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How do EFI and CPI impact Foreign Direct Investment (FDI) inflows in Selected Emerging Markets?

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ABSTRACT

This study examines the determinants of foreign direct investment in certain countries in emerging markets. The most distinctive feature that distinguishes this empirical research from its peers is that it includes the EFI (Economic Freedom Index) and CPI (Corruption Perception Index) scores as the explanatory variable in the model. After cross-section dependency tests and unit root tests, long and short-term parameters were estimated by ARDL model. The empirical method was employed on data set during the period 1997-2018 to determine the impact of economic freedom index and corruption perceptions index on foreign direct investment in selected emerging markets. The empirical results show that the relationship between corruption perceptions index and foreign direct investment is a positive, The effect of CPI was found to be significant among the long-term parameters, and an increase of 1% significant level increases FDI by 7% significant level.

ملخص

تبحث هذه الدراسة في العوامل المحددة للاستثمار الأجنبي المباشر في بعض البلدان في الأسواق الناشئة. وأبرز سمة مميزة لهذا البحث التجريبي عن أقرانه هي أنه يشتمل على مؤشر الحرية الاقتصادية (EFI) ومؤشر إدراك وجود الفساد (CPI) باعتبارهما المتغير التفسيري في النموذج. وبعد اختبارات التبعية الشاملة لعدة قطاعات والاختبارات الجذرية للوحدات، قُدرت المتغيرات الطويلة والقصيرة الأجل حسب نموذج الانحدار الذاتي للإبطاء الموزع (ARDL). واستُخدمت الطريقة التجريبية في مجموعة البيانات خلال الفترة 1997-2018 لتحديد أثر مؤشر الحرية الاقتصادية ومؤشر إدراك وجود الفساد على الاستثمار الأجنبي المباشر في أسواق ناشئة مختارة. وتظهر النتائج التجريبية أن

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العلاقة بين مؤشر إدراك وجود الفساد والاستثمار الأجنبي المباشر هي علاقة إيجابية. كما تبين أن تأثير هذا المؤشر كبير جدا بين المتغيرات الطويلة الأجل، كما تؤدي الزيادة في المستوى الكبير بنسبة 1% إلى زيادة الاستثمار الأجنبي المباشر في المستوى الكبير بنسبة 7%.

ABSTRAITE

Cette étude examine les déterminants des investissements directs étrangers dans certains pays des marchés émergents. Le trait le plus distinctif qui distingue cette recherche empirique de ses pairs est qu'elle inclut les scores EFI (indice de liberté économique) et CPI (indice de perception de la corruption) comme variable explicative dans le modèle. Après les tests de dépendance en coupe et les tests de racine unitaire, les paramètres à long et court terme ont été estimés par le modèle ARDL. La méthode empirique a été employée sur les données de la période 1997-2018 pour déterminer l'impact de l'indice de liberté économique et de l'indice de perception de la corruption sur les investissements directs étrangers dans certains marchés émergents. Les résultats empiriques montrent que la relation entre l'indice de perception de la corruption et l'investissement direct étranger est positive, l'effet de l'IPC s'est avéré être significatif parmi les paramètres à long terme, et une augmentation de 1% du niveau significatif augmente l'IDE de 7% du niveau significatif.

Keywords: FDI, Economic Freedom, CPI, PANEL ARDL

1. JEL Classification: C13, E22, F21, E02Introduction

Nowadays, interest in promotion activities made to attract foreign direct investments and increase the attraction in the emerging markets is surging. Economists/experts agree on the importance of foreign direct investment because investment acts as a cornerstone by acting as a trigger for the increase of national income, economic growth and sustainable development. Although globalization slows down (pandemic effect, quotas, additional tax, commerce wars), FDI shows a positive change and countries are making efforts to attract such investments. Reason; It is the elimination of the savings gap of these countries with foreign capital, contributing to capital accumulation, and the introduction of new technology and management knowledge into the country. Increasing competition in the country will improve human resources and eliminate the deficits in the balance of payments by creating employment. As a result of all these effects, the development rate of the country will increase and it will have a positive effect on economic growth (Alfaro, Chanda, Kalemli-Ozcan, and Sayek, 2004; Hansen & Rand, 2006). However, how

and in which direction FDI will affect which of the economic variables may vary (see Table I). For this reason, it may not meet all expectations. The economic impacts of FDI vary from country to country and from sector to sector (Kok and Acikgoz Ersoy, 2009; Sánchez-Martín, de Arce, and Escribano, 2014).

Table I:FDI Inflows and Projections, By Group Of Economies And Region, 2017–2019, And Forecast 2020 (Billions Of Dollars And Per Cent)

				Projections
Group of economies/region	**2017**	**2018**	**2019**	**2020**
World	1 700	1 495	1 540	920 to 1 080
Developed economies	950	761	800	480 to 600
Europe	570	364	429	240 to 300
North America	304	297	297	190 to 240
Developing economies	701	699	685	380 to 480
Africa	42	51	45	25 to 35
Asia	502	499	474	260 to 330
Latin America and the Caribbean	156	149	164	70 to 100
Transition economies	50	35	55	30 to 40
Memorandum: annual growth rate (per cent)				
World	-14	-12	3	(-40 to -30)
Developed economies	-25	-20	5	(-40 to -25)
Europe	-16	-36	18	(-45 to -30)
North America	-40	-2	0	(-35 to -20)
Developing economies	7	0	-2	(-45 to -30)
Africa	-10	22	-10	(-40 to -25)
Asia	7	-1	-5	(-45 to -30)
Latin America and the Caribbean	14	-5	10	(-55 to -40)
Transition economies	-25	-51	59	(-45 to -30)

Source: UNCTAD, FOMNE database (www.unctad.org/tdistatistics).

Note: Projections are based on UNCTAD's forecasting model (box I.1) and expert judgement. Numbers are rounded.

Firms want to examine every variable while making investment decisions. Therefore, the characteristics of the market/country to be invested are evaluated. Its legal structure, political structure, social-cultural structure, and economic indicators are discussed in detail. There are many determinants in the literature that affect FDI.

In this paper, we examine whether economies with certain countries in emerging markets are able to benefit more from EFI (Economic Freedom Index) and CPI (Corruption Perception Index) to promote their FDI.

2. EFI and CPI, Certain Countries in Emerging Markets

Economic freedom is measured by the Heritage Foundation's Economic Freedom Index (EFI) and is defined as "the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty (Yap and Sufian, 2018). The creators of the Economic Freedom index have embraced an approach similar to that of Adam Smith (The Wealth of Nations), according to which the basic institutions that protect the freedom of individuals to pursue their own economic interests create greater prosperity for society at large (Nica, 2020). To measure economic freedom with 50 independent economic variables, these some variables; business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom (Peterson and Hoque, 2013). Corruption activities in a country; change according to many different factors that emerge depending on the economic, social, political, and cultural structure of the country and causes the social structure to deteriorate gradually. It is possible to determine whether the corruption activities of countries are at a low or high level, in other words, to measure corruption with the corruption index (Buz and Dayıoglu, 2018). Corruption Perception Index is prepared by Transparency International, headquartered in Berlin. This index is based on the public sector of the countries and they are ranked according to the level of corruption by means of this index. The score for any country ranges from "0" highly corrupt to "100" very clean. The rank of the country refers to its position in comparison to other countries. "*CPI is a compound index that is formed using the researches of businessmen and country analysts. It includes reliable resources that use several sampling frames and different methodologies*" (Uca, Ince, and Sumen, 2016). Some countries have worked diligently to fight corruption and at times find themselves shifting in the index. Other countries seem to be doing little or nothing and yet they move several positive positions upward. Correspondingly, foreign direct investment increases or decreases (Gilman, 2018).

Economic freedom and corruption are always significant issues that governments should control, due to their effects on the development of each country is very large, especially in developing countries. The results indicate that the index of economic freedom and corruption perceptions were strongly and positively correlated with the degree of importance of corporate income tax revenue at 1 percent. Moreover, at a 10 percent degree of importance, the annual inflation rate has a negative and important effect on corporate income tax revenue (Cung, 2019). The average value of all data for the years 2000-2004 in 38 developed countries was used by Demirhan and Masca (2008). The empirical findings in the main model showed that the effect on FDIs of per capita growth rate, main telephone lines and degree of transparency is positive and important, whereas inflation and tax rates have a negative and significant impact on FDI. The article also found that the relationship between labor costs and FDI has a positive and negligible effect.

The accumulated long-run impact of corruption on growth is that when the reversed CPI increased by one standard deviation, real per capita GDP declined by about 17 percent. The effects of corruption on economic growth are particularly pronounced in autocracies and are transmitted to growth through a decrease in FDI and a rise in inflation. (Gründler, K., and Potrafke,2019) In the article, to determine the impact of corruption perceptions index and economic freedom index on FDI (net inflows) for the years 1999-2018 in Vietnam. The results show that the index of economic freedom has a positive impact and significant (at a 5%) while the index of corruption perceptions has a significant positive impact (at a 1%). Therefore, the article expresses should continue improving these two factors (EFI&CPI) in an upward direction in order to partly enhance national competitiveness in attracting FDI. (Cung and Nhung, 2020). Using panel data analysis, Azman-Saini, Baharumshah, and Law (2010) examine economic independence, foreign direct investment, and growth relationships in 85 countries. The findings indicate that foreign direct investment has no direct (positive) effect on economic development. However, because of the degree of economic freedom in the host countries, FDI is important. In other words, countries that promote economic independence reap the benefits of FDI. Using data from 1995 to 2014, Sahin (2018) investigates the relationship between direct foreign capital investments, economic freedoms, and economic development in BRICS-T countries. Kloya's bootstrap panel causality analysis is used by

ahin (2006). In Turkey, a causal relationship between economic freedom and foreign direct investment has been observed.

There are no generally accepted concrete indicators regarding the assessment and determination of rising powers. Naturally, this situation makes such conceptualization and categorization difficult. For this reason, a socio-economic comparison is made for the selected countries in the paper in Table II.

Table II: A Socio-Economic Comparison Is Made for The Selected Countries

Countries	Population	Growth (%)	GDP(million,$)	S&P	MSCI	IMF
Mexico	128.933.000	-8,9	1.258.286	+	+	+
Philippines	108.928.000	-8,3	376.796	+	+	+
Vietnam	97.380.000	1,6	261.291	-	-	-
S.Africa	59.671.000	-8	351.432	+	+	+
Turkey	84.174.000	6.7	754.412	+	+	+

Source : Ministry of Trade, Turkey, 2019

3. Econometric Analysis

In this part of the study, the definition of the data used in the study, the cross-section dependency tests in question, the stability tests of the variables, the cointegration tests, the long and short term analysis with the panel ARDL, as well as all the empirical results will be evaluated. The reason why Panel ARDL is preferred as an empirical method is to determine the effects of the variables in the study on foreign direct investments and detailed results can be determined by comparative analysis of the countries found. In addition, with the ARDL application, it is aimed to determine the short and long-term relationships between foreign direct investments and these variables.

3.1. Dataset

In this study, the variables cover the period between 1997 and 2018, and econometric analysis will be carried out with annual data. The data of the study were obtained from the official websites of three institutions, World Bank, Transparency International and Heritage Foundation.

The data in the study are dollar-based and the index values to be included in the models range from 0-100. In the table below, the sources and descriptive statistics of the data are specified by explaining the dependent and independent variables to be used in this study.

Table III. Dataset

Variables	Descriptive statistics	Source
FDI	Foreign Direct İnvestment	World Bank
EXC	Exc. Rate Of Dollar (USD/ Local Currency)	World Bank
CPI	Corruption Perception Index	Transparency Internatıonal
EFI	Economic Freedom Index	Heritage Foundatıon

FDI ve EXC logarithmically transformed and descriptive statistics are given in the table.

Table IV. Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
lfdi	overall	22.37464	1.230873	20.01399	24.57911	N = 110
	between		0.942903	21.53027	23.91727	n = 5
	within		0.8929	20.34528	23.89554	T = 22
cpi	overall	35.31091	7.847343	23	52	N = 110
	between		7.485411	28.02273	46.15	n = 5
	within		4.042827	26.80182	45.80182	T = 22
efi	overall	59.17	6.658423	38.6	68.3	N = 110
	between		6.359189	48.32273	64.12727	n = 5
	within		3.418533	49.44727	64.99727	T = 22
lexc	overall	3.694266	3.275493	-1.88476	10.0258	N = 110
	between		3.616956	0.287906	9.755574	n = 5
	within		0.408586	1.521597	4.980869	T = 22

3.2. The Model

Within the scope of this article, the author perform a model and the author as the most distinctive feature that distinguishes in this empirical research from its peers is that it used the EFI (Economic Freedom Index) and CPI (Corruption Perception Index) index the explanatory variable in the model. After cross-section dependency tests and unit root tests, long and short-term parameters were estimated by ARDL model.

Model FDI (Foreign Direct Investment) was created as follows by accepting that it is a function of EFI (Economic Freedom Index) and INF (Inflation), CPI (Corruption Perception Index), EXC (Exchange Rate).

$$FDI_{it} = f(EFI_{it}, CPI_{it}, EXC_{it})$$

Here, it expresses: FDI_{it}= the amount of foreign direct investment that country i received in period t, EFI_{it}= the economic freedom index value of country i in period t, CPI_{it}= the corruption perception index of country i in period t, EXC_{it}= dollar rate of country i in period t, İ=1,2,3,4,5 (number of countries), t=1,2,3…..,22 (time dimension).

3.3. Stationarity Analysis

When conducting econometric analysis, one of the most important issues to be considered in order to reach the correct result is that the series are stationary. If the mean and variance of the time series are constant over time and the covariance between two periods depends on the distance between the two periods, not the time of the observed variables, the time series is stationary. If the series is not stable, it cannot maintain its average in the long term and the variance value goes away as the time approaches infinity. Autocorrelation values move away from zero as the number of lags increases, R2 values are high and t statistics values are significant. Thus, the model estimates obtained in the long term cannot give accurate results and a false regression model emerges. In the study, it was first examined whether there is a cross-sectional dependency between variables. The existence of cross-section dependence also requires the application of tests that take into account the cross-section dependency in selecting the methods to be used in the following stages. If there is no cross-sectional dependency, first-generation unit root tests, otherwise,

second-generation unit root tests, which also take into account cross-sectional dependence, should be used.

Cross Section Dependency Test

In general, it is assumed that the error terms between the units in the panel data models are uncorrelated. This is especially true for panels with large horizontal cross-section dimensions. Since the study covers few units and relatively long period, cross-section dependency should be examined. The accuracy of the unit root tests to be performed later depends on the results obtained here. Although various tests are available, the Breusch-Pagan (1980) LM test was deemed suitable because it has a few cross-section units but a relatively long period.

Figure 1. Correlation matrix of residuals

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       _e1    _e2    _e3    _e4    _e5
_e1  1.0000
_e2  0.3760  1.0000
_e3  0.3223  0.2506  1.0000
_e4  0.1121  0.2717  0.1536  1.0000
_e5  0.2390  0.6986  0.5377  0.2064  1.0000

Breusch-Pagan LM test of independence: chi2(10) =    28.487, Pr = 0.0015
Based on 22 complete observations over panel units
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Since the null hypothesis expressing cross section independence is rejected, second generation unit root tests should be used.

CIPS unit root test

CIPS statistics are calculated by taking the average of the unit root test statistics of each cross section (CADF).

Table V. CIPS Results

CIPS test	Const.	Const.+Trend	Unit root
	Prob	Prob	
LFDI	0.348	0.606	+
D.FDI	0.004	0.041	-
LEFI	0.755	0.987	+
D.LEFI	0.01	0.02	-
LCPI	0.894	0.637	+
D.LCPI	0.090	0.000	-

3.4. Cointegration Process

After testing whether the series contain unit root or not, it was seen that the series were stationary at I (1) level, and whether there was a long-term mutual relationship was investigated by Pedroni (1999) and Kao (1999) panel cointegration tests. The appropriate lag lengths that overcome the autocorrelation problem were determined with the Schwarz information criterion.

Table VI. Pedroni Test

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	1.217283	0.1117	1.064874	0.1435
Panel rho-Statistic	-0.765122	0.2221	-0.453547	0.3251
Panel PP-Statistic	-2.273254	0.0115	-2.101232	0.0178
Panel ADF-Statistic	-2.237115	0.0126	-2.154283	0.0156

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	0.379976	0.6480
Group PP-Statistic	-2.387698	0.0085
Group ADF-Statistic	-2.133796	0.0164

Kao Test	*H0: There is no cointegration.*	
	t-Statistic	Prob.
ADF	-2.995377	0.0014
Residual variance	0.470408	
HAC variance	0.213100	

Of the seven test statistics calculated for the Pedroni test, four reject the null hypothesis. However, since the Kao test statistics also rejected the null hypothesis, we conclude that the series are co-integrated.

3.5. The Model Estimation

The panel ARDL (p, q, q…, q) model can be expressed as follows.

$$\Delta Y_{it} = \theta_i\left[Y_{i,t-1} - \lambda'_i X_{i,t}\right] + \sum_{j=1}^{p-1} \xi_{ij}\Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{ij}\Delta X_{i,t-j} + \varphi_i + e_{it}$$

It expresses here:

$$\theta_i : Adjustment\ coefficient$$

λ'_i: Long-term relationship vector

$\left[Y_{i,t-1} - \lambda'_i X_{i,t}\right]$: Error correction term

$\xi_{i,j}, \beta'_{ij}$: Short-term relationship coefficients

After determining the optimal lag length according to Eviewste AIC criteria, the ARDL (2,1,1,1) model was estimated by PMG and MG estimators and the results are given in the table.

Table VII. ARDL Results

N=5 , T=21	ARDL(2,1,1,1)	PMG	results		MG results			
Long Term	Coefficient	Std eror	t-stat.	Prob.	Coefficient	Std eror	t-stat.	Prob.
LEFI	0.661	0.860	0.768	0.445	-12.8536	10.2065	-1.2600	0.2080
LEXC	*1.691*	*0.235*	*7.183*	*0.000*	3.8165	3.7620	1.0100	0.3100
LCPI	2.886	0.670	4.305	0.000	7.2995	3.6439	2.0000	0.0450
Short Term								
ECM	-0.624	0.206	-3.023	0.003	-0.6632	0.1968	-3.3700	0.0010
ΔLFDI(-1)	0.073	0.176	0.413	0.680	-0.0362	0.1615	-0.2200	0.8220
ΔLEFI	-2.850	5.334	-0.534	0.595	-4.6573	5.2190	-0.8900	0.3720
ΔLEXC	-0.894244	0.832534	-1.074124	0.2861	0.4487	0.2833	1.5800	0.1130
ΔLCPI	-0.310618	0.897196	-0.346209	0.7301	1.9424	1.0388	1.8700	0.0610
C	3.076401	1.919269	1.602903	0.1131	22.7934	13.4828	1.6900	0.0910

Pesaran et al. (1999) created two estimators: Mean Group (MG) and Pooled Mean Group (PMG), both of which can be used. When MG is unable to distribute those parameters uniformly across cross-section units, PMG is used to perform the necessary estimation. The PMG estimator, which incorporates pooling and averaging, allows intercepts, short-run coefficients, and error variances to vary freely between classes while constraining long-run coefficients to be the same (Pesaran et al., 1999). The PMG estimator appears to be suitable for the considered function due to initial conditions or systemic variables that have the potential to affect all classes in a similar way. In cross-country studies, the probability ratio used to measure homogeneity of error variances and/or short- or long-run slope coefficients typically rejects equality of error variances or slopes at traditional significance stages, according to Pesaran et al. (1999). Due to this problem, Pesaran et al. (1999) recommend using Hausman (1978)-type tests. Although the PMG and MG estimators are expected to be consistent under long-run slope homogeneity, only the PMG estimator is assumed to be effective.

Figure II. The Hausmann Test

	Coefficients			
	(b) mg	(B) pmg	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lefi				
L1.	-12.85364	.6606058	-13.51424	12.71587
lexc				
L1.	3.816495	1.691143	2.125351	4.691688
lcpi				
L1.	7.299533	2.8859	4.413634	4.500466

b = consistent under Ho and Ha; obtained from xtpmg
B = inconsistent under Ha, efficient under Ho; obtained from xtpmg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 13.94
Prob>chi2 = 0.0030

Before interpreting the results, it was concluded that the MG estimator was effective and consistent because the Chi square tail probability was greater than 0.05 in the Hausman test, which was conducted to decide which was the effective and consistent predictor.

Table VIII. MG results

Long Term	Coefficient	Std eror	t-stat.	Prob.
EFI	-12.8536	10.2065	-1.2600	0.2080
LEXC	3.8165	3.7620	1.0100	0.3100
LCPI	7.2995	3.6439	2.0000	0.0450
Short Term				
ECM	-0.6632	0.1968	-3.3700	0.0010
ΔLFDI(-1)	-0.0362	0.1615	-0.2200	0.8220
ΔLEFI	-4.6573	5.2190	-0.8900	0.3720
ΔLEXC	0.4487	0.2833	1.5800	0.1130
ΔLCPI	1.9424	1.0388	1.8700	0.0610
C	22.7934	13.4828	1.6900	0.0910

When the short-term parameters were analyzed, only the error correction term was found to be statistically significant and negative. In other words, when our variables with long-term equilibrium relationship deviate from balance with a shock, they return to equilibrium level after about 2 periods. The empirical results show that the relationship between corruption perceptions index and foreign direct investment is a positive, The effect of CPI was found to be significant among the long-term parameters, and an increase of 1% significant level increases FDI by 7% significant level.

4. Conclusion

In this study is examined the freedom index and corruption index scores as explanatory variables. If some indicators are good in the freedom index and the corruption index, it will attract FDI to the country. If there is a setback, the investor runs away. Overall, it is difficult to determine a priori whether the CPI or EFI the mitigation effects will dominate the relationships between FDI inflows variables of other selected emerging

markets. For the purposes of this paper, and given the chosen approach and data limitations, when short-term parameters were analyzed, only the error correction term was found to be statistically significant and negative. In other words, when our variables with a long-term balance relationship deviate from balance by a shock, they return to the balance level after about 2 periods. Since FDI's rapid response to independent variables is theoretically not expected, the short-term coefficients are insignificant, satisfying the expectation. In addition, only CPI was found to be significant among the long-term parameters, and an increase of 1% increases FDI by 7%.

In order to prevent corruption, countries should attach importance to creating a corporate culture. In corporate culture, using effective and efficient corporate communication, creating common values, and employees' feeling of corporate belonging will contribute to the country. Nonetheless, it would be worthwhile to further explore and test the EFI&CPI of other countries foundations of FDI inflows under uncertainty in future research.

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