# The Impact of foreign direct investment inflows on Economic Growth in the Gulf Cooperation Council Countries: Econometric Study from 1990 to 2018

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**Abstract**:
This study aims to try to measure the effect of foreign direct investment inflows on economic growth in the Gulf Cooperation Council Countries for the period (1990-2018), using regression analysis of cross-sectional time series data, based on the cointegration methodology and error correction model for Panel data.
The results of the study concluded from unit root tests and cointegration of Panel data are that the two variables are integrated from the first degree, and that there is a long-term equilibrium relationship between them, showed The result to estimate the error correction model for the long-term equilibrium relationship there is a direct but weak relationship between FDI flows and economic growth.
**Keywords**: foreign direct investment inflows, economic growth, Panel data.
**JELClassification Codes** : **C23**; **O11**; **P3**.

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## 1. INTRODUCTION

Foreign direct investment (FDI) inflows became an increasingly important element in global economic development and integration in recent years, Where During the last three decades the Gulf Cooperation Council Countries adopted many economic reform policies to keep in pace with the rise of global growth, one of the policies was in form of supporting and welcoming foreign companies to attract foreign direct investment in order to spur economy growth.

Where he confirms Many policy makers and academics contend that foreign direct investment (FDI) can have important positive effects on a host country's development effort.1 In addition to the direct capital financing it supplies, FDI can be a source of valuable technology and know-how while fostering linkages with local firms, which can help jumpstart an economy, Based on these arguments, industrialized and developing countries have offered incentives to encourage foreign direct investments in their economies (Markusen, 1995, p. 170).

In this context, we will study an the Gulf Cooperation Council Countries, with regard to the reality of Foreign direct investment (FDI) inflows and its impact on the economic growth, Hence the following problem can be posed:

**To what extent does foreign direct investment inflows affect long-term economic growth in the Gulf Cooperation Council Countries?**

To answer the question we will test the following hypotheses:

-There is a long-term relationship between FDI inflows and economic growth in the Gulf Cooperation Council countries.

-FDI inflows have a positive impact on economic growth in the countries of the Gulf Cooperation Council.

## 2. Previous studies:

There are several studies tried to explain The Impact of foreign direct investment inflows on Economic Growth, recall the most recent:

- the study of Baharumshah and Thanoon (2006) used a dynamic panel model to examine the link between FDI and growth in East Asian economies. They demonstrated that FDI positively contributes in the process of growth in studied countries. In other words, this study has argued that countries that are successful in attracting FDI can grow faster than those that deter FDI, Based on a number of determinants of the linkage between FDI and economic growth (such as human capital, learning by doing, exports, macroeconomic stability, level of financial development, public investment and other determinants) (Baharumshah & Thanoon, 2006, pp. 70-83) ;
- the study of Bhandari et al. (2007) illustrate that an increase in the stock of domestic capital and inflow of foreign direct investment are main factors that positively affect economic growth in East European countries (Bhandari, Dharmendra, Gyan, & Upadhyaya, 2007, pp. 1-9);
- Besides, Won et al. (2008) focused their analysis on the case of Asian newly industrializing economies, Using the panel vector autoregressive models, results show

that the openness of the economy, measured by exports and FDI inflows, is the most common economic factor attributed to the rapid growth of the Asian newly industrializing economies (Won, Frank, & Doo Yong, 2008, pp. 11-86);

- Agrawal and Khan (2011) investigated the impact of FDI on economic growth in five Asian countries (China, Japan, India, South Korea, and Indonesia) over the period 1993-2009. This study confirms that FDI promotes economic growth and further provides an estimate that one dollar of FDI adds about 7 dollars to the GDP of each of the five countries (Agrawal & Khan, 2011, pp. 257-264);

- Moreover, Adeniyi and al (2012) examines the causal link between FDI and economic growth with financial development in some small open developing economies. Using a trivariate framework which applies Granger causality tests in a vector error correction (VEC) over the period 1970-2005, results suggest that the extent of financial sophistication matters for the benefits of foreign direct investment on economic growth in studied economies (Adeniyi, Omisakin, Egwaikhide, & Oyinlola, 2012, pp. 105-127).

**3. FDI Promotes Growth: Strong Evidences:**

All the countries in the world are continuously striving for rapid economic growth and as a result they are inviting more and more investments by allowing foreign investors to invest in their land. There are several factors that help or hinder the economic growth of a country, and the factors, that are often identified as stimulants (UNCTAD, 1994, p. 88) for a country's growth are: (1) Large amounts of investment capital, (2) Advanced Technologies, (3) Highly skilled labor, (4) Well-developed transportation and communication infrastructure, (5) Stable and supportive political and social institutions, (6) Low tax rates, and (7) Favorable regulatory environment. Differences in the growth rates of the countries are explained by the differences in the endowments or levels of these factors (Dondeti & Mohanty, 2007, p. 23).

FDI has long been recognized as a major source of technology and know-how to developing countries, Indeed, it is the ability of FDI to transfer not only production know- how but also managerial skills that distinguishes it from all other forms of investment, including portfolio capital and aid. While foreign portfolio investment may, in some cases, contribute to the capital formation in a developing country, often, the capital flows via this route are limited, and above all, they do not provide the advanced technologies needed to compete in the world markets. FDI can accelerate growth in the ways of generating employment in the host countries, fulfilling saving gap and huge investment demand and sharing knowledge and management skills through backward and forward linkage in the host countries (Frenkel, Katja, & Georg, 2004, p. 300) , Moreover, the very presence of foreign owned firms in the economy, with their superior endowments of technology, may compel locally owned firms to invest in learning if only to keep abreast of the competition. In turn, increased competition from locally owned firms through their investments in innovation may compel foreign firms to bring in superior quality technology and know-how, FDI generates productivity spillovers for the host economy (Blomstrom & Kokko, 2002, p. 247), One idea is that multinational

enterprises possess superior production technology and management techniques, some of which are captured by local firms when multinationals locate in a particular economy, In sum, imported skills enhance the marginal productivity of the capital stock in the host countries and thereby promote growth (Wang & Blomstrom, 1992, p. 137).

Though, FDI is seen as a vital factor in inducing growth rate, however, it will only lead to growth if its inflows are properly managed (Henri, 2009, p. 8), The degree up to which FDI can be exploited for economic development depends on conduciveness of economic climate. In the absence of such a climate FDI may be counterproductive; it may thwart rather than promote growth.

## 4. Methods and Materials:

Before addressing the standard study, we first conduct a descriptive study of the sample of the study, we will summarize our study on the following group of countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE), the study period runs from 1990 to 2018, with these data taken from World Bank data (World Bank data, 2020).

Using ACP-normée to study the impact of foreign direct investment inflows on economic growth, we suggest the following variables:

$LGDP_{it}$ : Logarithm represents the real GDP of the state i in the t period, and represents the dependent variable in the model.

$LFDI_{it}$ : Logarithm represents foreign direct investment inflows i in the t period.

$\varepsilon_{it}$ : sochastic limit.

In the years (1990-2018), 29 individuals are represented.

After preparing the data obtained from the World Bank, we applied the ACP-normée steps, using Xlstat2016.

In an attempt to study the impact of foreign direct investment inflows on economic growth, the study model is determined according to the following model:

$$LGDP_{it} = \beta_0 + \beta_1 LFDI_{it} + \varepsilon_{it}$$

$LGDP_{it}$ : Logarithm represents the real GDP of the state i in the t period, and represents the dependent variable in the model.

$LFDI_{it}$ : Logarithm represents foreign direct investment inflows i in the t period.

$\varepsilon_{it}$ : sochastic limit.

After preparing the data obtained from the World Bank, we using regression analysis of cross-sectional time series data, based on the cointegration methodology and error correction model for Panel data, using Eviews10.

## 5. RESULTS AND DISCUSSION

### 5.1 Descriptive study:

Prior to launching the ACP-normée method, the Kaiser-Mayer-O'Klin test and

Bartlett test must first be performed in order to accept the sample in question for statistical analysis.

**Table 1.**

Kaiser-Meyer-Olkin Standard Table and Bartlett Test

| | | |
|---|---|---|
| (Kaiser-Meyer-Oklin) | | 0.500 |
| (Bartlett) | Khi² (Valeur observée) | 4.195 |
| | Khi² (Valeur critique) | 3.841 |
| | DDL | 1 |
| | p-value | 0.041 |
| | alpha | 0.05 |

**Source:** Prepared by the researchers, based on Xlstat2016 output, See Appendice N°1,2

Through Table 01, we note that the sample accuracy criterion for Kaiser-Mayer-Oklin is relatively high (KMO=0.500), indicating that the sample in question is accepted for statistical analysis.

The bartlett test result also shows that $P-value=0.041\prec\alpha=0.05$ this indicates that the correlation matrix is different from the unit matrix, i.e. there are common variations between the study variables.

After confirming that we can pass the ACP-normée method to our group data in this study using Xlstat2016, we can pass the following results:

**First: Table of standard averages and deviations**

**Table 2.**

Table of standard averages and deviations

| Variable | Observations | Minimum | Maximum | Moyenne | Ecart-type |
|---|---|---|---|---|---|
| LGDP | 6 | 22,667 | 27,737 | 25,046 | 2,074 |
| LFDI | 6 | 1,052 | 1,898 | 1,322 | 0,299 |

**Source:** Prepared by the researchers, based on Xlstat2016 output.

The LFDI variable is responsible for the concentration of the studied society because it is characterized by a smaller standard deviation (0.299), and on the contrary the variable responsible for the dispersion of the studied society is LGDP because it is characterized by the greater standard deviation (2.074).

**Second: the matrix of correlations, subjective values and ratios of representation in the axes.**

**Table 3.**

Link Matrix

| Variables | LGDP | LFDI |
|---|---|---|
| LGDP | 1 | 0,536 |
| LFDI | 0,536 | 1 |

**Source:** Prepared by the researchers, based on Xlstat2016 output.

Through the results of the link matrix:

We note that there is a positive correlation between the LGDP variable and LFDI variable, and we explain that foreign direct investment inflows affect the economic growth of the group countries, and this is positive, as this indicates the positive signal of the correlation coefficients of economic growth with foreign direct investment inflows.

**Table 4.**

Subjective values and representation ratios on axes

| | F1 | F2 |
|---|---|---|
| Valeur propre | 1,836 | 0,164 |
| Variabilité (%) | 91,785 | 8,215 |
| % cumulé | 91,785 | 100,000 |

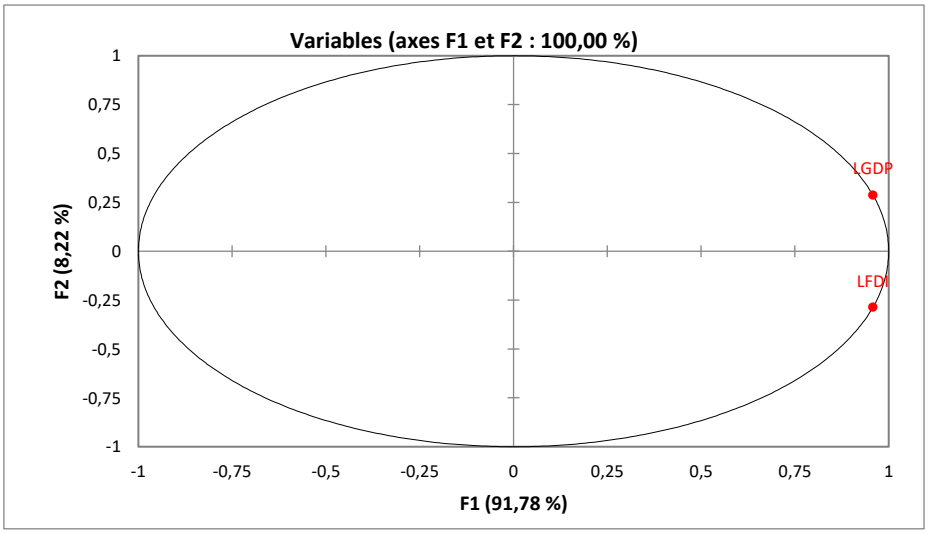
**Source:** Prepared by the researchers, based on Xlstat2016 output.

The first axis F1 represents 91.785% of the gridlife value, while the second axis F2 represents 8.215%, and in total represents the first and second axis F2, F1 (100%), from which we conclude that these two axes give the best representation of the scheme, and therefore we are content to represent the variables On a single two-dimensional perpendicular and homogenous landmark (F2, F1).

## Third: The graph of variables

**Fig.1.**

Variable graph




**Source:** Prepared by the researchers, based on Xlstat2016 output.

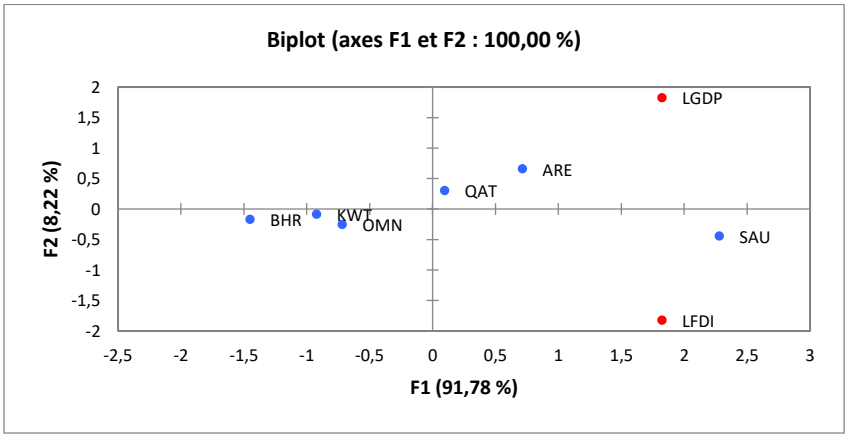
The previous figure represents the graph of variables on the circle of correlations, through this representation we note that all variables are far from the center and close to the ocean, which means that they are quality and acceptable in the study, as we note that the minority distance between lgdp and lfdi is medium, this indicates that there is a correlation Average and positive among these variables, and from the above we conclude

that foreign direct investment inflows has a positive correlation with economic growth in Gulf Cooperation Council Countries the study period.

**Fourth: Graphic representation of variables and individuals.**

**Fig.2.**

Graph of variables and individuals




**Source:** Prepared by the researchers, based on Xlstat2016 output.

The graph number 02 shows us the relationship between the variables and the study years that represent the individuals in the group, The high interpretative capacity suggests the great homogeneity of the sample members and the strength of immobility within the study data, weconsider can the proposed sample countries to be a homogeneous group and we can use longitudinal data techniques on sample country data.

**5.2 The standard study of the impact of foreign direct investment inflows on economic growth in the Gulf Cooperation Council Countries the period 1990-2018:**

**5.2.1 Determine the appropriate model type for study sample data:**

**First: Estimating the study model:** In this section we estimate the equation above in the smallest square method, and on the basis that the study data is longitudinal, we distinguish three models*:* the overall homogeneity model (Pooled), fixed effect model (MEF) and random impact model (MEA), and the first and second model is graded in squares, The last model is estimated in the manner of generalized micro squares and the results are recorded in the following:

**Table 5.**

result Estimate three models (Pooled, Fixed, Random)

| Method | Pooled | Fixed | Random |
|---|---|---|---|
| **LFDI** | 0.051489 (.05793) | 0.118058 (0.0055) | 0.117689 (0.0056) |
| **C** | 25.04763 (0.0000) | 25.05002 (0.0000) | 25.05000 (0.0000) |
| **$R^2$** | 0.001790 | 0.864377 | 0.043971 |
| **F- statistic** | 0.308474(0.005486) | 177. 3927 (0.0000) | 7.9108710(0.57933) |
| **Durban-Watson stat** | 0.006466 | 0.092328 | 0.089808 |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendices N°3, N°4, N°5.

**(.)**: Represents the probabilité associated with the calculated Statistic to test the null hypothesis. H0

**Second: Test the possibility of an individual effect in the model:** At the beginning we are working to test the spatial presence of an individual effect within the study sample data and this is based on a fisher-type test in which the hypothesis of non-compliance is compatible with the model of total homogeneity, i.e. the absence of any trace of individuals in the sample studied, and the statistic of this test is (William, 2005, p. 277)**:**

$$F(N-1\ ,\ \ NT-N-K)=\frac{(R^2{}_{MNC}-R^2{}_{MC})/(N-1)}{(1-R^2{}_{MNC})/(NT-N-K)}$$

N: The number of individuals (in our case 6 states).

T: Length of the proposed time series for study (in our case this is 29 years).

K: Number of external variables in the form (in our case this 1).

$R^2_{MC}$: The double selection factor of the restricted model is represented under the non-existent hypothesis, in this case a model without the effect of any total homogenization model (0.0017= $R^2_{MC}$).

$R^2_{MNC}$: The double selection factor for the unrestricted model, i.e. under the reverse hypothesis, in this case the fixed effect model (0.86= $R^2_{MNC}$) corresponds.

When applying this test gives us value for Fisher's calculated statistics $F_C = 204.77$ , the scheduled statistic is: $F_{(5,167)} = 2.21$ we reject the bad hypothesis and a moral level of 5% and say that there is an individual effect within the data of the study sample.

**Impact quality test:** After conducting the Fisher test, which between the presence of the individual effect, we will determine the quality of the impact using Hausman Test in order to choose between the fixed impact model or the random effect, and the result of this test is:

**Table 6.**

Hausman Test Result.

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f | Prob | |
|---|---|---|---|---|
| Cross-section random | 20.043869 | 1 | 0.0341 | |
| Cross-section random effects test comparisons: | | | | |
| Variable | Fixed | Random | Var(Diff) | Prob |
| LFDI | 0.118058 | 0.117689 | 0.000003 | 0.0341 |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendice N°6.

The calculated statistics of the Haussmann test $\chi_C^2 = 20.04$ are very large compared to the scheduled statistic, $\chi_1^2 = 3.84$ from which we can reject the non-existent hypothesis and acknowledge that there is a correlation between the interpreted variables and the individual effect, so the appropriate model of the study sample data is the individual effect type, which gives us capabilities. Consistent in this case, this means that the sample states agree in terms of the coefficients of the interpreted variables and differ in the values of the constant and this difference is determined by the values of the variables interpreted for each state.

**Fourth: Assessment of the individual impact model:** Based on the results of previous tests, the model that fits with the data of our study sample is the individual impact model, based on the results of the previous estimates shown in Table (05) , the model writes as follows:

$$LGDP_{it} = 25.05002 + 0.118058 LFDI_{it} + e_{it}$$

**Section 1: Economic Assessment**

We note that the indicative signal of the investment parameter is positive and this is appropriate for economic theory, as a 1% foreign direct investment inflows rate increases increase the per economic growth increase by 0.118%.

**Section 2: Statistical Assessment**

Through the results of the Student tests of the statistical morale of the model's parameters, we note that they are statistically accepted at the statistical morale level (5%).

R2=0.86 is an excellent value, and on the basis of this result, 86% of Gross Domestic Production is determined by the Independent variable of the model.

The DW test statistic also indicates a positive self-correlation to first-degree errors, which makes the parameter capabilities inconsistent (Non convergents), which means that the model is not acceptable to the record as we found that $R^2 \succ DW$ this is an indication of a false decline in the model due mainly to instability Strings.

**5.2.2 Estimate the long-term relationship between foreign direct investment**

**inflows and economic growth:**

**First: A study of the stability of longitudinal chains of variables (LGDP;LFDI).**

For the purpose of testing the stability of the longitudinal series of model variables, we use the following statistical tests: Levin, Lin et Chu, Breitung, Im, Pesaran et Shin, Maddala et Wu, and the results were shown in the following table:

**Table 7.**

Results of the longitudinal series stability test for variable LGDP.

| Panel unit root test :Summary | **Series: LGDP** | | **Series: D(LGDP)** | |
|---|---|---|---|---|
| Method | Statistic | Prob** | Statistic | Prob** |
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin&Chu t* | 1.38649 | 0.9172 | -3.63518 | 0.0001 |
| Breitung t-stat | 0.56505 | 0.7140 | -4.12275 | 0.0000 |
| Null: Unit root (assumes individuel unit root process) | | | | |
| Im, Pesaran and Shin W-stat | 0.89176 | 0.8137 | -3.29673 | 0.0005 |
| ADF – Fisher Chi-square | 5.77352 | 0.9271 | 30.7461 | 0.0055 |
| PP – Fisher Chi-square | 7.36562 | 0.8325 | 67.5533 | 0.0000 |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendice N°7, N°8.

**Table 8.**

Results of the longitudinal series stability test for variable LFDI.

| Panel unit root test :Summary | **Series: LFDI** | | **Series: D(LFDI)** | |
|---|---|---|---|---|
| Method | Statistic | Prob** | Statistic | Prob** |
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin&Chu t* | 1.38649 | 0.9172 | -3.63518 | 0.0001 |
| Breitung t-stat | 0.56505 | 0.7140 | -4.12275 | 0.0000 |
| Null: Unit root (assumes individuel unit root process) | | | | |
| Im, Pesaran and Shin W-stat | 0.89176 | 0.8137 | -3.29673 | 0.0005 |
| ADF – Fisher Chi-square | 5.77352 | 0.9271 | 30.7461 | 0.0055 |
| PP – Fisher Chi-square | 7.36562 | 0.8325 | 67.5533 | 0.0000 |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendice N°9, N°10.

All tests used are distributed by almost standard natural distribution.

Based on the results obtained, the variables (LGDP; LFDI), are unstable at their levels using all previous tests statistical and at a moral level of 5%, but they are stable in their first differences using all previous tests statistical at the level of 5%.

**Second: Study the long-term relationship of longitudinal data.**

If longitudinal data variables at their levels are unstable, their use in the estimate leads to a false regression, but we tend to take the same differences (d) to these chains as a measure to stabilize them and if they are stabilized then we say that these chains are

in a possible state of common integration from The degree (d) (Hurlin & Mignon, 2006, p. 23).

In order to verify that there is a common integration of these stable chains, a common data integration test is needed, One of the most important tests in this area is Pedroni, and of these the test depends on the imposition of noness, which does not allow for a common integration of variables, either the alternative imposition, and the existence of a common integration of variables.

The estimated relationship between the co-integrated chains within the model in question would then become a long-term structural balance relationship rather than a false regression. The estimated model is called the error correction form (VECM).

- **Pedroni cointegration test results:**

On the basis that the variables: LGDP,LFDI stable at their initial differences i.e. at the same level and therefore it is appropriate to look for a long-term relationship between these variables, but at the beginning it is necessary to test the possibility of achieving this relationship and for that we use the test (Pedroni) and the result of this test are in table 9.

**Table 9.**

Pedroni Test Results for cointegration.

| Pedroni Residual Cointegration Test<br>Series: LGDP LFDI<br>Null Hypothesis: No cointegration<br>Alternative hypothesis: common AR coefs. (within-dimension) | | | | |
|---|---|---|---|---|
| | Weighted | | | |
| | Statistic | Prob. | Statistic | Prob. |
| Panel v-Statistic | -2.531331 | 0.9943 | -3.140407 | 0.9992 |
| Panel rho-Statistic | -6.457838 | 0.0000 | -5.277756 | 0.0000 |
| Panel pp-Statistic | -10.03598 | 0.0000 | -7.202151 | 0.0000 |
| Panel ADF-Statistic | -10.01439 | 0.0009 | -7.229734 | 0.0010 |
| Alternative hypothesis: individuel AR coefs. (between-dimension) | | | | |
| | Statistic | | Prob. | |
| Group rho-Statistic | -3.961332 | | 0.0000 | |
| Group PP-Statistic | -8.207346 | | 0.0000 | |
| Group ADF-Statistic | -8.226708 | | 0.0000 | |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendice N°11.

The majority of The This test statistics prove that there is a cointegration between the variables LGDP,LFDI, at a moral level of 5%.

and in the light of this result and we can estimate the long-term relationship, and then the estimated relationship between the strings with cointegration within the model

in question becomes a long-term structural balance relationship and not a false regression, called the model. Estimated error correction ray model (VECM).

In order to estimate the VECM long-term relationship model, we use the Pedroni-2000-developed FMOLS method, which is characterized by its ability to deal with internal interpretive variables, self-linking of errors and the instability of the potential variation of long-term transactions, This method gives us almost unbiased capabilities with minimal variation and are therefore consistent.

- **estimating the error correction model in the FMOLS way**:

**Table 10.**

Results of estimating the error correction model in the FMOLS way.

| Dependent Variable: LGDP<br>Method: Panel Fully Modified Least Squares (FMOLS) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LFDI | 0.184376 | 0.076876 | 2.398345 | 0.0176 |
| R-squared | 0.863558 | Mean dependent var | | 25.08220 |
| Adjused R-quared | 0.858473 | S.D. dependent var | | 2.048491 |
| S.E. of regression | 0.770643 | Sum squared resid | | 95.61635 |
| Long-run variance | 1.808460 | | | |

**Source:** Prepared by the researchers, based on Eviews10 output**,** See Appendice N°12.

When reading Table 10, The value of the selection coefficient is shown $R^2 = 0.86$ , 86% of the changes in per capita output are explained within this model in the long term.

As for the LFDI foreign direct investment parameter, it is statistically acceptable at the 5% indicative level and its signal is economically acceptable and has an impact the per economic growth in the long term, where if the increase in the size of foreign direct investment inflows by 1% leads to an increase in the rate of economic growth by 0.18%.

and we explain that the volume of foreign direct investment inflows in the Gulf Cooperation Council Countries has a long-term impact as it is directed at investment in infrastructure and grassroots structures, the results of which are not shown until after the completion of these projects and their launch in the production process, Thus this leads to an increase weak in GDP in the long term.

## 6. CONCLUSION:

In this applied study, we found the impact of FDI inflows on economic growth in the Gulf Cooperation Council Countries:

- ✓ The proposed model of the study sample study is the Fixed Impact Model (MEF) through the economic and statistical assessment of the model, as well as based on the Hausman test; where foreign direct investment according to this model is variable and positively affects economic growth, where if the increase in the size of foreign direct investment inflows by 1% leads to an increase in the rate of economic growth by 0.11%, thus It is considered one of the determinants of the

increase in per GDP, in addition to is noted that the impact of these foreign direct investment inflows on economic growth is weak in addition to the statistics of Durban and Watson DW indicate a self-correlation to errors of the first degree which means that the capabilities of previous features are not Consistent.

In order to improve the results of the study and the explanatory capacity of the study model, we have studied the long-term impact of FDI inflows on economic growth, and the results of the estimate showed:

- ✓ The Pedroni Test proved the existence of a long-term equilibrium relationship between economic growth and FDI inflows.
- ✓ and in order to estimate the error correction (VECM) model for the long-term equilibrium relationship, we used the FMOLS method, The result of this test showed that the impact of the flow of foreign direct investment on economic growth in the countries of the study sample is weak, where if the increase in the size of foreign direct investment inflows by 1% leads to an increase in the rate of economic growth by 0.18%.
- ✓ Despite the importance of the foreign direct investment inflows in economic performance, the results of this study showed its weak impact, due to the fact that most of the sample countries of the study depend primarily on their natural resources such as oil, gas and agricultural products as well as the sector Tourism, which negatively affects the development and diversification of its exports.

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## 8. Appendices:

**Appendice N° 01:** Results the sample accuracy criterion for Kaiser-Mayer-Oklin

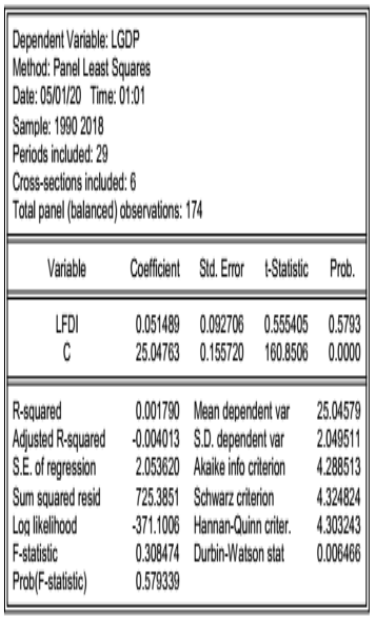
| | |
|---|---|
| LGDP | 0,500 |
| LFDI | 0,500 |
| KMO | 0,500 |

**Appendice N° 02:** Bartlett Test Results.

| | |
|---|---|
| Khi² (Valeur observée) | 4,195 |
| Khi² (Valeur critique) | 3,841 |
| DDL | 1 |
| p-value | 0,041 |
| alpha | 0,05 |

**Source:** Xlstat2016 outputs.

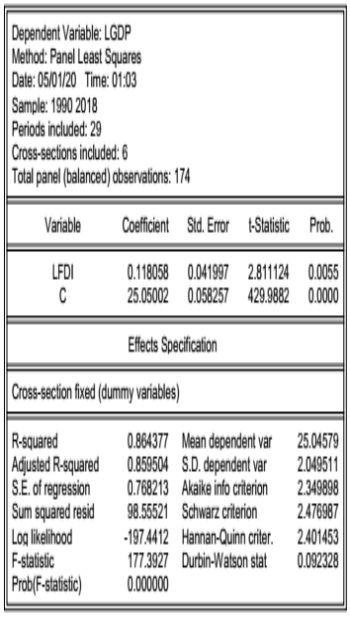
| | | |
|---|---|---|
| **Appendice N° 03:** Results of Estimate of the overall homogeneity model. | **Appendice N° 04:** Results of Estimate of the fixed impact model | **Appendice N° 05:** Results of sochastic Impact Model Estimate |



Dependent Variable: LGDP
Method: Panel Least Squares
Date: 05/01/20 Time: 01:01
Sample: 1990 2018
Periods included: 29
Cross-sections included: 6
Total panel (balanced) observations: 174

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LFDI | 0.051489 | 0.092706 | 0.555405 | 0.5793 |
| C | 25.04763 | 0.155720 | 160.8506 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.001790 | Mean dependent var | 25.04579 |
| Adjusted R-squared | -0.004013 | S.D. dependent var | 2.049511 |
| S.E. of regression | 2.053620 | Akaike info criterion | 4.288513 |
| Sum squared resid | 725.3851 | Schwarz criterion | 4.324824 |
| Log likelihood | -371.1006 | Hannan-Quinn criter. | 4.303243 |
| F-statistic | 0.308474 | Durbin-Watson stat | 0.006466 |
| Prob(F-statistic) | 0.579339 | | |



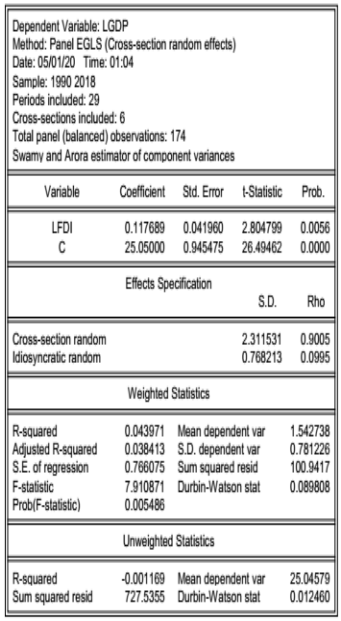
Dependent Variable: LGDP
Method: Panel Least Squares
Date: 05/01/20 Time: 01:03
Sample: 1990 2018
Periods included: 29
Cross-sections included: 6
Total panel (balanced) observations: 174

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LFDI | 0.118058 | 0.041997 | 2.811124 | 0.0055 |
| C | 25.05002 | 0.058257 | 429.9882 | 0.0000 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.864377 | Mean dependent var | 25.04579 |
| Adjusted R-squared | 0.859504 | S.D. dependent var | 2.049511 |
| S.E. of regression | 0.768213 | Akaike info criterion | 2.349898 |
| Sum squared resid | 98.55521 | Schwarz criterion | 2.476987 |
| Log likelihood | -197.4412 | Hannan-Quinn criter. | 2.401453 |
| F-statistic | 177.3927 | Durbin-Watson stat | 0.092328 |
| Prob(F-statistic) | 0.000000 | | |



Dependent Variable: LGDP
Method: Panel EGLS (Cross-section random effects)
Date: 05/01/20 Time: 01:04
Sample: 1990 2018
Periods included: 29
Cross-sections included: 6
Total panel (balanced) observations: 174
Swamy and Arora estimator of component variances

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LFDI | 0.117689 | 0.041960 | 2.804799 | 0.0056 |
| C | 25.05000 | 0.945475 | 26.49462 | 0.0000 |

| Effects Specification | S.D. | Rho |
|---|---|---|
| Cross-section random | 2.311531 | 0.9005 |
| Idiosyncratic random | 0.768213 | 0.0995 |

Weighted Statistics

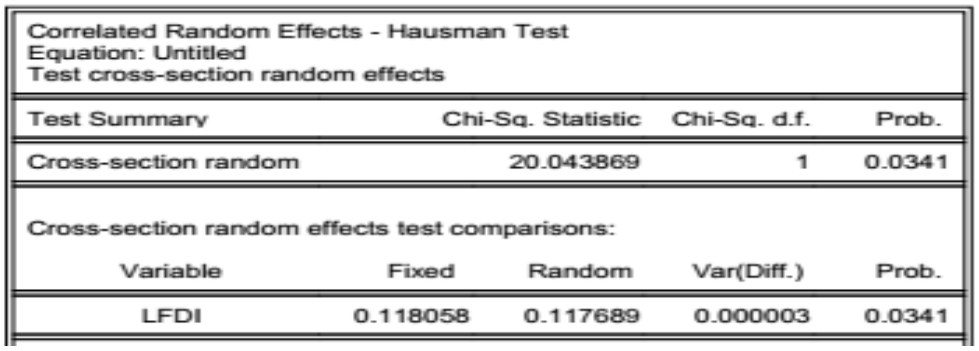
| | | | |
|---|---|---|---|
| R-squared | 0.043971 | Mean dependent var | 1.542738 |
| Adjusted R-squared | 0.038413 | S.D. dependent var | 0.781226 |
| S.E. of regression | 0.766075 | Sum squared resid | 100.9417 |
| F-statistic | 7.910871 | Durbin-Watson stat | 0.089808 |
| Prob(F-statistic) | 0.005486 | | |

Unweighted Statistics

| | | | |
|---|---|---|---|
| R-squared | -0.001169 | Mean dependent var | 25.04579 |
| Sum squared resid | 727.5355 | Durbin-Watson stat | 0.012460 |

**Source:** Eviews10 outputs.

**Appendice N° 06:** Hausman Test Result.



Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 20.043869 | 1 | 0.0341 |

Cross-section random effects test comparisons:

| Variable | Fixed | Random | Var(Diff.) | Prob. |
|---|---|---|---|---|
| LFDI | 0.118058 | 0.117689 | 0.000003 | 0.0341 |

**Source:** Eviews10 outputs.

**Appendice N° 07:** Results of the longitudinal series stability test for LGDP variable.

**Appendice N° 08:** Results of the longitudinal series stability test for D(LGDP) variable.

Panel unit root test: Summary
Series: LGDP
Date: 05/01/20 Time: 01:34
Sample: 1990 2018
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | 1.38649 | 0.9172 | 6 | 162 |
| Breitung t-stat | 0.56505 | 0.7140 | 6 | 156 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | 0.89176 | 0.8137 | 6 | 162 |
| ADF - Fisher Chi-square | 5.77352 | 0.9271 | 6 | 162 |
| PP - Fisher Chi-square | 7.36562 | 0.8325 | 6 | 168 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LGDP)
Date: 05/01/20 Time: 01:34
Sample: 1990 2018
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -3.63518 | 0.0001 | 6 | 156 |
| Breitung t-stat | -4.12275 | 0.0000 | 6 | 150 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -3.29673 | 0.0005 | 6 | 156 |
| ADF - Fisher Chi-square | 30.7461 | 0.0022 | 6 | 156 |
| PP - Fisher Chi-square | 67.5533 | 0.0000 | 6 | 162 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Source:** Eviews10 outputs.

**Appendice N° 09:** Results of the longitudinal series stability test for LFDI variable

Panel unit root test: Summary
Series: LFDI
Date: 05/01/20 Time: 01:35
Sample: 1990 2018
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -0.67125 | 0.2510 | 6 | 162 |
| Breitung t-stat | -1.22776 | 0.1098 | 6 | 156 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -1.08652 | 0.1386 | 6 | 162 |
| ADF - Fisher Chi-square | 16.8181 | 0.1566 | 6 | 162 |
| PP - Fisher Chi-square | 40.6816 | 0.0001 | 6 | 168 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Appendice N° 10:** Results of the longitudinal series stability test for D(LFDI) variable.

Panel unit root test: Summary
Series: D(LFDI)
Date: 05/01/20 Time: 01:35
Sample: 1990 2018
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -3.42016 | 0.0003 | 6 | 156 |
| Breitung t-stat | -3.92451 | 0.0000 | 6 | 150 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -6.89985 | 0.0000 | 6 | 156 |
| ADF - Fisher Chi-square | 63.4840 | 0.0000 | 6 | 156 |
| PP - Fisher Chi-square | 509.916 | 0.0000 | 6 | 162 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Source:** Eviews10 outputs.

**Appendice N° 11:** Pedroni Test Results for cointegration.

Pedroni Residual Cointegration Test
Series: LGDP LFDI
Date: 05/01/20 Time: 01:36
Sample: 1990 2018
Included observations: 174
Cross-sections included: 6
Null Hypothesis: No cointegration
Trend assumption: Deterministic intercept and trend
Automatic lag length selection based on SIC with a max lag of 5
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

| | Statistic | Prob. | Weighted Statistic | Prob. |
|---|---|---|---|---|
| Panel v-Statistic | -2.531331 | 0.9943 | -3.140407 | 0.9992 |
| Panel rho-Statistic | -6.457838 | 0.0000 | -5.277756 | 0.0000 |
| Panel PP-Statistic | -10.03598 | 0.0000 | -7.202151 | 0.0000 |
| Panel ADF-Statistic | -10.01439 | 0.0000 | -7.229734 | 0.0000 |

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

| | Statistic | Prob. |
|---|---|---|
| Group rho-Statistic | -3.961332 | 0.0000 |
| Group PP-Statistic | -8.207346 | 0.0000 |
| Group ADF-Statistic | -8.226708 | 0.0000 |

**Appendice N° 12:** Results of estimating the error correction model in the FMOLS way.

Dependent Variable: LGDP
Method: Panel Fully Modified Least Squares (FMOLS)
Date: 05/01/20 Time: 01:39
Sample (adjusted): 1991 2018
Periods included: 28
Cross-sections included: 6
Total panel (balanced) observations: 168
Panel method: Pooled estimation
Cointegrating equation deterministics: C
Coefficient covariance computed using default method
Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LFDI | 0.184376 | 0.076876 | 2.398345 | 0.0176 |

| | | | |
|---|---|---|---|
| R-squared | 0.863558 | Mean dependent var | 25.08220 |
| Adjusted R-squared | 0.858473 | S.D. dependent var | 2.048491 |
| S.E. of regression | 0.770643 | Sum squared resid | 95.61635 |
| Long-run variance | 1.808460 | | |

**Source:** Eviews10 outputs.