words, different from other E7 countries, the amount of FPI outflow is larger than the amount of FPI inflow in Russia, resulting in a negative net inflow. It is also recognized that net FDI and FPI inflows are at their lowest level in 2008 and 2009, the years that the global financial crises emerged.

The aim of this study is to investigate the effect of FDI and FPI net inflows on stock markets of E7 countries for the period 2005-2016. The remaining of this study is structured as follows. Discussion about the importance of foreign investment is given in the very first section of this study. In the Section 2, the together with definition of FDI and FPI, literature review are examined. Data and research design are given in Section 3. Empirical methodology is explained in Section 4. Empirical Findings are given in Section 5. Finally, concluding remarks and suggestions for future research are discussed in Section 6. As far as we know, there is no study examining the in-depth relation between FDI, FPI and stock markets in E7 countries. Hence, this study contribute to the existing literature by will filling the gap.

2. LITERATURE REVIEW

The increased mobility of goods and capital along with financial liberalization and globalization pave the way for foreign capital investments especially for developing countries. Foreign capital investments refer to investments made by an entity which is not the resident of the country. It includes two components: Foreign Direct Investments (FDI) and Foreign Portfolio Investments (FPI). Due to the high rate of capital formation in developed countries and lack of desired level of capital formation in developing countries, capital flows are directed mainly from developed to developing countries. This capital mobility can be in the form of foreign direct investment or portfolio investment.

While the physical investments made directly to the owners of assets in another country are defined as foreign direct investments; foreign portfolio investments are defined as portfolio investments in another country where high returns can be received while taking minimum risk. In other words, though physical asset investments are defined as FDI, investments in securities are defined as portfolio investments (Moreno, 2000: 3).

Many macroeconomic factors may affect the flow of portfolio investments such as interest rate, exchange rate and inflation risks. Portfolio investments increase the efficiency of the market by decreasing the capital costs with the increased liquidity which in turn results in higher economic growth. On the other hand, portfolio inflows may reverse quickly when the foreign investors are not willing to take more risk, leading to withdraw huge amount of capital in financial crisis. Hence, FDI is more desirable for emerging economies such as Turkey and

other E7 countries. As a long term investment, FDI contribute more to economic growth compared to FPI since the risk of disinvestment is much higher in portfolio investment.

There are many studies examining the relation between FDI, FPI and stock markets for different countries. As one on the earliest, examining the relation between foreign investments and stock market return in Mexico, Clark and Berko (1996) found supportive evidence for the positive relation between these factors. Bohn and Tesar (1996) examined the stock return gains of American investors in 22 different countries for the time period from 1980 to 1994 using regression analysis and reported that the returns of these investors are much more higher compared to other investors. Karataş et al. (2004) examined the investment performance of foreign investors in Borsa Istanbul and found that the monthly/annual and total returns gained by these investors are not higher than BİST 30 index monthly/annual and total return. In addition they also concluded that these investors are not also successful in timing of entering the market. Adam and Tweneboah (2009) reported positive interaction between FDI and Ghana stock market return. Similarly, Gümüş (2010) conclude that there is positive relation between BIST 100 stock market return and foreign investment. Using Granger causality analysis for the 2009-2011 period, İskenderoğlu and Karadeniz (2011) found unidirectional causality running from BİST stock returns to foreign investments.

Egly et al. (2010) examined the US market using VAR analysis and reported positive association between foreign investment and stock market performance in US for 1997-2007 period. Investigating the relation between foreign investment and stock market performance for Turkey, Okuyan and Erbaykal (2011) found postive interaction between these factors in long run whereas no relation is reported in the short run. İbicioğlu (2012) found causality running from foreign investment to index returns using variance decomposition analysis for the period 2005-2011. Yıldız (2012) examined the relation between foreign investments, macroeconomic factors and stock market returns in Borsa Istanbul and reported positive interaction between stock market returns and foreign investments. Using Winston regression analysis, Albayrak et al. (2012) could not find any supportive evidence for the relation between BIST 100 index return and foreign investment for the time period from 2005 to 2012.

Using panel data analysis for the period 1985-2013, Malik and Amjad (2013) concluded that foreign investments affect stock markets in the long run. Durmuşkaya and Mayıl (2014) investigated the association between foreign investment and VOB 30 future and BIST returns. Though they reported supportive evidence for the relation between BIST and foreign investment whereas no evidence for the relation between VOB 30 future index and foreign investment. Paramati et al. (2016) examined the interaction between these factors for 20 developing countries for the time period between 1991-2012 and found that foreign investment affect stock market performance positively in the long run.

FDI is also closely related to financial development which in turn affects stock markets. There are also many studies examining the relation between FDI and financial development in (Şahin and Ege, 2015; Ege and Şahin, 2014).

3. DATA, RESEARCH DESİGN AND DESCRIPTIVE STUDIES

In this study, the relation between FDI, FPI and stock market return is examined for the time period from 2005 to 2016 for E7 countries. Foreign investment data are retrieved from World Bank (data.worldbank.org) whereas stock market returns are gathered from in www.investing.com. The research design of the study is given in Figure 1 below.

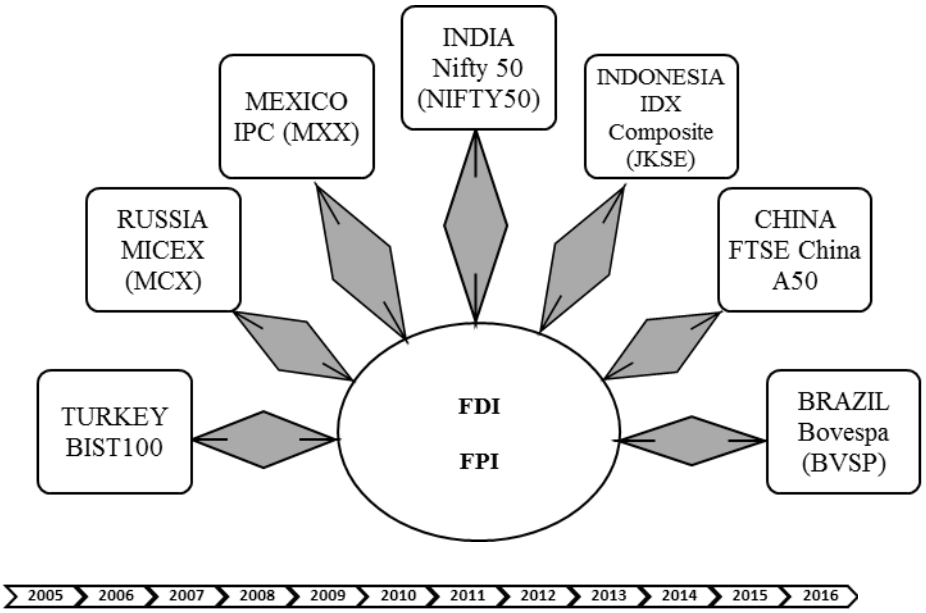

Figure 1. Research Design

Information about the variables and calculation methods are given in Table 2. All the variables are used in natural logarithms in order to reduce heteroscedasticity.

Table 2. Data Set

	Variable	Description	Explanation
Dependent Variable	SMR	Stock Market Return	(Closing Price (End of the Period) – Closing Price (Beginning of the Period) / Closing Price (Beginning of the Period)
Independent Variables	FDI	Foreign Direct Investment	(Foreign direct investment, net inflows (Bop, current US$)
	FPI	Foreign Portfolio Investment	(Portfolio equity, net inflows (Bop, current US$)

Detailed descriptive statistics are given in Table 3 below.

Table 3. Descriptive Statistics

	SMR	FDI	FPI
Mean	0.138964	24.21843	22.48881
Median	0.101821	24.04933	22.33745
Max.	1.357746	26.39634	24.67289
Min.	-0.998168	22.04821	19.59154
Std. Dev.	0.413010	1.009714	1.151739
Skewness	0.131641	0.320384	-0.191045
Kurtosis	4.138394	2.718634	2.529121
Jarque-Bera	4.778403	1.714128	1.287020
J-B Prob.	0.091703	0.424406	0.525445
Num. of Obs.	84	84	84

Descriptive statistics indicate that the average return in E7 countries is 13% for the time period analyzed. In addition, it is also seen that mean values for FDI and FPI is 24.21 and 22.48 respectively. It is also recognized that standard deviation is quite low for all variables in essence. In addition, Jargue-Bera statistics show that series are normally distributed.

The empirical model applies in this study is given in Eq. (1) below;

$$SMR_{it} = \beta_{0it} + \beta_{1it} FDI_t + \beta_{2it} FPI_{it} + Ɛ_{it} \quad (1)$$

where i = 1, 2, 3,……N is cross sectional units, t = 1, 2, 3,……T is the time dimension, Ɛ is the panel data error term.

4. METHODOLOGY

Panel data analysis has been carried in order to examine the interactions between FDI, FPI and stock markets returns in E7 countries. In the first step of the panel data analysis, Pearson correlations and Variance Inflation Factors (VIF) are estimated. In the second step, cross sectional dependency has been investigated using Breusch-Pagan (1980), (Lagrange Multiplier-LM) and Pesaran (2004) (Cross-section Dependence-CD). In the third step, Heterogeneity has been examined using Pesaran and Yamagata (2008) delta tests. In the fourth step, unit root tests of Hadri and Kurozumi (2012) which also accounts for the cross sectional dependency has been used to determine the stationarity of the series. After then, appropriate model is chosen using Breusch-Pagan LM (1980) and Honda (1985) tests in the fifth step. Heteroscedasticity has also been tested using Breusch-Pagan-Godfrey Heteroscedasticity LM in the sixth step. Finally, autocorrelation has been investigated by Baltagi and Li (1991), Born and Bretuing (2016) and Durbin-Watson tests of Bhargava et al. (1982) in the seventh step. After then, the final state of the model has been examined by Period SUR (PCSE) developed by Beck and Katz (1995).

4.1. Multicollinearity

Multicollinearity refers to a situation where a number of independent variables in a multiple regression model are closely correlated to one another. Due to the estimation

problems caused by multicollinearity among variable OLS can not be used (Greene, 2008: 11-19; Kennedy, 2008: 41-42). In order to account for this multicollinearity problem, Pearson correlations and variance inflation factors are estimated and results of which are reported in Table 4 and Table 5 respectively.

Table 4. Pearson Correlations

	SMR	FDI	FPI
SMR	1.000000	-----	-----
	-----	-----	-----
	-----	-----	-----
FDI	-0.135401	1.000000	
	[-1.237502]	-----	-----
	(0.2194)	-----	-----
FPI	0.219366	0.600752	1.000000
	[2.036032]	[6.804856]	-----
	(0.0450)	(0.0000)	-----

It is seen in table 3 that there is positive and significant correlation between stock market return and FPI. In addition, there is also positive interaction between FDI and FPI. However, there is no significant relation between stock market return and FDI.

Multicollinearity is a problem in regression analysis that occurs when two independent variables are highly correlated, e.g. r = 0.90, or higher (Hair et al, 2013: 196). However, it is seen in Table 3 that the highest significant correlation is 0.60 which is lower than the threshold.

Multicollinearity analysis (Hair et al., 2013: 197) has also been examined by variance inflation factor (VIF) tests, the results of which are given in Table 4. Any VIF value smaller than 10 is accepted to be the indicator of multicollinearity problem.

Table 5. Variance Inflation Factor Means

Variable	**Variance Coefficients**	**Variance Inflation Factor Means**
FDI	0.002715	1.564708
FPI	0.002087	1.564708
C	1.092122	NA

When the VIF values in Table 5 examined, the estimated VIF value for the factors in essence is 1.564708. Hence, it obvious that there is no multicollinearity problem among the variables analyzed. These results are also supporting the findings in correlation matrix.

4.2. Cross Sectional Dependency

In panel data estimation, cross sectional dependency affects the validity of the results. In other words, any panel data analysis disregarding cross sectional dependency may cause biased and inconsistent results (Breusch- Pagan, 1980; Pesaran, 2004). Breusch-Pagan (1980) developed the Lm statistics in order to account for this problem in panel data estimation. After than an improved tests are developed by Pesaran (2004) called as CD and CDlm tests.

Recently, a more powerful test (LMadj) is suggested by Pesaran et al. (2008). These tests are valid for different sizes of T and N. In particular, Breusch-Pagan (1980) LM tests can be used when the size of T is quite larger than the size of N (T>N). Pesaran (2004) CDlm test can be used for the cases when T>N but the spread between time and cross section dimension is relatively lower. Pesaran (2004) CD test is valid for the cases when cross sectional dimension is larger than the time dimension (N>T). As a more powerful test, LMadj test developed by Pesaran et al. (2008) accounts for the deviations in Lm statistics and the case where the sum of correlation coefficients to be zero for the cases when T>N. Using these powerful tests cross sectional dependency is estimated results of which are given in Table 6.

Table 6. Cross Sectional Dependency in Panel

CD Tests	Stat.	P-value
CD_{lm} (BP,1980)	37.951	0.013
CD_{lm} (Pesaran, 2004)	2.616	0.004
CD (Pesaran, 2004)	3.939	0.000
LM_{adj} (Peseran et al., 2008)	3.057	0.000

H_0: No cross sectional dependency

According to the findings in Table 6, the null hypothesis of no cross sectional dependency is rejected by all of the dependency tests applied. This means that cross sectional dependency exist in series which implies that any shock in one country causes a shock in another country. This result is consistent with what experienced in global financial crisis in 2008. In order to determine the consistent unit root tests, cross sectional dependency in parameters are also investigated, results of which are given in Table 7.

Table 7. Cross-sectional Dependency in Parameters

Variable	Test	Stat.	P-value		Lag
SMR	LM (Breusch, Pagan 1980)	40.347	0.007	Brazil	2
	CDlm (Pesaran 2004)	2.985	0.001	China	1
	CD (Pesaran 2004)	-1.414	0.079	Indonesia	1
	LMadj (PUY, 2008)	-0.747	0.773	India	1
				Mexico	1
				Russia	2
				Turkey	1
FDI	LM (Breusch, Pagan 1980)	44.568	0.002	Brazil	1
	CDlm (Pesaran 2004)	3.637	0.000	China	1
	CD (Pesaran 2004)	0.130	0.448	Indonesia	1
	LMadj (PUY, 2008)	-0.885	0.812	India	1
				Mexico	1
				Russia	1
				Turkey	1
FPI	LM (Breusch, Pagan 1980)	38.832	0.010	Brazil	1
	CDlm (Pesaran 2004)	2.752	0.003	China	2
	CD (Pesaran 2004)	-1.502	0.067	Indonesia	1
	LMadj (PUY, 2008)	-0.018	0.507	India	1
				Mexico	2
				Russia	1
				Turkey	1

Considering the time series property, lag length (p_i) is determined as 2 in this study.
H_0: No cross sectional dependency

The findings in Table 7 indicate that cross sectional dependency also exist in parameters when CDlm (Pesaran, 2004) test is considered. Since cross sectional dependency exist also in parameters, second generation unit roots tests should be used in examining the stationarity of the series (DeJong and Whiteman, 1991: 221).

4.3. Unit Root Tests

In panel data analysis, stationarity is required for the validity of the results. There mainly two alternatives in examining the stationarity in series, namely first generation and second generation tests. First generation unit root tests are used for the cases when there is no cross sectional dependency whereas second generation test should be used when cross sectional dependency exists in parameters (DeJong and Whiteman, 1991, 221-225, Barberi, 2005). Since our data has cross sectional dependency in parameters, second generation unit root tests (Breuer et al., 2002; SURADF, Smith et al., 2004; Bootstrap, Bai and Ng, 2004; PANIC, Pesaran, 2007; CADF and CIPS, Hadri and Kurozumi, 2012) should be used. However, some these second generation unit root tests (Levin, Lin and Chu, 2002; Breitung, 2005) depend on the homogeneity assumption, whereas some of them (Im, Pesaran and Shin, 2003; Maddala and Wu, 1999; Choi, 2001) depend on the heterogeneity assumption. There is also another test developed by Hadri (2000) which is valid under both homogeneity and heterogeneity assumptions.

Homogeneity tests enable us investigating whether constant and slope terms are homogenous across cross section units. In this study, Pesaran and Yamagata (2008) delta tests are used in order to investigate the homogeneity. Results are given in Table 8.

Table 8. Homogeneity Test for Parameters and The Panel

Variable	$\tilde{\Delta}$	P-Value	$\tilde{\Delta}_{adj}$	P-value
α (Constant)	0.393	0.347	0.472	0.318
β FDI	-0.286	0.613	-0.330	0.629
β FPI	0.825	0.205	0.952	0.170
SMR	-0.971	0.834	-1.121	0.869
FDI	1.959	0.025	2.263	0.012
FPI	-0.153	0.561	-0.176	0.570

H_0: Equal Variances.

It is seen in in Table 8 that constant term and slope coefficients are homogenies across the cross sectional units in the panel. When homogeneity is investigated in parameters in addition to panel estimations, it is seen that stock market return and FDI parameters are homogeneous whereas FDI is heterogeneous across cross section units. These results prompt us to use Hadri and Kurozumi (2012) (HK) unit root test in examining the stationarity of the data. Unit root test results are given in Table 9.

Table 9. Hadri and Kurozumi Panel KPSS Unit Root Test

Variable		Constant		Constant and Trend	
Level		Stat.	P-value	Stat.	P-value
SMR	ZA_spc	-0.6786	0.7513	2.4266	0.0076
	ZA_la	-1.3040	0.9039	0.4352	0.3317
FDI	ZA_spc	-1.2986	0.9030	0.3538	0.3617
	ZA_la	-0.3794	0.6478	2.1067	0.0176
FPI	ZA_spc	-0.5206	0.6987	8.9506	0.0000
	ZA_la	-1.4105	0.9208	3.8075	0.0001
First Difference					
SMR	ZA_spc	0.9943	0.1600	2.4973	0.0063
	ZA_la	-1.0077	0.8432	24.1758	0.0000
FDI	ZA_spc	4.0189	0.0000	24.7217	0.0000
	ZA_la	5.2575	0.0000	30.1046	0.0000
FPI	ZA_spc	7.6007	0.0000	18.6306	0.0000
	ZA_la	2.9828	0.0014	10.5746	0.0392

Max. Lag lenth is taken as 1 and SIC information criterion is used to determine the optimal lag length for cross section units.
ZA_spc indicates the Panel KPSS test where long term variance is estimated using Sul et.al (2005) approach.
ZA_la indicates the Panel KPSS test where long term variance is estimated using Choi (1994) and Toda &Yamamoto (1995) approach.

H_0 : No unit root.

Hadri and Kurozumi (2012) (HK) unit root test results indicate that all of our variables (FDI, FPI and SMR) are stationary at levels, namely I (0).

4.4. Model Selection For The Panel Data

In order to choose the most appropiate panel data model, F-test, Breuch-Pagan LM (1980) and Honda (1985) are applied, results of which are given in Table 10. In order to determine the consistent model, F-tests, Breuch-Pagan LM Tests and Honda (1985) are run.

F–test is used to determine the most efficient and consistent model out of pooled data and fixed affect models, whereas Breuch-Pagan LM (1980) and Honda (1985) tests appropriate to decide between pooled data and random effect model. Finally, Hausman test can be used in choosing the consistent model out of random and fixed effect models (Baltagi, 2008, Greene, 2008).

Table 10. Model Selection for Panel Data

Test	**Stat.**	**P-value**	**Null Hypothesis**	**Decision**
F Tests				
Individual effect (F.E)	1.160	0.338	H_0: Individual effect but no time effect	1
Time Effect (F.E)	3.270	0.001	H_0: Time effect but no individual effect	2
Individual and time Effect (F.E.)	2.829	0.001	H_0: No individual and time effect.	2
Breuch-Pagan LM Tests				
Individual effect (R.E)	0.055	0.813	H_0: Individual effect but no time effect	1
Time Effect (R.E)	10.799	0.001	H_0: Time effect but no individual effect	2
Individual and time Effect (R.E.)	10.855	0.004	H_0: No individual and time effect.	2
Honda (1985) Test				
Individual effect (R.E)	0.236	0.406	H_0: Individual effect but no time effect	1
Time Effect (R.E)	3.286	0.000	H_0: Time effect but no individual effect	2
Individual and time Effect (R.E.)	2.490	0.006	H_0: No individual and time effect.	2
Hausman Test				
Hausman	4.343			
Hausman	4.343			

Decision 1: Cannot Reject, Decision 2: Reject, F.E: Fixed Effect, R.E: Random Effect

F-test statistics indicate that the valid model is the one way fixed effect model with time effect. Hence, considering the characteristics of the data set and model tests, fixed effect model is estimated using OLS regressions.

4.5. Heteroskedasticity and Autocorrelation

Heteroskedasticity is investigated using Breusch-Pagan-Godfrey Heteroscedasticity LM test, whereas autocorrelation is examined with Baltagi and Li (1991), Born and Bretuing (2016) and Durbin-Watson tests developed by Bhargava, Franzini and Narendranathan (1982). The estimates of heteroskedasticity and autocorrelation are given in Table 11.

Table 11. Heteroskedasticity and Autocorrelation for Fixed Effect Model

Heteroskedasticity	Stat.	P-value
Breusch-Pagan-Godfrey LMh_fixed	19.887	0.002
H_0: No Heteroskedasticity		
Autocorrelation		
Baltagi and Li (1991) LMp-stat	8.428	0.003
H_0: No Autocorrelation		
Born and Bretuing (2016) LMp*-stat	14.023	0.000
H_0: No Autocorrelation		
Durbin-Watson Bhargava, Franzini and Narendranathan (1982)	2.320	
H_0: No Autocorrelation		

Heteroskedasticity is examined by Breusch-Pagan-Godfrey LM test for fixed effect model. Results indicate that error term variances are not constant across cross section units and covariances do not equal to zero indicating heteroskedasticity in the panel. Autocorrelation is also investigated by Baltagi and Li (1991) LM, Born and Bretuing LM (2016) and Durbin-Watson tests for fixed effect model. Results for Baltagi and Li (1991) LM and Born and Bretuing LM (2016) show that error terms are serially correlated which means that autocorrelation problem exist in series. The lower limit (dL) for the for the Durbin-Watson d test is 1.8512 whereas the upper limit (dU) is 1.8596 for 84 observations (Bhargava et al., 1982: 537). Since the estimated Durbin-Watson test statistics is 2.3205, there is negative autocorrelation in panel.

4.6. Empirical Findings

Period SUR (Panel Corrected Standard Errors -PCSE) approach developed by Beck ve Katz (1995) which accounts for the heteroskedasticity and autocorrelation problem in series is used in examining the relation between FDI, FPI and stock market returns in E7 countries. The results for Period SUR estimations are given in Table 12.

Table 12. Period SUR (PCSE) Estimates

Dependent Variable	Approach			Time Period
SMR	Least Squares Period SUR (PCSE) standard errors & covariance (d.f. corrected)			2005-2016
Independent Variables	Coefficient	Stand. Dev.	t-stat	P-value
FDI	-0.073444	0.043423	-1.691376	0.0952*
FPI	0.074805	0.037887	1.974439	0.0523*
C	0.235380	0.814446	0.289006	0.7734
	Period Fixed (Dummy Variables)			
	R-squared	0.468169	Mean dependent var	0.138964
	Adjusted R-squared	0.369400	S.D. dependent var	0.413010
	S.E. of regression	0.327973	Akaike info criterion	0.759239
	Sum squared resid	7.529625	Schwarz criterion	1.164375
	Log likelihood	-17.88803	Hannan-Quinn criter.	0.922100
	F-statistic	4.740053	Durbin-Watson stat	2.162700
	Prob(F-statistic)	0.000008		

***,** and * indicates %1, %5 ve %10 significance respectively.

The results in Table 12 indicate that our estimated model is significant at 99% confidence. It is also seen that FDI and FPI can explain 46% of the deviations in stock market return. Results show that there is a significant negative relation between FDI and stock market return at 90% confidence. It is indicated in Table 12 that a 1% increase in FDI results in a 7.3% decrease in stock market return. On the other hand, there is positive significant association between FPI and stock market return at 95% confidence. It is seen that 1% increase in FPI results in 7.4% increase in stock market return.

5. DISCUSSION AND CONCLUDING REMARKS

As a crucial part of globalization, increasing financial liberalization eased the mobility of international capital flows. Surplus fund in the developed countries flows to developing countries that are in need of these funds with the liberalization of financial markets. This fund flows contribute to the economic growth and employment via the increased financial development in host countries. On the other hand, capital flow from developed countries to developing countries leads to increased interest rates till the point where local interest rate equals to international interest rate. ,

Capital flows can either be in the form of foreign direct or portfolio investments. However, foreign direct investments accepted to be much more stable since the reversal of this type of investment is quite difficult compared to portfolio investments, the rationale why the policy makers in developing countries develop policies in order to attract foreign direct investments.

The aim of this study is to examine the effects of foreign direct investment and foreign portfolio investments stock market returns in E7 (Brazil, China, Indonesia, Mexico, Russia and Turkey) for the time period from 2005 to 2016 using panel data analysis. In estimating the panel data model, multicollinearity has been examined with Pearson correlation and variance inflation factor tests. Cross sectional dependency in panel and parameters is also investigated using Breusch-Pagan (1980) (Lagrange Multiplier-LM) and Pesaran (2004)

(Cross-section Dependence-CD) tests. It is seen that cross sectional dependency exists both in panel data in parameters. Examining the Homogeneity using Pesaran ve Yamagata (2008) delta tests, only foreign direct investment is found to be heterogeneous. Stationarity is investigated by Hadri and Kurozumi (2012) test which accounts for the heterogeneity. Model estimators are examined using F test, Breuch-Pagan LM (1980) and Honda (1985) tests. In addition to the results F-tests and the characteristics of the data point out the fixed effect estimator. Hence, fixed effect estimator is used in analysis. Breusch-Pagan-Godfrey Heteroscedasticity LM and Baltagi ve Li (1991), Born and Bretuing (2016) and Durbin-Watson test by Bhargava, Franzini and Narendranathan (1982) tests indicate heteroskedasticity and autocorrelation problems in series. In examining the effects of between FDI and FPI on stock market returns Period SUR approach of Beck and Katz (1995) which accounts for heteroscedasticity and autocorrelation is used. Results indicate that FDI and FPI can explain 46% of the deviations in stock market returns in E7 countries. It is also found that 1% increase in FDI results in a 7.3% decrease in stock market return, whereas a 1% increase in FPI results in 7.4% increase in stock market returns in E7 countries. Supportive findings for the positive interaction between FPI and stock market return is consistent with those Clark and Berko (1996), Bohn and Tesar (1996), Karataş et al. (2004), Gümüş (2010), Egly et al. (2010), Okuyan and Erbaykal (2011), İbicioğlu (2012), Yıldız (2012) and Albayrak et al. (2012).

It is seen in this study that though FDI reduce, FPI increase the stock market returns in E7 countries. Hence, it is shown in this study that short term foreign portfolio investments boost stock market in E7 countries. This implies that foreign portfolio investment is a crucial factor in for stock market performance in these countries. This may also imply that foreign investors receive higher rates of returns in E7 countries. Though it is expected for FDI to have positive effect on the performance stock markets, we found a negative relation between FDI and stock market performance. Future studies may focus on the relation between these factors for different economic or trade unions such as G8 or G20 countries. Future studies may also focus on the causal associations between these factors in essence for different time dimensions.

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