

THE IMPACT FDI ON THE ECONOMIC SECTORS IN TURKEY COUNTRY (AN ECONOMETRICS STUDY BY USE JOHNSON METHOD FOR TRANSFORMATION DATA)

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ABSTRACT

The relationship between investment and development of close relations in economic thought, foreign investment have been associated by the development of international trade, and helped to spread and increasing rates emergence transnational corporations National Furthermore mergers and acquisitions across borders, including the purchase of foreign investors Government Organizations that have been privatized, Has used the most of the world foreign capital to modernize and develop its production facilities and other components of the national economy, and foreign investment played an important role in economic development projects for the host countries if they have done these countries to choose their projects and their foreign partners, Investing can close the gap of resources and capabilities that are not available in the receiving countries, The research problem in that Economics sectors be affected by a lot of factors that affect one way or another by and by certain of these factors is not economic, so there are major factors leading to development and growth to the desired goal final namely economic well-being and these important factors is foreign direct investment (FDI) The orientation of the plan drawn about the problems and economic critical points, it leads to the activation of the entire economy, The research aims to targets several of them estimate general trends for each indicator and then process the data to make it distributed naturally using functions transfers Johnson three SL, SU, SB, as well as estimate the econometrics models represent the relationship between foreign direct investment as an independent variable economic indicators for Turkey country.

KEYWORDS: International Economics, Economic Policies, Econometrics

INTRODUCTION

The relationship between investment and development of close relations in economic thought, foreign investment have been associated by the development of international trade, and helped to spread and increasing rates emergence transnational corporations National Furthermore mergers and acquisitions across borders, including the purchase of foreign investors Government Organizations that have been privatized, Has used the most of the world foreign capital to modernize and develop its production facilities and other components of the national economy, and foreign investment played an important role in economic development projects for the host countries if they have done these countries to choose their projects and their foreign partners, Investing can close the gap of resources and capabilities that are not available in the receiving countries, and expanding the investor base in the country, and through the participation of local capital and therefore a positive impact on the balance of payments and increasing exports and substitution of locally produced goods store imported goods, Add to expand the quality of local industries and also convey this investment

advanced methods of management, training and production, marketing and transportation technology and indigenization and its contribution to the creation of more jobs and give the National Labor technical and managerial skills of modern directly leading to improved performance level national employment.

The research problem in that Economics sectors be affected by a lot of factors that affect one way or another by and by certain of these factors is not economic, so there are major factors leading to development and growth to the desired goal final namely economic well-being and these important factors is foreign direct investment (FDI) The orientation of the plan drawn about the problems and economic critical points, it leads to the activation of the entire economy, The research aims to targets several of them estimate general trends for each indicator and then process the data to make it distributed naturally using functions transfers Johnson three SL, SU, SB, as well as estimate the econometrics models represent the relationship between foreign direct investment as an independent variable economic indicators for Turkey country.

In the field of foreign direct investment published many researchers effects of foreign investment on economic growth and on economic development and sustainable development, and this research has indicated (Kiyoshi Kojima 1978)[7] on the role of foreign direct investment and its impact on the economy, Publishing (M. TalhaAtik and Hung Tran2008)[10] research titled (FDI in Developing countries the case of Ericsson in Mexico and Vietnam) analyzed the role of investment in economic development, and Publishing (Sung-Hoon Lim 2008)[16] on the role of foreign direct investment on foreign trade in Korea and entitled (Foreign Direct Investment Policy and Incentives, Korea Trade-Investment, Promotion Agency (KOTRA)), And published researcher (Tun, wai and wang 1982)[17] paper entitled (Determinants of private investment in Developing countries), research in this topic for determinants of investment in developing countries and stressed the role of private investment objective role of foreign direct investment, and published (European Commission research in 2006)[3] research titled (study on FDI and regional development), and published researcher (Edward graham 1995)[2] discussed the role of foreign direct investment in the global economy, other researchers publishing about the role of sustainable development of the economy and the role of foreign direct investment, The researchers (Meadows, D, H L., and Meadows 1972)[8] research entitled (on the determinants of growth and its factors), and the researcher (Jonathan M. Harris 2000)[6] published a book shows basic principle sustainable development and the role of foreign direct investment, & Publishing many researchers (Pearce D. W, and others 1989)[12] paper entitled (Blueprint for green Economy, Earth scan) and identified the role of the environment in economic development and pollution factors that limit the operations of development and economic growth.

Foreign Direct Investment (Concepts, Theories)

Economic literature distinguished between two types of foreign investment, foreign direct investment and portfolio investment in the Securities and called indirect foreign investment, Has been known FDI definitions multiple ones «It is an establishment of new projects and the expansion of existing projects, whether wholly owned foreign investor or to owning shares of a company with the acquisition of the right to manage the project and control it is accompanied by investment mentioned transmission technology, resources and skills carry out integrated productivity in the host country[9]. As defined by the United Nations Conference on Trade and Development (UNCTAD) as the process of recruitment of foreign funds is a national asset capital fixed in host countries certain and involves long-term relationship reflecting the benefit of a foreign investor shall have the right to manage its assets and control of his country or country of residence, which is where it may be investor individual or company or institution [18], And defined by the WTO that

investment happening when the investor is stable in the country « Home country» own origin is in another country « Host country» with a mechanism has in the management of that asset [14], as defined by (Gilles Bertin, 1970) that the investment that requires control (supervision) on the project, and this investment takes the form of establishment of the investor alone equal participation or unequal, and it also takes the form of repurchase all or part of an existing project.

Theoretical Explanations for FDI

Classical Theory

Classical analysis is characterized by a set of factors from which: advocacy for freedom and non-interference of the state, and full competition in the market, and the absence of any obstacles in the movement of capital, and production elements [1]. Among the pioneers classical school David Ricardo (who founded in 1817 the theory of comparative advantage) [15], who sees "the transfer of capital to be part of the country which is characterized by productivity high capital into the country, which is characterized by productivity capital and low "and that the main reason for the movement of capital is for the purpose of profit by taking advantage of differences in interest rate ratios that result from variation capital in each country [11]. Thus the continuity of this movement (of capital) to reach the end, becomes marginal productivity of capital equal countries then to stop the movement, allowing the emergence of inequality new returns, which is noted on this theory that the disparity between the returns between countries that is allowing owners capital investment abroad in the case of equal returns, they do not expect to get any movement of capital across countries, then the capital moves from one country to another in response to differences in the marginal productivity of capital and thus the direction of motion of the country is characterized by an abundance of capital to another is secure relative, but this theory contradicts the fact that the bulk of direct investment moves within the walls of the more developed areas of the world capitalist system, as converging levels marginal productivity of capital.

Theory Heckscher - Ohlin 1933

After criticism of the classical theory in non-clarified the reasons that lead to the difference in the relative costs continued studies in the interpretation of those reasons, as Heckscher - Ohlin relative difference in expenditures is not a sufficient condition for the establishment of the international exchange and added to two factors:

- Factor differences in the relative abundance of factors of production between countries.
- Factor difference in the prices of factors of production between countries.

Hence Heckscher - Ohlin believes that the disparity in costs is primarily due to the difference in states with respect to the availability of natural resources, State concerned to export some factors of production available to it and import those factors that scarcity where [4], and to explain this theory of foreign direct investment based on the principle of specialization, as each country specializes in the production and export of products, which is characterized by the relative plenty of factors of production and imported goods that do not enjoy relative plenty of factors of production.

Monopolistic Advantage Theory [13]

Adopt this theory on the assumption of internationalization in the interpretation of the causes that lead multinationals to resort to foreign direct investment and focus of this theory on the idea that multinational corporations have the capabilities and potential private not enjoyed by local companies, as well as the inability of local companies to get those features, It is noteworthy that these features make foreign companies get higher returns from local companies and those competitive advantages any production company specific commodity distinct companies cannot local or other

competitors be produced because of the information gap or trademark protection or marketing skills or lower unit costs due to production volume great, or administrative excellence and taxation.

Data Scrubbing

The data from the states sample must be characterized randomly and distribution of natural, but actual practice shows estimates where defects several failed statistical tests and containment models problems econometrics and such as multicollinearity and autocorrelation and the problem of Heteroscedasticity and data in mostly all States of this kind and thus cannot be we get the estimation and clear and pure models that pass all econometrics and statistical tests and this is a problem facing researchers, but (Johnson) Find functions and transfers know Johnson transfers and here's how to hold them.

Johnson Transfers

In 1949 derived Johnson system functions that were flexible and cover enough for multiple types of data and was this system practically and theoretically great benefit of giving the ability to transform this data from non-normal distribution to the normal distribution as the data that was taken for estimation is non-normal distribution and thus Johnson had transfers to these condensed using functions gave the high flexibility of the data as it became distributed naturally.

Johnson Transfers System

Of continuous random variable X be distributed is not known or unknown and this makes it impossible to get significant results from it, so Johnson makes three transfers they are in the following :

$$Z = \gamma + \delta f\left(\frac{X - \xi}{\lambda}\right)$$

Where:

f = transformation function.

Z =standard normal random variable.

γ and δ = shape parameters. λ = scale parameter, ξ = location parameter

Johnson assumed that $\delta > 0$ and $\gamma > 0$ that the first transfer to Johnson defines natural as to logarithm system refers to the symbol distributional S_L and thus function takes the following form:

$$Z = \gamma + \delta \ln\left(\frac{X - \xi}{\lambda}\right), X > \xi = \gamma^* + \delta \ln(X - \xi), X > \xi$$

And S_L includes transfer Natural logarithm Group.

The distribution system specified bounded distribution and symbolized by Johnson indicated S_B identified Johnson as the function following:

$$Z = \gamma + \delta \ln\left(\frac{X - \xi}{\xi + \lambda - X}\right), \xi < X < \lambda$$

As well as the distribution system set includes all the curves specified distributions, and distributions can be determined with a low and a high or a combination of both, and this system of distributions is a group that includes gamma

distributions or distributions beta, and so on.

The non-specific distributions system and Johnson code symbol S_U has formulated and identified Johnson as the following:

$$Z = \gamma + \delta \sinh^{-1} \left[\left(\frac{X - \xi}{\lambda} \right) + \left\{ \left(\frac{X - \xi}{\lambda} \right)^2 + 1 \right\}^{1/2} \right], -\infty < X < \infty$$

$$= \gamma + \delta \sinh^{-1}((X - \xi)/\lambda)$$

Thus, the curves non-specific distributions system includes t cover as well as natural distributions and between them [5].

Johnson transfer format for the three functions

For the purpose of showing the differences between real data and the transferred data will be included data values between the real values and the values of format transfers Johnson sample countries and also comes:

FDI Transfer

To organize real data and transfer format Johnson will start the independent variable, which represents foreign direct investment, as follows:

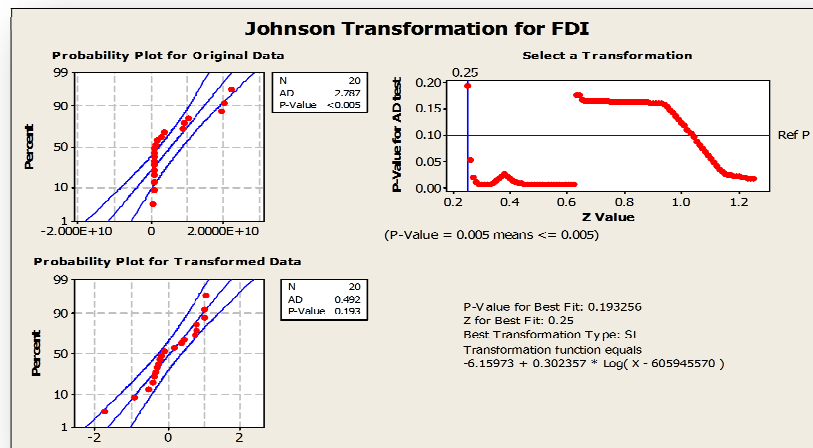
Table 1: Showing the True Values and Johnson Transform Values by Natural Logarithm Formula S_L

Real FDI Value (US \$)	Transformation of FDI Value (SL)
8.10000E+08	-0.37446
8.44000E+08	-0.32787
6.36000E+08	-0.95359
6.08000E+08	-1.76482
8.85000E+08	-0.27982
7.22000E+08	-0.54509
8.05000E+08	-0.38196
9.40000E+08	-0.22543
7.83000E+08	-0.41738
9.82000E+08	-0.18962
3.35200E+09	0.41153
1.08200E+09	-0.11832
1.70200E+09	0.13383
2.78500E+09	0.34160
1.00310E+10	0.78439
2.01850E+10	1.00544
2.20470E+10	1.03291
1.95040E+10	0.99474
8.41100E+09	0.72737
9.03800E+09	0.75073

Source: 1- www.worldbank.org/data/dataquery.html

2- <http://www.imf.org/external/index.htm>

3- The researcher estimated the Johnsons transformation by using the Minitab -14 Demo



Source: by use the data from www.worldbank.org/data/dataquery.html and the Minitab-14 Demo program.

Figure 1: Shows the Johnson Transformation for FDI

Johnson transfer formula shows that values foreign direct investment was not distributed naturally according to the hypothesis theory of random variable and can be viewed at the results in the figure above, which created the best transfer formula Johnson transfers as a function of transfer logarithmic normal and hence the forthcoming tests cannot attach them because results in the accompanying graph.

Dependent Variables

Economic Indicators

- The agricultural sector added value variable in GDP (%)

Johnson transfers shows that the best transfer is limited transfer function organized transferred data and real as in the following table:

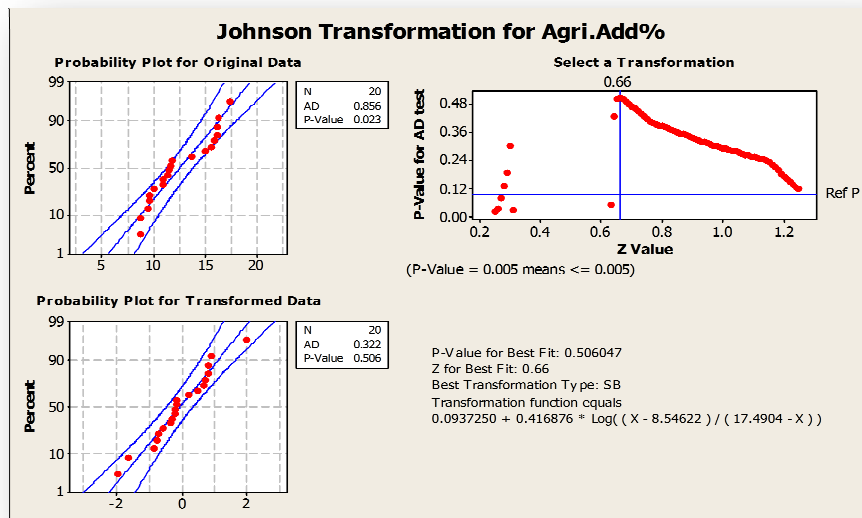
Table 2: Showing the True Values and Estimated Values by Using Format Johnson

Real Value of Agriculture, Value Added (% of GDP)	Transformation of Agriculture, Value Added (% of GDP)
15.8040	0.70214
15.5632	0.63242
16.0749	0.79040
16.0258	0.77347
16.2894	0.87064
17.3946	1.98000
14.9656	0.48273
13.5825	0.19947
11.5380	-0.19306
11.3123	-0.24127
9.9484	-0.60766
11.7077	-0.15799
11.3915	-0.22412
10.9192	-0.33089
10.7962	-0.36080
9.5243	-0.78064
8.6764	-1.66348
8.6076	-1.98000

9.3476	-0.87284
9.5995	-0.74577

Source: 1-www.worldbank.org/data/dataquery.html
 2- <http://www.imf.org/external/index.htm>
 3-The Researcher Estimated the Johnsons Transformation by using the Minitab -14 Demo

The Figure shows the result of the limited transfer function for Johnson, as follows:

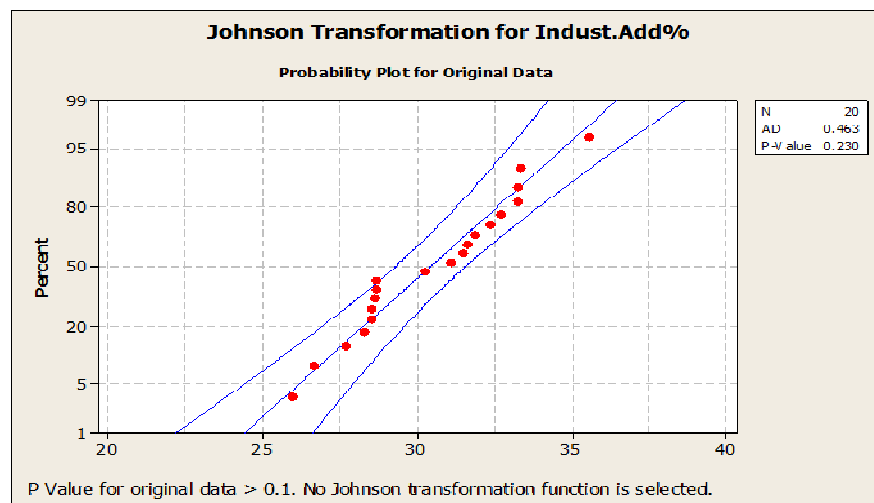


Source: from the data www.worldbank.org/data/dataquery.html and by using the same program.

Figure 2: Shows the Johnson Transformation for Agriculture, Value Added (% of GDP)

- The Industrial sector added value variable in GDP (%)

Transfers Johnson failed to find the optimal transformational function to normal distribution and the result was in the following diagram:



Source: from the data www.worldbank.org/data/dataquery.html by using the same program.

Figure 3: Shows the Johnson Transformation for Industry, Value Added (% of GDP)

- The Services sector added value variable in GDP (%)

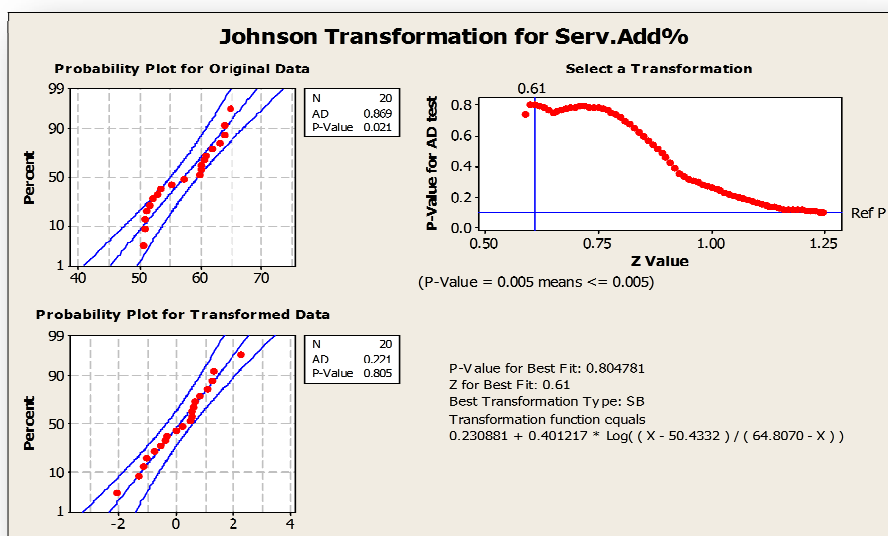
Transfers Johnson showing that transfer optimization is the limited transfer function SB converted data is organized and real in the following table:

Table 3: Showing the True Values and Estimated Values by Using Johnson Format

Real Value of Services, etc., Value Added (% of GDP)	Transformation of Services, etc., Value Added (% of GDP)
51.5030	-0.78043
52.0519	-0.59737
52.8276	-0.41511
50.7251	-1.32430
50.4739	-2.12240
51.0064	-1.04547
53.1808	-0.34789
50.8747	-1.15407
55.1364	-0.05834
57.2111	0.18516
59.8165	0.48421
59.6196	0.46017
59.9902	0.50578
60.5636	0.58000
60.6934	0.59758
61.8029	0.76488
63.0663	1.02610
63.7055	1.22949
64.7105	2.23562
63.7501	1.24743

Source: 1- www.worldbank.org/data/dataquery.html
 2- <http://www.imf.org/external/index.htm>
 3- The researcher estimated the Johnsons transformation by using the Minitab -14 Demo

The following Figure shows the following results Johnson limited transfer function



Source: From the Data in www.worldbank.org/data/dataquery.html by using the Same Program

Figure 4: Shows the Johnson Transformation for Services, etc., Value Added (% of GDP)

The Model

Models value added as a percentage of GDP to the sectors of agriculture, industry and services.

Formulation of the model

Researcher relies on a linear model as the best solution to reach the impact of FDI on development and growth in Islamic economies and which takes the following form:

$$Y_i = \alpha + \beta X_i + U_i$$

Y_i = Dependent variable (i=1,2,3,.....,n).

X_i = independent variable.

α = intercept.

β = slope.

And can estimate this model by the ordinary least squares method.

The theoretical prediction of signal parameter:

Expected researcher supposed that the impact of FDI is positive in its effects on all dependent variables.

The Estimation

1 - Estimate the impact of FDI on the added value of the agricultural sector in GDP

Estimates are organized in the following table:

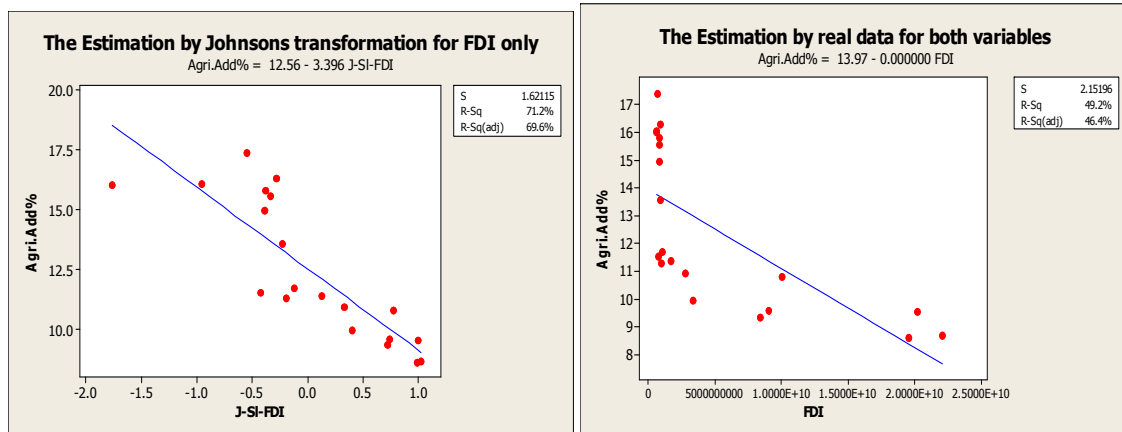
Table 4: Showing the Estimation of three Models to the Impact of FDI on the Added Value of the Agricultural Sector in GDP

Models Parameters	Regression Model by Using the Real Data	Regression Model by Using Johnsons J Transformation data for FDI Only	Regression Model by Using Johnsons J Transformation Data for Both Variables
Constant	13.9669	12.5560	-0.0557
T	(23.19) ^{1%}	(34.61) ^{1%}	(-0.44) ^{non}
FDI	-0.0000000012	-3.3959	-1.0157
T	(-4.18) ^{1%}	(-6.67) ^{1%}	(-5.66) ^{1%}
SE	2.15196	1.62115	0.570757
R ²	49.2%	71.2%	64.1%
r	70%	84%	80%
F(2,20)	(17.44) ^{1%}	(44.45) ^{1%}	(32.07) ^{1%}
D.W	(0.341226) ^{out 5%}	(1.14606) ^{between 1%}	(1.41424) ^{in 1%}

Source: from the real data and by using Johnsons transformation and the Minitab -14 Demo program.

Of estimate shows that models the second and third transfers Johnson for FDI only and variables, respectively, but the second model transfers Johnson investment variable did not pass the test D.W and therefore the researcher based on the third model because the model passes statistical tests and the best to represent the economic relationship but estimated model shows the reference investment variable negative signal which indicates that the impact of investment opposite effect in the value added in the agricultural sector May be justified by researcher partly due to real data and justification second due to agricultural investment not to exceeding the value added in GDP as the foreign direct investment has

exhausted part most of the added value of the agricultural sector of the Turkish account native country and thus appeared passivity, and graphs represent models estimated and can be compared between behavior of the regression line in the third model compared other two models.



Source: The data from a www.worldbank.org/data/dataquery.html by using Minitab 14-Demo.

Figure 5: Shows the Trends Curves Models Estimate the Adoption of Real Data and Transfer Johnson Transfers to the Impact of FDI on the Added Value of the Agricultural Sector in GDP.

2-Estimate the impact of FDI on the value-added of the industrial sector in GDP.

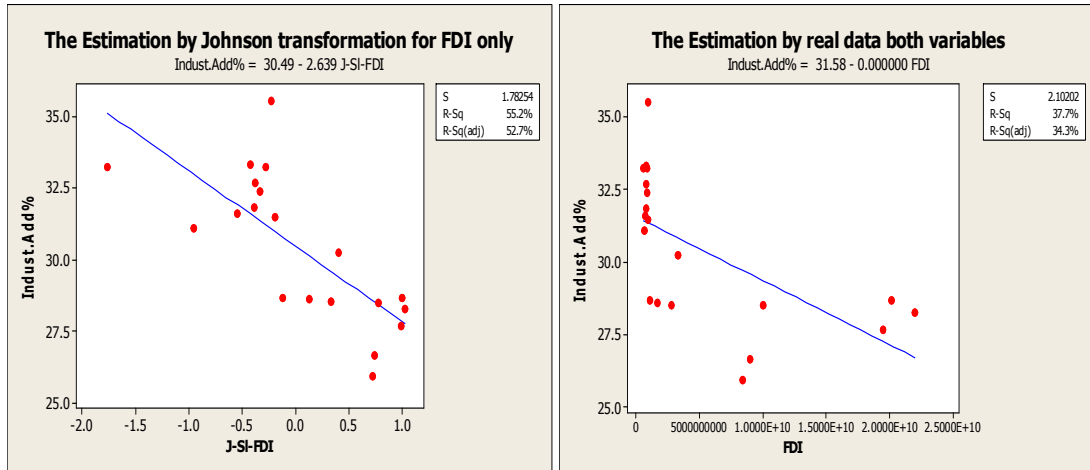
Transfers Johnson failed to find the optimal distribution function to the variable value added of the industrial sector and so it will be scale models are limited on the two regression models, as follows:

Table 5: Showing Regression Models to Estimate the Impact of FDI on the Value-Added of the Industrial Sector as a Percentage of GDP

Models Parameters	Regression Model by Using the Real Data	Regression Model by Using JohnsonsJ Transformation Data for FDI Only
Constant	31.5804	30.4908
T	(35.67) ^{1%}	(76.43) ^{1%}
FDI	-0.00000000012	-2.6390
T	(-3.30) ^{1%}	(-4.71) ^{1%}
SE	2.10202	1.78254
R ²	37.7%	55.2%
r	61%	74%
F(2,20)	(10.91) ^{1%}	(22.20) ^{1%}
D.W	(0.806345) ^{out 5%}	(1.4.567) ^{in1%}

Source: from the real data and by using Johnsons transformation and the Minitab -14 Demo program.

Limited estimate on the two models, one real-time data and other transfers Johnson variable FDI and showing the form last ability is greater than the estimation first since passed all statistical tests and econometrics and reference parameter investment also appeared signal negative and thus return researcher for the reasons mentioned in advance and showing diagrams ability regression line estimate compared the first model.



Source: real data from a table 2 by using Minitab 14-Demo.

Figure 6: Shows the Trends Curves Models Estimate the Adoption of Real Data and Transferred Johnson Transfers to the Impact of FDI on the Added Value of the Industrial Sector in GDP

3 - Estimate the impact of FDI on the value-added services

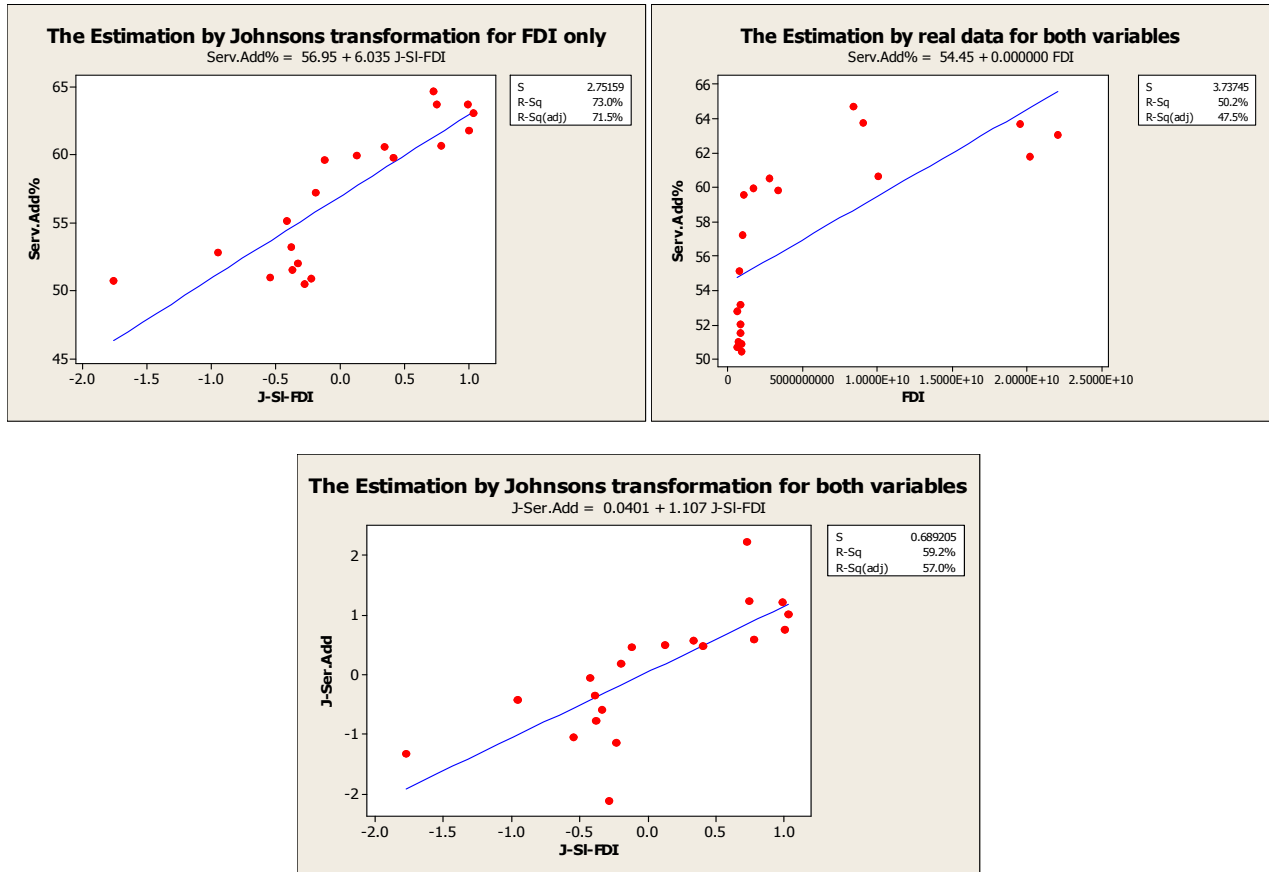
It was estimating three models and organized in the following table:

Table 6: Showing Regression Models to Estimate the Impact of FDI on the Added Value of the Service Sector as a Percentage of GDP

Models Parameters	Regression Model by Using the Real Data	Regression Model by Using Johnsons J Transformation Data for FDI Only	Regression Model by Using Johnsons J Transformation Data for Both Variables
Constant	54.453	56.9532	0.0401
T	(52.05) ^{1%}	(92.48) ^{1%}	(0.26) ^{non}
FDI	0.0000000045	6.0349	1.1074
T	(4.26) ^{1%}	(6.98) ^{1%}	(5.11) ^{1%}
SE	3.73745	2.75159	0.689205
R ²	50.2%	73%	59.2%
r	70%	85%	77%
F(2,20)	(18.17) ^{1%}	(48.72) ^{1%}	(26.15) ^{1%}
D.W	(0.475635) ^{out 5%}	(1.38141) ^{in 1%}	(1.77354) ^{in 1%}

Source: from the real data and by using Johnsons transformation and the Minitab -14 Demo program.

Seen from the estimate of the three models that the best estimate represents the economic relationship between investment and the added value of the service sector is the third model transfers Johnson both variables of which represents the added value and the independent variable that represents the investment that they are the parameter investment significant on the level of significance of 1% and significant model as well as on the same level and passes the model test D.W and free from the problem of autocorrelation between residuals random and relationship investment value added positive relationship which shows that the impact of foreign investment affects positively on the sector of services demonstrating that the trends of foreign investment in the services better than other sectors to useful and safety and so on. The following graphs show estimate the direction of the regression line optimization as the third form of the best lines.



Source: The data from www.worldbank.org/data/dataquery.html by using Minitab 14-Demo

Figure 7: Shows the Trends Curves Models Estimate the Adoption of Real Data and Transfer Johnson Transfers to the Impact of FDI on the Added Value of the Services Sector in GDP

THE CONCLUSIONS

- It turned out that data from the official institutions of the United Nations organizations in mostly non-distributed naturally means that irregular because the data sent by States to these organizations may be weighted or modified on the way they really are and to show these countries as an economy a developing or to improve image economic and social development of States.
- Produced a transfers Johnson on a lot of variables that annexation of research and representing economic indicators were not distributed in mostly non-distributed naturally and this causes problems exist record when estimate.
- The estimate of the impact of investment on the service sector moreinfluential than the agriculture and industry sectors.that the impact of investment opposite effect in the value added in the agricultural sectorMay be justified by researcher partly due to real data and justification second due to agricultural investment not to exceeding the value added in GDP as the foreign direct investment has exhausted part most of the added value of the agricultural sector of the Turkish account native country and thus appeared passivity, and the Industrial sectoralso appeared signal negative and thus return researcher for the reasons mentioned in advance ,the service sector are positive relationship which shows that the impact of foreign investment affects positively on the sector of services

demonstrating that the trends of foreign investment in the services better than other sectors to useful and safety and so on.

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