



Impact of Country Risk and Return on FPI

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Received: 21 July 2020

Accepted: 06 October 2020

DOI: <https://doi.org/10.32479/ijefi.10495>

ABSTRACT

This study measures the economic content of three different inductors of country risk: political, economic and financial risk indices, and fundamental attributes, such as earning-to-price ratios, and its impact on net foreign portfolio equity investment inflow in Egypt. We explore whether any of these measures contain information about net foreign portfolio equity investment inflow in Egypt. The study uses the autoregressive distributed lag (ARDL) bounds testing approach. Quantitative estimates based on the time series annual data from 2004 to 2018. The empirical results prove that there is a univariate cointegrated and stable long-run relationship among net foreign portfolio equity investment inflow and three different measures of country risk and E/P ratio. The results show that three measures of country risk have a significant effect on net foreign portfolio equity investment inflow in Egypt in the long and short run. But Political risk is a positive effect, While Economic and Financial risks are a negative effect. And E/P ratio has a positive significant effect on net foreign portfolio equity investment in Egypt in the short run only. The results confirm that after Procedure the CUSUM and CUSUMSQ tests, net foreign portfolio equity investment inflow function is stable.

Keywords: Country Risk, Return, FPI, ARDL, Egypt

JEL Classifications: C12, F21, G11, G15

1. INTRODUCTION

How does an international investor think when he wants to invest abroad? Does the international investor prefer to invest in Egypt and why? This question has become very important for the Egyptian decision-maker so that he can formulate and implement sound policies and regulations that promote and attract more foreign investment. The importance of this study comes from here.

The Egyptian economy recently faces many challenges, especially after the January 25 revolution, and the subsequent political and economic events that were reflected on the Egyptian stock market, as a result of being affected by these events.

With the beginning of the nineties of the last century, emerging economies began to establish and open their financial markets to foreign investors, as a result of the different economic and political structures in the developed and developing economies; Country risk analysis has become very important for these investors. The

foreign investor seeks to invest in different countries to diversify the risks and achieve more returns. The behavior of the foreign investor is driven by two types of determinants: Returns and risk factors with a positive response to returns and a negative response to risks.

Foreign portfolio investors generally resort to short-run investment to reap the benefits of good economic conditions and they tend to withdraw their investment during periods of economic recession.

In terms of the host country, especially developing countries, as Egypt inflows of the foreign investment portfolio play an important role to bridge the savings-investment gap and provide foreign exchange to finance the current account deficit, and increase the liquidity and efficiency of domestic capital markets.

Foreign portfolio Investment increases the liquidity and efficiency of local capital markets. As markets become more liquid, deeper, and broader. A larger group of investments can be funded. New projects

have a greater chance of getting startup financing. Consequently, savers have more opportunity to invest, while ensuring that they will be able to manage their portfolio or sell their securities quickly if they need to have access to their savings. In this way, liquid markets can make long-term investments more attractive. Foreign investors in investment portfolios are more likely to demand a higher level of information disclosure and accounting standards and bring with them experience in using these standards and knowledge of how they work. It can also help foster the development of stock markets, rewarding the market with better performance, better prospects for future performance, and better corporate governance. This promotes a more efficient allocation of capital flows, which improves risk management opportunities for foreign and domestic investors. This will lead to a better allocation of capital and resources in the local economy and make the economy healthier. Open capital markets also contribute to economic development around the world by improving the global allocation of savings and resources. Open markets allow foreign investors the opportunity to diversify their portfolios, improve risk management, and possibly foster a higher level of savings and investment.

All commercial transactions involve a degree of risk, and when these transactions occur across international borders, they carry additional risks that are not present in local transactions. These additional risks are called country risks, and these risks usually arise as a result of a variety of differences between countries in terms of structures. Economic, social, political, geographic, and currency differences (Meldrum, 2000).

According to (Gabriel, 1966), the country risk analysis aims to know the extent of these risks to reduce the expected return on investment across borders.

Asset pricing theory holds that financial markets compensate investors for their exposure to some components of uncertainty, and therefore providing objective and updated information about risk and return in the stock market will make stock prices be determined more efficiently as a result of narrowing the scope of speculation operations and daily operations become faster and more economic. Hence the benefit to all for investors and dealers in the stock markets as a whole, which leads to attracting more foreign investment.

Therefore, the literature on this topic is based on an implicit assumption that an imbalance in the economic, social, and political spheres of a country is likely to lead to an increase in investment risks in that country.

This study examines the impact of the risks to which the international investor is exposed in the Egyptian stock market (country risk), and the expected return on the foreign investment in Egyptian securities.

There have been several empirical studies that explored the impact of country risk and returns on Foreign Portfolio Investment.

Cosset and Suret (1995) examined the diversity between risky countries improves the risk-return characteristics of the optimal

portfolio, and the most obvious result is that the inclusion of political risk countries in international investment portfolios reduces the risks of the portfolio as a whole.

Erb et al. (1996) investigated a number of 117 developed and emerging countries, including Egypt, that study demonstrated a relationship between country risk indicators and expected returns on stocks, and those risk indicators are significantly related to stock value indicators, and this Emphasizes the economic viewpoint that achieving high returns reflects the high degree of risk.

Busse and Hefeker (2005) examined the relationship between political and institutional risks and the flow of foreign direct investment to a sample of 83 developing countries during the period from 1984 to 2003, including Egypt, using data from the International Country Risk Index (ICRG), The study proved that political stability, the absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order have a positive significant effect on attracting FDI.

Driessen and Laeven (2005) investigated the advantages of diversifying the international investment portfolio across countries from a local perspective. It shows that the return on diversification of the international investment portfolio varies from country to country from the perspective of the local investor. The study found that the advantages of investing in developing countries are greater when they can control the exchange rate, the greatest benefits are realized from investment outside the region of the home country. The greater benefits of the global diversification of the investment portfolio are realized whenever a Short-Sales system is found in the emerging stock markets. More returns are generated from the diversification of international portfolios in high-risk countries. These advantages vary over time with the change in country risks.

Harvey (2005) investigated the relationship between the country risk and the cost of capital and return in emerging markets, It dealt with the importance of political risks, financial risks, and economic risks to foreign direct and indirect investment. The study found that these indicators contain information about future expected stock returns of shares, It was found that there is a relationship between these indicators and the implicit cost of capital based on expected returns. The results indicate that the country's risk indicators are related to future returns per share in emerging markets only.

Le and Zak (2006) examined the impact of political risks on capital flight, on a sample of 45 developing countries over 16 years, divided political risks into three types: 1- economic risks, 2- political instability, 3- policy variability, on the flight of capital. The results of the study confirmed that all three types of risks have a statistically significant effect on capital flight.

Agati (2007) examined the effects of international diversification on investment portfolio risks; the study demonstrated that diversification of international investment portfolios leads to risk reduction.

(Petrović and Stanković, 2009) examined the relationship between risk and foreign direct investment and domestic and foreign companies in the Republic of Serbia, the study has demonstrated a

significant relationship between the degree of risk and investment policymaking in multinational companies.

Pastor and Veronesi (2012) examined the uncertainty in government policies and stock prices, which dealt with an analysis of the change in government policies and their impact on stock prices, and the study demonstrated that stock prices strongly express the change in government policies.

Amengual and Xiu (2014) found that downward volatility jumps of stock prices are related to decisions related to uncertainty policies, especially for the data issued by the meetings of the Federal Open Market Committee or the letters issued by Federal Reserve Chairman, and that there is a positive relationship between these jumps and the risk rate.

Kelly et al. (2014) confirmed that prices in political uncertainty related to major political events and national elections, and global summits are linked to changes in the Option Market.

Waqas et al. (2015) Examined the relationship between macroeconomic factors and the volatility of an investment in foreign portfolios, In three countries, China, Pakistan, India, and Sri Lanka, it was found that investment in foreign portfolios depends mainly on the macroeconomic factors of the host country. The study showed a significant impact of macroeconomic factors on the volatility of an investment in foreign portfolios, and that in the host country if the interest rate increases, foreign direct investment, the value of the currency decreases, the inflation rate decreases, with an increase in the rate of growth of GDP, the volatility of an investment in the foreign portfolio will be less In this country. The picture shows that the stable macroeconomic situation in the country attracts more foreign investors in investment portfolios to invest in the country, and the volatility of foreign portfolio investments decreases due to the stable economic conditions of the host country.

Haider et al. (2017) examined the impact of the stock market performance on investment in foreign portfolios (FPI) in China. Using the (ARDL) form for time series data from 2007 to 2015, The study found a significant positive impact of the stock market performance on the foreign investment index in foreign portfolios (FPI), and that some historical events such as the 2008 Asian financial crisis and the collapse of the Shanghai Composite Stock Index for 2015 significantly affected the FPI index in China. Investors should consider these two factors while investing in foreign financial markets.

Singhania and Saini (2017) examined the determinants of foreign portfolio investment (FPI) in developed and developing economies. On a sample consisting of 19 developed and developing countries, during the years from 2004 to 2013. It was found that in the case of developed countries, it was noted that the variation of interest rates, trade openness, the performance of the stock market in the host country and the returns of the stock market in the United States are important indicators, While in developing countries, the Freedom Index, interest rate differentials, host country stock market performance, trade openness, and US stock market returns

and crisis periods (2006-2008) significantly influence the FPI flow. Portfolio investments are greatly affected by interest rate differentials, the index of commercial openness, the American stock market, and stock market return in the host country.

2. MEASURING COUNTRY RISK

2.1. Political Risk

Assessment the political risk remains an important challenge. The political risk does not encompass natural disasters, such as earthquakes and tsunamis, nor does it include macroeconomic or financial risk factors. There are many techniques that measure country risk the most important of these methods:

First, proposed by many textbooks and practitioners to assess for political risk through an adjustment to the discount rate. By using the sovereign yield spread is the difference between the yield on a bond issued by a foreign country in U.S. dollars and a U.S. Treasury bond of similar maturity. but that the procedure is flawed and tends to lead to costs of capital that are too high. This implies that the use of such a procedure may decrease foreign direct investment (FDI) and lead to international capital misallocation.

Second, political risk can be insured. As (Bekaert and Hodrick, 2011) discuss, by taking out an insurance policy against the political risk that covers all contingencies and then subtract the insurance premium it must pay each year from the cash flows of the project. While it is possible to purchase political risk insurance, it is seldom the case that an investment can be fully insured. (Clark, 1997) modeled political risk as to the value of an insurance policy that reimburses all losses resulting from political risk events. While public and private sector providers offer select investment insurance against political risk, the vast majority of FDI remains uninsured, suggesting alternative political risk measurements remain essential.

Finally, by using the available political risk ratings, that offered by Several institutions country by country risk analysis⁽¹⁾. This technique is based on expert self-assessments, Which may be difficult to incorporate in the quantitative methods and to confront this problem we can use the International Governance Index, which provides the same indicators related to country risk, by relying on more than 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. Which offers reports aggregate and individual governance indicators for over 200 countries annually and territories over the period 1996–2018, for six dimensions:

- 1- Control of Corruption (POL 1): Related perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests
- 2- Government Effectiveness Bureaucracy (POL 2): Concerning perceptions of the quality of public services, the quality of

1 As: Business Environment Risk Intelligence (BERI), Nord Sud Export (NSE), Euromoney Country Risk Index (ECR), Political Risk Services (PRS) and International Country Risk Guide (ICRG).

the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies

- 3- Political stability and absence of violence/terrorism (POL 3): Measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism
- 4- Regulatory Quality (POL 4): Presented the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
- 5- Rule of law (POL 5): Concerned the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence
- 6- Voice and accountability (POL 6): Clearing the extent to which a country’s citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

The six composite WGI measures are useful as a tool for broad cross-country comparisons and for evaluating broad trends over time.

Because we sought to quantify the importance of political risk in net foreign portfolio equity investment, we used (WGI) as a political component as our proxy for political risk. Our sample period starts in 2004 and goes through 2018.

The six aggregate indicators are reported in two ways according to (Kaufmann et al., 2010): (1) in their standard normal units, ranging from approximately -2.5 to 2.5, and (2) in percentile rank terms from 0 to 100, with higher values corresponding to better outcomes. Rank percentile rank among all countries (ranges from 0 (highest risk) to 100 (lowest risk) rank), we used the second way.

The ratings of 6 political risk attributes combine to form one overall political risk score for Egypt. The maximum score assigned to each attribute is set so that Egypt’s overall score falls between zero (highest risk) and 100 (lowest risk).

The six variables were combined into one main indicator that expresses the direction of those variables. Principal component analysis (PCA) was used, which is a statistical procedure that allows extracting and summarizing important information in large data tables by means of a smaller set of “summary indicators.” That can be more easily visualized and analyzed.

The normalize loadings scaling protocol will be used in this study. In other words, we will use the eigenvalue vectors themselves. Because scaling is unity and dimension reduction.

Table 1 shows the six political risk attributes and their maximum scores for Egypt from 2004-2018.

After the revolution of 2011, Egypt has suffered political instability, politically-motivated violence, and terrorism.

Figure 1 shows the graph of the political risk index for Egypt from 2004 to 2018.

We can see some improvement in the political risk index for Egypt from 2014, motivated by some improving Government Bureaucracy and Rule of Law.

According to The Standard Portfolio Model, investors demand a higher return for higher risk. Consequently, the components of political risks are expected to have a negative impact on the excess returns, and this is already the case with some previous findings from (Erb et al., 1996b) and (Bilson et al., 2002).

In contrast, (Perotti and van Oijen, 2001) found a significant positive correlation between political risks and returns (reduced risks lead to higher returns), which is also supported by the results of a study (Diamonte et al., 1996) and (Lehkonen and Heimonen, 2015), which confirmed that emerging countries with an improved political risk profile also receive higher returns than those whose ratings have been downgraded.

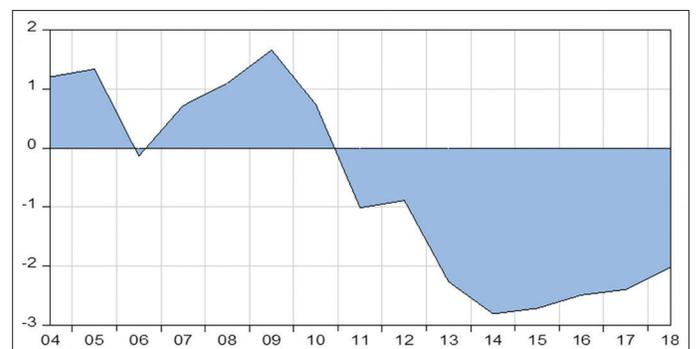
This discrepancy in the impact of political risks on returns, which these studies have found and whether that effect is positive or negative, represents one of the aims of this study.

Table 1: The political risk attributes

Year	POL 1	POL 2	POL 3	POL 4	POL 5	POL 6	POL Index
2004	29.27	47.29	21.36	33.00	52.63	21.63	1.21
2005	31.22	40.69	26.70	38.73	52.63	21.15	1.34
2006	25.37	36.10	22.22	36.76	47.37	14.42	-0.14
2007	24.27	43.20	27.05	43.20	48.33	14.90	0.72
2008	23.79	43.20	28.85	49.51	51.44	13.46	1.10
2009	36.36	47.37	25.59	46.89	52.61	14.22	1.66
2010	30.95	42.11	19.43	46.89	49.76	13.74	0.74
2011	25.59	35.07	6.64	41.23	41.78	14.08	-1.01
2012	33.18	23.22	7.58	33.65	40.38	25.82	-0.89
2013	31.75	20.85	7.11	29.38	33.33	16.90	-2.26
2014	30.77	20.19	7.62	26.44	29.33	14.78	-2.81
2015	30.77	22.12	8.57	22.12	31.25	14.78	-2.71
2016	31.25	27.88	9.05	17.79	32.69	14.29	-2.49
2017	34.13	29.33	9.05	17.31	32.69	13.30	-2.39
2018	30.77	30.77	11.90	17.79	37.50	13.30	-2.02

Source: Data from (www.govindicators.org), and author calculated (POL index) by Eviews10

Figure 1: Graph of the political risk index



Source: Author calculations by Eviews10

2.2. Economic Risk

The economic risk analysis includes assessing the current and potential economic situation of the country, The economic variables currently used in assessing the form of the country's economic risks in the various economic theories of currency devaluation are the same ones that are usually used for local macroeconomic analysis and can be divided into ratios that depend on variables related to the macroeconomic and ratios dependent on variables associated with the balance of payments.

The data used in this indicator are issued by The World Bank, and it is composed of two types of ratios, one of which depends on the variables related to the macroeconomic variables, and the other depends on the variables associated with the balance of payments.

a. The ratios that depend on the macroeconomic variables aims at assessing the prospects for long-term growth in GDP or GNP. It includes

1. Gross fixed capital formation (% of GDP) (Eco 1)
This ratio measures the direction of the economy towards investment, assuming that an increase in the investment rate will lead to increased production and higher rates of GDP growth, and thus an increase in this percentage will be favorable.
2. Gross domestic savings (% of GDP) (Eco 2)
This ratio measures the ability of the local economy to rely on its domestic resources to bridge the financing gap, and thus an increase in this ratio is favorable.
3. Gross capital formation (% of GDP) (Eco 3)
This ratio is used to measures the economy's propensity to invest. The assumption here is that a higher rate of investment will lead to increased output and higher rates of growth of GDP.
4. Gross domestic savings / Gross fixed capital formation (Eco 4)
The decrease in this ratio indicates that the economy is more dependent on foreign resources, and this is usually interpreted as a negative, so the increase in this ratio is favorable.

b. The ratios that depend on the variables associated with the balance of payments: They are based on the elasticities approach. They include

1. Annual growth of exports of goods and services/annual growth of increase in world GNI (Eco 5)
High-income elasticity of the demand for exports and low-income elasticity of the demand for imports is usually considered as favorable for the balance of payments.
2. Annual growth of imports of goods and services/annual growth of GDP (Eco 6)
The high ratio of imports to GDP is considered unfavorable. To include this ratio in the economic risk index and to standardize the trend of the indicator, the inverse of that ratio will be used.
3. Imports of goods and services (% of GDP) (Eco 7)
The high ratio of this ratio is considered unfavorable. Because of the well-known volatility of commodity prices. To include this ratio in the economic risk index and to standardize the trend of the indicator, the inverse of that ratio will be used.

4. Merchandise exports/exports of goods and services (Eco8).

As a result of the volatility of commodity prices, the high ratio of merchandise exports to exports of goods and services is considered unfavorable. To include this ratio in the economic risk index and to standardize the trend of the index, the inverse of that ratio will be used.

These variables were combined by Principal Component Analysis - Normalize Loadings scaling protocol- into one main indicator, it's called (ECO). Table 2 shows the eight economic risk attributes and their maximum scores for Egypt from 2004 to 2018.

Figure 2 shows the graph of the economic risk index for Egypt from 2004 to 2018.

After the revolution of 2011, Egypt has suffered political instability, politically-motivated violence, and terrorism. That had a negative effect on economic indicators.

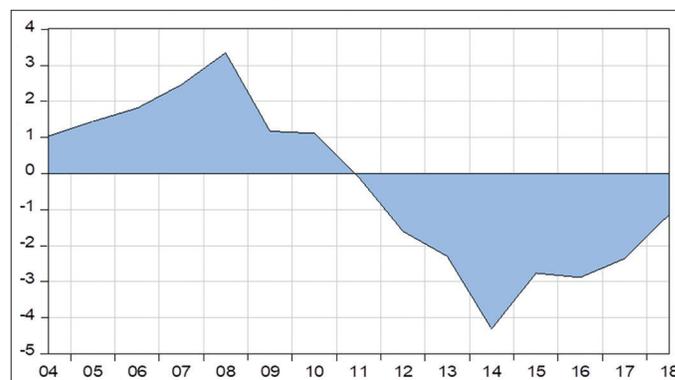
2.3. Financial Risk

The country's financial risks indicate the ability of the domestic economy to generate enough foreign exchange to cover payments from interest and the principal of the external debt. Financial risk analysis includes an assessment of the country's foreign financial obligations compared to its current and future economic situation.

Using a set of analysis tools inspired by the idea of financial leverage in corporate financial theory (Bouchet et al., 2003). The most frequently used tools that play a major role in this analysis are ratios that combine information related to a country's external debt with macroeconomic variables and balance-of-payments variables. It is divided into three groups of ratios:

- a. The first group depends on the flow variables GNI and exports, so the following ratios can be used as a measure of the financial leverage of the economy
 1. External debt stocks (% of exports of goods, services) (FIN1).
 2. External debt stocks (% of GNI) (FIN 2).
 3. Public and publicly guaranteed debt service (% of exports of goods, services and primary income) (FIN 3)
 4. Public and publicly guaranteed debt service (% of GNI) (FIN4).

Figure 2: Graph of the economic risk index



Source: Author calculations by Eviews10

Table 2: The economic risk attributes

Year	Eco1	Eco2	Eco3	Eco4	Eco5	Eco6	Eco7	Eco8	ECO
2004	16.39	15.58	16.94	0.95	5.72	23.73	3.38	230.39	1.04
2005	17.91	15.71	17.98	0.88	5.27	18.77	3.07	210.76	1.45
2006	18.74	17.11	18.73	0.91	4.76	31.43	3.17	192.44	1.81
2007	20.86	16.27	20.85	0.78	5.37	24.61	2.87	205.31	2.46
2008	22.28	16.80	22.39	0.75	17.61	27.22	2.59	205.16	3.35
2009	18.92	12.55	19.19	0.66	8.70	-26.13	3.16	204.51	1.17
2010	19.21	14.26	19.50	0.74	-0.69	-162.89	3.76	176.76	1.12
2011	16.71	12.98	17.10	0.78	0.39	20.99	4.05	159.00	-0.10
2012	14.69	8.11	16.03	0.55	-0.92	20.61	4.11	155.76	-1.60
2013	12.99	7.87	14.21	0.61	1.74	370.80	4.28	169.24	-2.29
2014	12.45	5.21	13.64	0.42	-3.65	2985.89	4.41	162.07	-4.31
2015	13.65	5.81	14.29	0.43	-0.01	459.62	4.62	205.45	-2.76
2016	14.47	5.48	15.04	0.38	-6.19	-195.55	5.02	135.24	-2.89
2017	14.82	1.78	15.27	0.12	26.67	7.96	3.41	145.41	-2.36
2018	16.25	6.20	16.66	0.38	10.01	47.04	3.41	171.77	-1.15

Source: Data from (<https://data.worldbank.org/>), and author Calculated (ECO index) by Eviews10

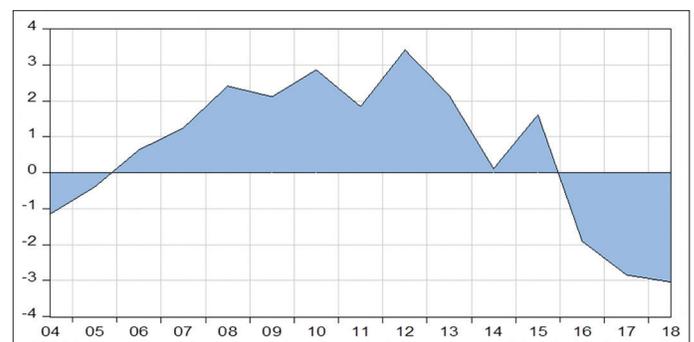
The lower these ratios, the better the financial position of the economy. To include these ratios in the financial risk index and to standardize the trend of the indicator, the inverse of those ratios will be used.

- b. The second group is used to measure and determine the ability of the current income to cover current obligations: These ratios represent the guaranteed financial flows as follows
1. Total debt service (% of exports of goods, services and primary income) (FIN 5)
 2. Total debt service (% of GNI) (FIN 6)
- The lower these ratios, the better the financial position of the economy. To include these ratios in the financial risk index and to standardize the trend of the indicator, the inverse of those ratios will be used.
- c. The third group is similar to the ratios of liquidity in corporate finance, where liquidity ratios measure the ability of an enterprise to meet its short-term obligations
1. Total reserves (% of total external debt) (FIN 7)
 2. Total reserves in months of imports (FIN 8)
- This ratio measures the entity's ability to meet its short-term obligations, and the rise in that ratio is a sign of high liquidity and is favorable.
- This ratio measures the country's ability to maintain import levels with the cash currently available. And the rise in that ratio is an indication of high liquidity and is favorable.

These eight variables were combined by Principal Component Analysis - Normalize Loadings scaling protocol- into one main indicator, it's called (FIN). Table 3 shows the eight financial risk attributes and their maximum scores for Egypt from 2004 to 2018.

The following Figure 3 shows graph of the changes in the financial risk index for Egypt during the period from 2004 to 2018.

Beginning with the end of 1997, the Egyptian economy was subjected to several internal and external shocks, including the effects of the financial crisis experienced by Southeast Asian countries, which led to an increase in the import bill, and this was not compensated by an increase in the export proceeds and the consequent pressure on the exchange rate of the pound. Against the

Figure 3: Graph of the financial risk index

Source: Author calculations by Eviews10

US dollar, and despite these conditions, the central bank continued to defend the stability of the exchange rate, by interfering in the foreign exchange market using its balances from international reserves, which resulted in a decrease in these balances.

The events of September 11, 2001, and the general trends that followed in the global economy, caused some negative effects on the performance of the Egyptian balance of payments, as the tourism sector was affected and the opportunities for foreign investments to come to the region diminished, and the foreign exchange reserves balances continued to decrease to 12.9 Billion Dollars at the end of 2001, compared to 18.7 billion dollars in 1997.

On 29 January 2003, in an attempt to limit the effects of the previous stage, the Egyptian government announced the floating of the Egyptian pound, which led to a decrease in the exchange rate of the pound to 6.153 pounds for the dollar at the end of 2003, with a decrease of 36.7% from the previous year.

The global financial crisis in 2008 affected the indicators of the Egyptian economy, including the exchange rate negatively. The exchange rate rose in 2009, the central bank succeeded in 2010 in controlling the exchange rate problem and eliminating the black market, and controlling inflation rates from insecurity through an index new for core inflation derived from the general figure for inflation.

Table 3: The financial risk attributes

Year	Fin1	Fin2	Fin3	Fin4	Fin5	Fin6	Fin7	Fin8	FIN
2004	84.44	2.53	13.77	40.32	12.46	36.49	48.84	6.64	-1.14
2005	100.46	2.92	14.65	40.76	14.06	39.11	71.48	7.33	-0.39
2006	118.23	3.48	16.6	45.7	15.78	43.43	83.83	7.36	0.64
2007	128.34	3.81	17.6	48.56	16.49	45.5	93.12	6.95	1.25
2008	161.48	4.84	18.27	51.88	17.56	49.86	101.24	5.97	2.42
2009	126.02	5.34	16.06	66.59	15.37	63.74	98.58	7.36	2.12
2010	132.78	5.83	16.98	73.78	16.11	70	100.69	6.7	2.87
2011	133.76	6.54	13.33	64.72	12.65	61.42	52.98	3.29	1.84
2012	121.41	6.82	16.6	92.77	15.12	84.48	39.15	2.49	3.42
2013	96.33	6.05	13.63	85.19	13.08	81.73	35.56	2.73	2.15
2014	112.99	7.15	8.1	50.99	7.89	49.72	35.76	2.21	0.12
2015	75.37	6.56	10.6	91.52	10.02	86.53	31.81	2.6	1.62
2016	48.61	4.75	5.55	53.6	5.13	49.52	34.18	3.89	-1.9
2017	50.78	2.73	7.12	37.66	6.52	34.53	43.11	5.72	-2.84
2018	52.3	2.48	7.29	33.93	6.66	31.04	42.39	5.95	-3.04

Source: Data from (<https://data.worldbank.org/>), and author calculated (FIN Index) by Eviews10

With the beginning of 2011 and the January 25 revolution and the resulting political and economic events and turmoil, as it had negative repercussions on the Egyptian economy, where a significant decline in the foreign exchange reserve occurred, as Egypt lost 21 billion dollars until December 2012, and the problem of declining stocks from the reserve was Foreign exchange is one of the most important challenges facing the Central Bank of Egypt, which was reflected in the exchange rate, as the value of the pound fell against the dollar.

In March 2016, Egypt adopted a more flexible exchange rate policy was that reflects supply and demand mechanisms to overcome distortions in the foreign exchange market. the pound was reduced by 12.7% in the bids submitted by the central bank to banks to reach the weighted average exchange rate of the dollar 8, 85 pounds.

On November 3, 2016, the government followed the policy of liberalizing the exchange rate for the 2nd time, to correct foreign exchange trading policies, and to overcome foreign currency shortages. This policy led to the depreciation of the pound against the dollar, to become 18.4108 pounds at the end of the year, a decrease of 51.5% of the value of the pound⁽²⁾. This led to an increase in the country's financial risks.

The study attempts to investigate The Impact of Country Risk and Return on Foreign Portfolio Investment in Egypt using the newly developed ARDL-Bounds testing approach. contrary other cointegration techniques, that impose a restrictive assumption that all the variables under study must be integrated of the same order. Secondly, while other cointegration techniques are sensitive to the size of the sample, the ARDL test is suitable even if the sample size is small.

3. METHODOLOGY

The autoregressive distributed lag (ARDL) model treated with Univariate cointegration and is presented by Pesaran and Shin (1999) and further developed by Pesaran et al. (2001). This

approach is based on the estimation of an Unrestricted Error Correction Model (UECM) that enjoys several advantages over other alternatives of cointegration techniques:

- Bounds testing will be convenient for this study because it can be applied to a small sample size study (Pesaran et al., 2001)
- It provides unbiased estimates of the long-run model and valid t-statistic even when some of the regressors are endogenous (Harris and Sollis, 2003). Inder (1993) and Pesaran (1997)
- The standard F-statistics or Wald used in the bounds test has a nonstandard distribution under the null hypothesis of no-cointegration relationship between the examined variables, irrespective whether the underlying variables are I (0), I (1) or fractionally integrated
- It estimates the short-run and long-run components of the model simultaneously, and it removes problems associated with autocorrelation and omitted variables
- The short-run and long-run coefficients of the model are estimated simultaneously.

The methodology used in this study is summarized in the following steps:

- Time series stability test: Unit root test
- Cointegration test by using the bounds test and estimating the long-run model by using the autoregressive distributed lag mode (ARDL)
- Diagnostic tests: A model to be trusted, it must be robust. To support robustness of an estimated model, one needs to peruse various diagnostic tests. Typical diagnostic tests follow to investigate the goodness of fit, stability, parsimony, functional form, and a well-behaved model in general. The Breusch Godfrey serial correlation LM test, the Breusch-Pagan Godfrey Heteroskedasticity test or the White test, and the Jarque-Bera test are some of the tests encountered in these applications. In addition to that, the Ramsey reset test is used for the functional form
- Error correction model (ECM)
- Stability test.

The following model includes Net Foreign Portfolio Equity Investment, earning to price, political, economic, and financial risk indexes:

2 Central Bank of Egypt, Annual Report, 2016-2017.

$$FPIEQ_t = \alpha_0 + \beta_1 EP_t + \beta_2 POL_t + \beta_3 ECO_t + \beta_4 FIN_t + \varepsilon_t \quad (1)$$

$t = 1, 2, \dots, T$

Where,

t is lagged times

T is observations

$FPIEQ$ is the Net Foreign Portfolio Equity Investment⁽³⁾

E/P is earning to price⁽⁴⁾. With expected positive elasticity;

POL is political risk index, with expected negative elasticity;

ECO is economic risk index, with expected negative elasticity;

FIN is financial risk index with expected negative elasticity;

ε is error term.

α is constant

β_s is coefficients elasticity.

An ARDL regressions are estimated in the form of equation (1) as follows:

$$\begin{aligned} \Delta FPIEQ_t = & \alpha_0 + \sum_{i=1}^m \alpha_{1i} \Delta FPIEQ_{t-i} + \sum_{i=1}^m \alpha_{2i} \Delta EP_{t-i} + \\ & \sum_{i=1}^m \alpha_{3i} \Delta POL_{t-i} + \sum_{i=1}^m \alpha_{4i} \Delta ECO_{t-i} + \sum_{i=1}^m \alpha_{5i} \Delta FIN_{t-i} \\ & + \beta_1 FPIEQ_{t-1} + \beta_2 EP_{t-1} + \beta_3 POL_{t-1} + \beta_4 ECO_{t-1} + \beta_5 FIN_{t-1} + e_t \end{aligned} \quad (2)$$

where Δ indicate the first difference factors; α_0 is the drift element, and e_t is the usual white noise residuals.

The net foreign portfolio equity investment in left-hand side. The first until fourth expressions (β_1 - β_5) on the right-hand side correspond to the long-run relationship. The remaining expressions with the summation sign (α_1 - α_5) represent the short-run dynamics of the model.

By using bound testing under Pesaran et al. (2001) procedure, To investigate the presence of long-run relationships among the $FPIEQ$, E/P , POL , ECO , and FIN . The bound testing procedure is depending on the F-test. The F-test is actually a test of the hypothesis of no cointegration among the variables against the existence or presence of cointegration among the variables, denoted as:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$

i.e., there is no cointegration among the variables.

$$H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0$$

i.e., there is cointegration among these variables.

The ARDL bound test is based on the Wald-test (F-statistic). The asymptotic distribution of the Wald-test is non-standard under the null hypothesis of no cointegration among the variables. Two critical

3 Source: Data from (<https://data.worldbank.org/>).

4 Source: Data from the monthly reports issued by the Egyptian Stock Exchange, (https://www.egx.com.eg/en/Services_Reports.aspx), and annual averages were calculated using Eviews10 program.

values are given by Pesaran et al. (2001) for the cointegration test. The lower critical bound assumes all the variables are I (0) meaning that there is no cointegration relationship between the examined variables. The upper bound assumes that all the variables are I (1) meaning that there is cointegration among the variables. When the computed F-statistic is greater than the upper bound critical value, then the H0 is rejected (the variables are cointegrated). If the F-statistic is below the lower bound critical value, then the H0 cannot be rejected (there is no cointegration among the variables). When the computed F-statistics falls between the lower and upper bound, then the results are inconclusive.

We developed the unrestricted error correction model (UECM) based on the assumption made by Pesaran et al. (2001). From the unrestricted error correction model, the long run elasticities are the coefficient of the one lagged explanatory variable (multiplied with a negative sign) divided by the coefficient of the one lagged dependent variable.

The ARDL has been chosen since it can be applied for a small sample size as it happens in this study. Also, it can estimate the short and long-run dynamic relationships in the net foreign portfolio equity investment at the same time. The ARDL methodology is reduces of the burden of establishing the order of integration amongst the variables. moreover, it can distinction dependent and explanatory variables, and allows testing for the existence of relationship between the variables. Finally, with ARDL, different variables can have an optimal number of lags.

Thus, equation (2) in the ARDL of the error correction model can be explained as equation (3): The error correction version of ARDL model pertaining to the variables in equation (2) is as follows:

$$\begin{aligned} \Delta FPIEQ_t = & \alpha_0 + \sum_{i=1}^m \alpha_{1i} \Delta FPIEQ_{t-i} + \sum_{i=1}^m \alpha_{2i} \Delta EP_{t-i} + \\ & \sum_{i=1}^m \alpha_{3i} \Delta POL_{t-i} + \sum_{i=1}^m \alpha_{4i} \Delta ECO_{t-i} + \\ & \sum_{i=1}^m \alpha_{5i} \Delta FIN_{t-i} + \lambda ECT_{t-1} + u_t \end{aligned} \quad (3)$$

where λ is the speed of adjustment parameter and u_t is the residuals that are obtained from the estimated cointegration model of equation (2).

4. EMPIRICAL RESULTS

4.1. Unit Root Test

The paper used annually data over the period 2004–2018 to test the null hypothesis of no cointegration Opposite the alternative hypothesis. The first practice in applying any cointegration technique is to determine the degree of integration of each variable. For this reason, the ADF test was utilized. The test results are presented in Table 4

The results of Table 4 denote that, the variables are integrated I (0) and I (1). For this reason, ARDL approach is used for the cointegration of the model.

Table 4: Results of ADF tests

Variables	FPIEQ	EP	POL	ECO	Fin
The lag length	4	1	1	4	4
Level					
Intercept					
t-statistic	-2.4909	-2.2723	-1.0565	-2.4541	-0.4098
Pr	0.1428	0.1927	0.7012	0.1507	0.8754
Trend and intercept					
t-statistic	-2.5099	-2.3758	-1.6869	-2.6872	1.05168
Pr	0.3188	0.3737	0.7024	0.259	0.9994
None					
t-statistic	-3.456805***	-0.4062	-0.6403	-2.551549**	-2.048280**
Pr	0.0027	0.5185	0.4217	0.0162	0.0436
First difference					
Intercept					
t-statistic	-9.849127***	-3.574525**	-3.410619**	-2.519	0.13967
Pr	0	0.023	0.0305	0.1393	0.953
Trend and intercept					
t-statistic	-9.339227***	-3.378671*	-3.2892	-2.9695	-8.064672***
Pr	0.0001	0.0977	0.1117	0.1759	0.0002
None					
t-statistic	-9.015	-3.739795***	-3.244514***	-3.196320***	0.07719
Pr	0	0.0013	0.0036	0.0039	0.6866
The rank	I(0)	I(1)	I(1)	I(0)	I(0)

Source: Author calculations by Eviews10.

***, **, * imply significance at the 1%, 5% and 10% level, respectively; The lag length for the ADF was selected using Schwarz Bayesian Criterion (SBC). NB: The null hypothesis is that the series is non-stationary [I(1)], or contains a unit root. The rejection of the null hypothesis is based on MacKinnon (1996) critical values. The lag length are selected based on SIC criteria, this ranges from lag zero to lag two. ***, ** and * indicate the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significant level, respectively

The main advantage of this approach lies on the fact that it obviates the need to classify variables into I (1) or I (0).

4.2. Autoregressive Distributed Lag (ARDL) Estimates

We propose ARDL modeling for cointegration test, where net foreign portfolio equity investment (*FPIEQ*) is considered to be the dependent variable and the best lag distribution of the independent variables, earning to price (*E/P*), political risk (*POL*), economic risk (*ECO*) and financial risk (*FIN*), was modeled.

4.3. The Optimal Number of Lags

The *ARDL* model was estimated from a recursive search of the optimal number of lags through the Akaike Information Criterion (AIC) and from the diagnostic statistics. Table 5 presents the *ARDL* estimates.

Given the annual data available for estimation, we set the maximum lag order of the various variables in the model equal to one to suitable for a small sample size. This is the first stage of *ARDL* modeling for the cointegration test.

4.4. Bound Test (ARDL)

Table 6 shows the computed value of the F-statistic to be 14.735, which is more than the upper bound value of Narayan (2005) critical value at 1 percent level of significance; this depicts a long-run cointegrated relationship between net foreign portfolio equity investment and its determinants, earning to price, political risk, economic risk and financial risk. Hence, we reject the null hypothesis of no levels relationship and then proceed to estimate the long-run coefficients and short-run model.

The results of Table 2 show that, F-statistic is greater than critical values, indicating that there is cointegration between net foreign

Table 5: Autoregressive distributed lag estimates. ARDL (1, 1, 1, 1, 1) selected based on Akaike Information Criterion. Dependent variable is FPIEQ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPIEQ (-1)	-0.41595	0.189177	-2.19873	0.0928
EP	0.455445	0.184999	2.461871	0.0696
EP(-1)	-0.64012	0.249452	-2.56611	0.0622
POL	0.631474	0.383057	1.648513	0.1746
POL(-1)	2.134242	0.41964	5.085893	0.0071
ECO	-1.06153	0.326192	-3.2543	0.0312
ECO(-1)	-0.92347	0.317324	-2.91018	0.0437
FIN	-0.20235	0.163614	-1.23677	0.2838
FIN(-1)	-0.29671	0.23122	-1.28325	0.2687
Constant	2.538695	1.606878	1.579893	0.1893
R-squared	0.905472	Mean dependent var		-0.07842
Adjusted	0.692785	S.D. dependent var		1.139385
R-squared				
S.E. of regression	0.631527	Akaike info criterion		2.094455
Sum squared resid	1.595304	Schwarz criterion		2.550925
Log likelihood	-4.66119	Hannan-Quinn criter.		2.052201
F-statistic	4.257291	Durbin-Watson stat		1.752938
Prob(F-statistic)	0.088268			

Source: Author calculations by Eviews10

portfolio equity investment and its determinants, earning to price, political risk, economic risk, and financial risk. The computed F-statistic was also compared with the critical values that account for small sample sizes provided by Narayan (2005).

4.5. Diagnostic Tests

Before applying the model estimates for economic analysis, the results were subjected to several econometric tests. These include tests for serial correlation, normality, heteroscedasticity, and Specification test (Greene, 2008; Gujarati and Sangeetha, 2007). The econometric tools employed included Breusch-

Pagan-Godfrey, Breusch-Godfrey Serial Correlation LM Test, Jarque-Bera, and Ramsey RESET test. The estimated diagnostic indicators are summarized in Table 7.

The LM test result of serial correlation, shows that the residuals are not serially correlated, since the P-value (0.9417) is greater than the %5 level of significance. The variables are normally distributed, as confirmed by the P-value (0.9270), which is greater than %5. Meanwhile, the test for heteroscedasticity, also shows that the residuals are Homoscedastic, because the P-value (0.9270) is also more than 5%. And the model does not suffer from the problem of misspecified, as confirmed by the P-value (0.7003), which is >%5. Implies the statistic is not significant at the relevant statistical level.

The foregoing results imply that the model’s residuals were normally distributed, devoid of the significant presence of serial correlation, free from the presence of heteroskedasticity threats, not fraught with a severe threat of multicollinearity and properly specified or not misspecified. These properties are desirable properties of OLS models. Since our model exhibit all the desirable properties of OLS, we conclude that our model is very reliable for economic analysis and forecasting.

4.6. Estimated Long Run Coefficients

The second stage of an ARDL modeling for cointegration test is to estimate the long-run coefficients of model. Table 8 presents the solved static long run results of the ARDL model.

Table 6: Results of F-bound test

The computed F-statistic	Critical value	Significant level		
		%1	%5	%10
14.73591***	Lower bound value I(0)	3.74	2.86	2.45
	Upper bound value I(1)	5.06	4.01	3.52

Source: Author calculations by Eviews10

Table 7: Diagnostic tests

Test Statistics	Statistic	Value	Pro.
A: Serial correlation (Breusch-Godfrey)	F-statistic	0.006317	0.9417
	Chi-square	0.029419	0.8638
B: Normality (Jarque-Bera)		0.151434	0.9270
C: Heteroskedasticity (ARCH)	F-statistic	0.008776	0.9270
	Chi-square	0.010364	0.9189
D: Functional form (Ramsey- Reset)	T-statistic	0.423787	0.7003
	F-statistic	0.179596	0.7003

Source: Author calculations by Eviews10. A: Lagrange multiplier test of residual serial correlation. B: Based on a test of skewness and kurtosis of residuals. C: Based on the regression of squared residuals on squared fitted values. D: Ramsey’s RESET test using the square of the fitted values

Table 8: Estimated long run coefficients the ARDL approach. ARDL (1, 1, 1, 1) selected based on akaike information criterion. Dependent variable is FPIEQ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.538695	1.606878	1.579893	0.1893
EP	-0.13043	0.154529	-0.84402	0.4462
POL	1.953259	0.424603	4.600203	0.01
ECO	-1.40188	0.303695	-4.61609	0.0099
FIN	-0.35246	0.104647	-3.36809	0.0281

Source: Author calculations by Eviews10

The long-run model of the corresponding ARDL (1, 1, 1, 1, 1) for the net foreign portfolio equity investment (FPIEQ) can be written as follows:

$$FPIEQ = 2.53 - 0.13 (EP) + 1.95 (POL) - 1.40 (ECO) - 0.35 (FIN)$$

The estimated coefficients show that political risk (POL) has a positive effect on net foreign portfolio equity investment (FPIEQ) in the long run. But, economic risk (ECO) and financial risk (FIN) have a negative effect on net foreign portfolio equity investment in the long run, and all the regressors are statistically significant at the %5 level. Only, the coefficient of the financial risk (FIN) is not statistically.

4.7. Error Correction Model (ECM)

After obtaining the long-term relationship according to the co-integration model, the ECM model is estimated to test the short-term relationship between the independent variables and the dependent variable (Table 9).

Estimations show that the coefficients of all the regressors are statistically significant at the %5 level. Only, the coefficient of the financial risk (FIN) is statistically significant at the %10 level. The results of ECM show that the coefficient of earning to price, and political risk (0.45, 0.63) respectively have a positive effect on net foreign portfolio equity investment in the short run. The results of ECM show that the coefficient of economic risk and financial risk (-1.06, -0.20) respectively have a negative effect on net foreign portfolio equity investment in the short run.

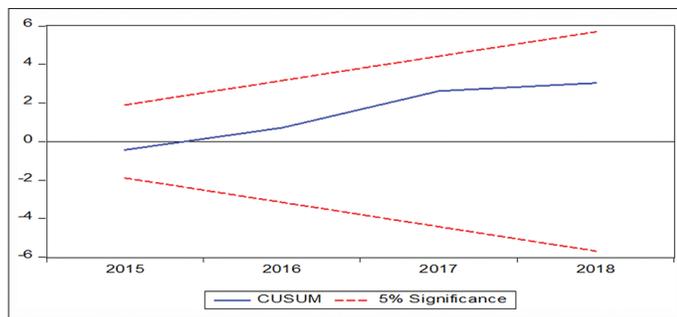
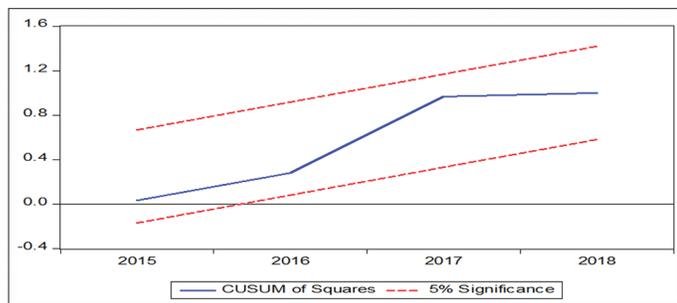
It is also worth that the error correction coefficient is significant and takes a negative value of 1.41 indicating the speed of return to the long-term equilibrium. This means that any deviation from the long-term equilibrium path between the explanatory variables and the independent variable in period t-1 will be compensated in period t. According to this estimation, the speed of adjustment is rapid. Also, the ECM only can explain 94% of the changes in net foreign portfolio equity investment in the short term can be explained by the variables in the model.

From the above, we can say that in the short term and the long term, there is a positive relationship between the net foreign

Table 9: Error correction representation for ARDL model. Dependent variable is FPIEQ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.538695	0.24231	10.47705	0.0005
D(EP)	0.455445	0.104678	4.350914	0.0121
D(POL)	0.631474	0.172436	3.662076	0.0215
D(ECO)	-1.06153	0.137906	-7.69748	0.0015
D(FIN)	-0.20235	0.093179	-2.17165	0.0956
CointEq(-1)*	-1.41595	0.116643	-12.1392	0.0003
R-squared	0.949197	Mean dependent var		0.013871
Adjusted R-squared	0.917446	S.D. dependent var		1.554202
S.E. of regression	0.446557	Akaike info criterion		1.523027
Sum squared resid	1.595304	Schwarz criterion		1.796908
Log likelihood	-4.66119	Hannan-Quinn criter.		1.497674
F-statistic	29.8945	Durbin-Watson stat		1.752938
Prob (F-statistic)	0.000056			

Source: Author calculations by Eviews10

Figure 4: The cumulative sum of recursive residual (CUSUM)**Figure 5:** Cumulative sum of square recursive residual (CUSUMSQ)

portfolio equity investment and political risk. If we want more net foreign portfolio equity investment, we have to pay attention to political risk.

4.8. The Test of Stability for Model (The CUSUM Test)

The structural stability test for the short and long-term transactions is the absence of any data used in this study from any structural changes in it over time. To achieve this, two tests are used: Cumulative Sum of Recursive Residual (CUSUM) and the cumulative sum test For the Cumulative Sum of Square Recursive Residual (CUSUMSQ), the structural stability of the estimated parameters in the UECM format of the ARDL model is achieved if the CUSUM and (CUSUMSQ) statistical figures fall within the critical limits at the 5% level of significance, and from Then, these coefficients are unstable if the graph of the statistics of the two mentioned tests moves out of bounds at this level.

It is evident from the two figures (Figures 4 and 5) that the estimated coefficients for the ARDL model used are structurally stable over the period under study, which confirms the existence of stability between the study variables and the harmony in the model between the results of error correction in the short and long term, where the graphical form of the statistics of the two tests mentioned for this model occurred within the critical limits at a significant level 5%.

5. CONCLUSIONS

The goal of this study is to explore the economic content of three country risk measures of Egypt: political, economic, and financial risk ratings. Our analysis suggests that there is considerable information contained in the economic, financial, and political index, in particular. The results show that three measures of

country risk have a significant effect on net foreign portfolio equity investment inflow in Egypt in the long and short run. But political risk is a positive effect, while economic and financial risk is a negative effect. And earning to price ratio has a positive significant effect on net foreign portfolio equity investment in Egypt in the short run only. But, in the long run, it has a negative nonsignificant effect.

The results also proofed that the major motivation for the international investor is to diversify the investment in order to achieve the highest return with the lowest risk. And that the international investor in Egyptian stocks prefers to invest in Egypt when the political risks improve, in the long and short run. And that there is a positive significant correlation between foreign investment and earning to price ratio in the short run.

These results confirm the importance control of corruption, increase the quality of Government Bureaucracy and build up its Effectiveness, an achievement Political Stability, and control of violence and terrorism, augment Regulatory Quality, promote Rule of Law, and to be deep-rooted of Voice and Accountability. And the result emphasizes the importance of return for a foreign investor in the short run. Also, the results confirm that after Procedure the CUSUM and CUSUMSQ tests, net foreign portfolio equity investment inflow function is stable.

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