Journal Tikrit Univ. For Agri. Sci. Vol. (18) No.(4) – 2018
ISSN-1813-1646

A Standard Economic Study of Agricultural Investment in Iraq for the Period (1990-2016)

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Key words:
Standard Economic Study, Agricultural Investment.

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Received: 9/1/2018
Accepted:23/1/2018

ABSTRACT

Investment is defined as a stream of spending on new fixed capital or additions to stocks over a period of time, and it is one of the most important components of aggregate demand, which includes both private investment, private consumption, government spending, and net exports and imports.

A study of the economic factors of agricultural investment in Iraq for the period 2016-1990 was conducted. The study aimed at conducting a standard analysis of the most important factors affecting agricultural investment. The results showed that all variables The total cultivated, agricultural output, loans and the number of agricultural workers were identical to economic logic and their effect was positive, as was the accumulation of capital which was also positive and identical to the economic logic. All variables were significant in the sense of test t, Predicting the values invested for agricultural production and showing that agricultural investment in the case of increasing. The study recommended the necessity of creating the appropriate climate for agricultural productive investments, developing technologies related to the agricultural sector and supporting the private sector in the field of agricultural investment, stressing the need for the government to rebuild the infrastructure of the agricultural sector and develop the existing ones.

دراسة قياسية اقتصادية للاستثمار الزراعي في العراق للمدة (1990-2016)

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الكلمات المفتاحية:
دراسة، قياسية، اقتصادية، استثمار زراعي.

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الاستلام: 2018/1/9
القبول: 2018/1/23

الخلاصة

يعرف الاستثمار على انه تيار من الانفاق على الجديد من السع الرأسمالية الثابتة أو الاضافات للمخزون خلال فترة زمنية معينة، وأنه من اهم مكونات الطلب الكلي حيث يشمل كلاً من الاستثمار الخاص والاستهلاك الخاص والانفاق الحكومي وصافي الصادرات والواردات.

لقد تم اجراء دراسة قياسية اقتصادية للاستثمار الزراعي في العراق للمدة 1990-2016 ، واستهدف البحث الى اجراء تحليل قياسي لأهم العوامل المؤثرة في الاستثمار الزراعي، وتبين من خلال نتائج البحث ان جميع المتغيرات والمتمثلة بكل من المساحة الاجمالية المزروعة والناتج الزراعي والقروض وعدد العمال الزراعيين جاءت مطابقة للمنطق الاقتصادي وكان تأثيرها موجبا وكذلك تراكم رأس المال الذي كان هو الاخر موجباً ومطابق للمنطق الاقتصادي، وكانت جميع المتغيرات معنوية بالنسبة لاختبار(t)، واثبتت معنوية الدالة ككل من خلال اختبار(F)، وتم التنبؤ بالقيم المستثمرة للإنتاج الزراعي وتبين ان الاستثمار الزراعي في حالة تزايد. واوصت الدراسة بضرورة تهيئة المناخ المناسب للاستثمارات الانتاجية الزراعية وتطوير التقنيات الخاصة بالقطاع الزراعي ودعم القطاع الخاص في مجال الاستثمار الزراعي واكدت على ضرورة قيام الحكومة باعادة بناء البنى التحتية للقطاع الزراعي وتطوير الموجود منها.

Introduction:

Public investment is defined as government spending through which the state seeks to obtain the means of production necessary to increase the quantity of national production and the rest of goods and services, or to abandon the funds owned by the individual at a certain point in time for future financial flows that compensate for:

1- The present value of the money that he gave up for any financial asset.

2. The expected decrease in purchasing power of such funds.
3 - The risk arising from the possibility of unexpected financial flows (Moussa and others, 2012,245)

It can be said that public investment is an important and effective means of changing the structure of the national economy and motivating it to grow, develop and progress, as it represents a new addition of existing or existing production capacities or compensation for productive capacity that has been destroyed or worn out due to its use or the end of its useful life. (Al-Saadi, 2010, 18)
Investment is considered to be the productive employment of capital by directing savings towards uses that lead to the production of goods or services that satisfy the economic needs of the society and increase its well-being. The investment is to invest the money available in various assets to obtain more financial flows in the future. Rather than using the money by other investors for the length of time that the investor abandons his capital considering the realization of returns covering the value of the required compensation as well as the risks arising from the uncertainty in obtaining expected future flows And above the inflation rate (Shabib, 2009, 15).

Investment spending is a factor in determining the size of national income. The national income depends on the amount of investment, and its stability or volatility depends on the stability or volatility of investment. Ahmed, 2007, 47)

The investment is based on sacrificing satisfying the consumer's present desire, not merely postponing it for the purpose of obtaining greater satisfaction in the future, namely, the abandonment of the money owned by the individual at a given time in order to obtain future flows that compensate for the value

As well as the expected decrease in their purchasing power due to the inflation factor, while providing a reasonable return against the risk component of the probability that these flows will not be realized (Rain, 2013.20).

Research Importance:

The importance of research depends on the importance of agricultural investment in Iraq, which is one of the basic requirements for economic growth and the development of the infrastructure of the agricultural sector through horizontal and vertical expansion or both together, in addition to showing or embodying the role of both agricultural output and the total area cultivated and the credit and agricultural labor, Money in the increase and development of Iraqi agricultural investment.

Research problem:

The low contribution of the agricultural sector to GDP, the low rates of agricultural production in Iraq and the low level of productivity are an indicator of the low rates of investment, which plays a key role in achieving the necessary material accumulation for agricultural production.

Search Goal:

The research aims at:
1 - Estimating the investment spending for agricultural production in Iraq and the factors affecting it during the study period.
2 - Conducting an economic analysis of the size of investment and determining the most important factors affecting it such as agricultural output, loans, total cultivated area, number of agricultural workers and capital accumulation for the period 1990-2016.
3 - Forecasting agricultural investment specialties in Iraq for the period 2010-2018.

Research Hypothesis:

The agricultural investment specialties are influenced by both the total area cultivated and the agricultural output at constant prices, loans and the number of agricultural workers and the accumulation of capital.

Methods and methods of data collection:

The term of the study (2006-2016) was used. As a part of the results were not identical to economic logic, the period (1990-2016) was adopted. Another independent variable was added to the function. The results were identical to the economic, (OLS) in the estimation of models using the statistical program (Eviews) and conducting statistical tests and standard tests related by taking agricultural investment specialties (Y) as a dependent variable, and the factors Independent are represented in:

X1=Total area cultivated (1,000 dunums).
X2= Agricultural output at constant prices (million ID).
X3= Loans (ID million).
X4= Agricultural workers (worker).
X5=Capital accumulation (ID million).

Data sources:

Data were obtained from agricultural investment specialties, total cultivated area, agricultural output at constant prices, loan amounts, number of agricultural workers, and the amount of capital accumulation from the Ministry of Planning - Central Statistical Organization for the period 2016-1990.

Characteristics of public investment in the agricultural sector:

The investment in the agricultural sector is accompanied by the creation of opportunities for the unemployed and thus increasing their individual incomes and affecting the increase in production and economic growth in the agricultural sector. This growth is reflected in the rest of the economy in general.

The most important characteristics of the investment are:

1. The provision of subsidies and subsidies to agricultural producers represents the bulk of agricultural investment.
2. Investments in the agricultural sector are aimed at achieving the greatest benefit to the private sector and are direct and short-term investments.
3. The provision of support and protection to the agricultural sector requires the state to bear large financial burdens and the results of this investment does not appear as required in developing countries, unlike developed countries.
4 - This investment needs to spend in addition to investment spending in fixed capital.

Objectives of public investment in the agricultural sector:

The aim of public investment is to optimize the exploitation of available economic resources and eliminate all waste and loss. It also contributes to the absorption of unemployment, the creation of employment opportunities and the increase in the local supply of goods and services. It includes the transfer and resettlement of advanced agricultural technologies in the world to increase production and productivity in the agricultural sector , And for the purpose of raising the rates of investment in the agricultural sector must be increased levels of support provided by the State for each of the prices of agricultural inputs and outputs and then increase the value of agricultural output, which is reflected on the net profits of agricultural producers, For the individual and the achievement of economic and social well-being and contributes to the creation of the necessary funding opportunities for economic projects and companies, and investment in the agricultural sector needs to finance Agricultural finance is meant to provide or provide capital for investment.

Private Investment and Public Investment:

The investment is based on two types: private investment and public investment. Each one has its own characteristics. The concept of private investment is a stream of spending on new fixed capital goods such as factories, machinery or roads, as well as additions to stocks such as raw materials, intermediate goods or finished goods, , Within a certain period of time.

As for public investment, it is represented by government spending, ie, the total amount of cash that the government sector spends in order to achieve the public interest, or it is sums of money that come out of the treasury as a public body, to satisfy public needs for the public benefit of society members (Dawood, 2013,228-141) , And that the motive of private investment is the profit alone, in addition to the inability of the government to affect this spending directly and the role of the government on monetary and monetary policy measures, while public investment is under the control of the government in general and is used as a compensatory factor to fill any deficit in the nose The private sector, and the flexibility it enjoys is not great, it is used to meet social needs such as education, health and transportation and profit is rarely a goal and therefore The public investment program may be difficult to adjust in the short term.

It also requires mentioning that there is a total investment and net investment, where the total investment includes both net investment and current investment and the first intended additions to real capital during a certain period of time, while the second is allocated to face depreciation (depreciation) in order to maintain the actual balance of capital in the face of various factors Which affect the size of this balance such as wear and tear, damage, obsolescence, fire, flood or other disasters (Saqr 1983,229).

Thus, the total investment = net investment + extinction

If the net investment is positive, it means that a new addition to the production goods has been achieved and that the amount of the investments represents compensation for the productive goods consumed annually. If it is negative, it means that the total investment is not enough to compensate for the scattered or consumed production goods (Al-Issa and Qatif, 2006,181).

Adequate adequacy of investment and interest rate: -

The narrow limit of investment (Sakr, 1983,234-235) is defined as the discount rate that should be used to deduct the expected net return from the investment project to make the present value of the yield exactly equal to the bid price. In other words, the marginal efficiency of the investment represents the expected rate of return Of the proposed investment either interest rate The financial burdens borne by the borrower due to his borrowing represent the capital or the material benefits that the lender benefits in return for lending the capital. (Bakri, Kamel and Ahmed Mandour, 1989,374-481), and the investor to decide to make investment if the marginal limit of investment greater than the interest rate, either if it is less than the interest rate it must refrain or stop investing, and therefore the limit of investment for any A proposed project is based on the cost of the offer (investment expense) and the expected net return.

The relationship between the total supply price and the marginal efficiency of investment is inverse. The relationship between the net yield and the marginal adequacy of investment is a positive one.

The reality of agricultural investment in Iraq for the period 2016-1990: -

The investment in the agricultural sector works to increase the production and productivity of the agricultural worker, ie the development of the productive forces, the creation of new jobs, the renewal of buildings and agricultural facilities, the addition of land resources through reclamation, the use of agricultural mechanization, modern methods in agriculture and the development of other productive capacities of plants and animals. Which is one of the main pillars of economic growth and then correct structural imbalances by raising the contribution of the productive sectors, including the agricultural sector in GDP (Ahmad and Hamza, 2017.1).

Table (1) shows that the amount of agricultural investment for the study period reached an average of ID (3926.7) million and the highest value in 2014 was ID (9627) million and the lowest value in 1993 and 1992. The total area reached (13854.7) thousand dunums, the highest value was (21862) thousand dunums in (1991) and the lowest value (10531) thousand acres in 2009, and the agricultural output was on average (ID6,195) million, the lowest value of the year (1991) and amounted to (2877.2) million dinars, while loans amounted to an average of (36449.7) million dinars The highest value in 2009 was ID (67263) million and the lowest value in 1991 was (10901)

million dinars. The number of agricultural workers reached an average of (1202732) workers and the highest value in 2002 was (188351))Factor, And the lowest value of the year (2005) and amounted to (100319) workers, while the accumulation of capital amounted to an average (354.89) million dinars and the highest value in 1991 (499) million dinars and the lowest value in each of the years (2008-2012 - (2013-2014) to reach (246) million dinars.

Table (1) shows agricultural investment, total area, agricultural output, loans, number of workers and capital accumulation for the period 1990-2016

Capital accumulation (million dinars)	Number of workers (worker)	Loans (Million dinars)	Agricultural output (Million dinars)	Total area (Thousand acres)	Investment (Million dinars)	The years
337	992510	12309	3447.8	15538	739	1990
499	1195300	10901	2877.2	21862	152	1991
468	1425006	11143	3531.9	14976	116	1992
432	1443675	41141	3492.4	13799	116	1993
490	1610201	51143	3741	13779	1185	1994
415	1630560	12959	4188.2	12907	599	1995
445	1660345	16000	4498.3	12780	341	1996
489	1710310	54207	4133.8	12958	345	1997
496	1770511	45000	4475.1	14131	341	1998
489	1810305	59800	5188.3	13778	7631	1999
496	1850561	54379	4589	13622	1012	2000
331	1878000	27914	4644	13130	6791	2001
320	1880351	14682	5432.6	13545	4841	2002
300	170150	13495	5850.3	13545	2131	2003
389	1078112	32319	4521	13137	1489	2004
359	100319	23500	5939.6	13964	4811	2005
349	910256	62475	6195.9	13448	3329	2006
249	902781	33836	4479.7	13843	4007	2007
247	870613	33077	4244	14239	5166	2008
248	982674	67263	4488.2	10531	5085	2009
248	809169	50549	4510	12043	9551	2010
248	710123	56512	5939.6	13023	6025	2011
247	928314	28981	6195.9	12743	9556	2012
247	1180570	39765	4479.7	14055	7011	2013
247	939669	34373	4244	14902	9627	2014
249	1016184	45442	4488.2	13900	7017	2015
248	1017185	50977	4510	13900	7007	2016
354.89	1202732	36449.7	4604.65	13854.7	3926.7	Average
499	1880351	67263	6195.9	21862	9627	highest value
247	100319	10901	2877.2	10531	116	Lowest value

Source: Ministry of Planning - Central Statistical Organization for the period 1990-2016

Results and discussion:

In the research, investment was taken as a dependent factor. The independent factors were (total area, agricultural output, loans, agricultural labor, capital accumulation). The linear model, the double logarithmic model, the logarithmic model and the logarithmic half model were used. Of the economic, statistical and standard logic. The results were as follows:

The logarithmic half function

LNY=4.915326+0.000129X1+0.000722X2+0.0000204X3+0.000000738X4

t (2.14) (1.22) (3.37) (2.21) (1.87) −0.011450X5

t (-5.72) R^2= 0.79 R^{-2}= 0.74 F= 15.89 D.W= 2.312

Economic Analysis:

It was found that the constant of the equation is positive and is identical to the economic logic. The total cultivated area was positive and is consistent with the economic logic, which indicates the positive relationship between the investment and the total area ie increasing the total area by one unit leads to increase investment by 0.329, Positive and is identical to the logic of economic, which also indicates the relationship between investment and agricultural output, that the increase of agricultural output by one unit leads to increase investment by 0.522, while the loans have been positive and match the logic of the strongest Which indicates the positive relationship between investment and loans, that increase loans by one unit leads to increase investment by 0.204, And agricultural employment was also a positive and corresponding to the logic of economic, ie, the increase of agricultural labor by the amount of one unit leads to increase investment by 0.138. The accumulation of capital was also a positive sign to the economic logic, ie increasing the accumulation of capital by one unit leads to increase investment by 0.628. But the accumulation of capital was a positive sign and matched the logic of economic. This means that the increase in capital accumulation by one unit will increase investment by 0.628.

Statistical and normative analysis:

All the variables were significant for the t-test at a significant level of 1%. Except for the total area was not significant, The value of R2 is 0.74, which means that 74% of the fluctuations are caused by the independent factors. The remaining 26% is due to other factors not included in the standard model. (F), which was 15.89, below 5%. The model showed that there was a problem of self-correlation between the independent factors through the DW test, which reached 2.312.

2. Linear function

Y= -2589.411 + 0.478983 X1 + 1.22273 X2 +0.047885 X3 – 0.02232 X4-28.67842X5

T(-0.41) (1.66) (2.08) (1.90) (-1.95) (-5.25)

R^2= 0.69 R^{-2}= 0.61 F= 9.41 D.W= 2.60

3 - double logarithmic function

lNY= 1.820021 + 1.353135 LNX1 + 0.000710LNX2 - 0.569130LNX3 – 0.223814LNX4

t(0.61) (2. 26) (2.00) (-0.56) (-1.71)

-3323565 LNX5 -5.51) (t

R^2= 0.77 R^{-2}= 0.72 F= 14.72 D.W = 2.09

4- The reverse logarithmic function

Y = -35184.08 + 5794.883 LNX1 + 1.257085LNX2 – 1284.464 LNX3 + 975.0441LNX4

T(-0.78 0) (2.40) (1.30) (-1.65) (1.72)

−8351.790 LNX5

T(-5.20)

R^2= 0.68 R^{2-}= 0.61 F= 9.33 D.W= 2.52

Future prediction:

Forecasting predicts the situations and behavior of the phenomenon in the near or distant future. Whether it is an estimate, an expectation, or an expectation, it means one concept which is to describe the state of the phenomenon at a point or time in the future (Truett and Truett, 1998,137), and the prediction may be based on personal perceptions of the researcher or may be based on Real information and data on the behavior of the phenomenon in the past by the influence of certain factors or real behavior in the present with expectations about the future behavior of the phenomenon.

Prediction is also defined as a quantitative estimate of the expected values of dependent variables in a future estimate based on available information about past and present. Therefore, we can say that prediction is a future prediction of the behavior of the phenomenon and its expected values within a known time range depending on past and present events of the phenomenon itself (Field, 1981,203)

Forecasts of agricultural investment in Iraq for the period (2019-2028).

Based on the time series data (1990-2016), the following relationship was defined:

$Y = e\ a + bt$

$Y = a + b\ T$

The equation of the general direction of investment is:

$Y = -845.6040 + 340.8791\ T$

whereas :-

Y = Agricultural Investment (Million ID).

T = time.

Price forecasts for a given year can be obtained by subtracting the value of the time variable (T), which indicates the corresponding sequence number for the year to be predicted in the general trend equation, and then multiplying the valuation value of the independent variables for the years to be predicted (2019-2028) According to the estimated model mentioned, then add them to the fixed limit value and show that the investment is in an increasing state.

Table (2) shows the expected values of agricultural investment for the years 2019-2028 .

Expected Values (ID Million)	The years
15141	2019
15646	2020
16151	2021
16655	2022
17160	2023
17665	2024
18169	2025
18674	2026
19179	2027
19684	2028

Source: - Prepared by the work of the researcher based on the equation of the general trend.

Table (2) shows that the values of agricultural investment for the years 2019-2028 are taking an upward trend over the expected period.

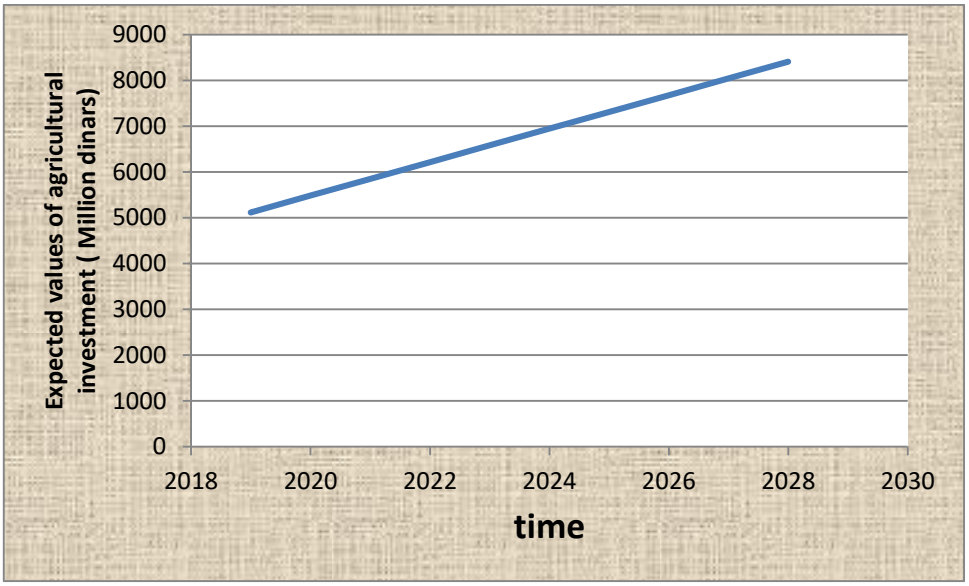

Figure (1) shows the prediction of the expected values of agricultural investment for the period 2019-2028.

Conclusions:

The study reached the following conclusions:

1- The total cultivated area and the agricultural output have a positive impact on the agricultural investment according to the economic logic ie the relation between the investment and both the total cultivated area and the agricultural output.

2 - The loans were identical to the economic logic was positive and proved the relationship between investment and investment loans.

3- The variable number of agricultural workers showed a positive effect that is identical to economic logic.

4. A variable capital accumulation signal was negative and did not conform to economic logic because of the difficult political conditions that were reflected in the economic situation experienced by Iraq throughout the study period. In the light of the above results, the researcher concluded that the variables adopted in the model have a positive impact on investment. In other words, investment in the agricultural sector is profitable and achieves results that benefit farmers and increase farmers' profits and increase national income

.

Recommendations:

1. Creating the right climate for productive agricultural investments for the development of the agricultural sector and encouraging them by various means.

2- Increasing interest in agricultural scientific research and developing the technologies related to the agricultural sector, especially studies and researches that maximize the benefit of agricultural land investment due to its scarcity and low productivity. The agricultural sector should take a course in development and face the problems of agricultural production and food security.

3. Support the private sector in the field of agricultural investment with low-interest, long-repayment or interest-free loans.

4 - The government to rebuild the infrastructure of the agricultural sector and develop the existing ones

5- Supporting the inputs and outputs of agricultural production in both its vegetative and animal sectors, in a distinctive way, as it encourages producers to increase investment in the agricultural sector.

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Linear model

Dependent Variable: Y
Method: Least Squares
Date: 06/10/18 Time: 23:24
Sample: 1990 2016
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2589.411	6273.187	-0.412774	0.6840
X1	0.478983	0.288133	1.662366	0.1113
X2	1.222273	0.585344	2.088127	0.0492
X3	0.047885	0.025164	1.902940	0.0708
X4	-28.67842	5.457831	-5.254546	0.0000
X5	0.002232	0.001143	1.952198	0.0644

R-squared	0.691587	Mean dependent var	3926.704
Adjusted R-squared	0.618156	S.D. dependent var	3303.861
S.E. of regression	2041.574	Akaike info criterion	18.27396
Sum squared resid	87528491	Schwarz criterion	18.56192
Log likelihood	-240.6985	Hannan-Quinn criter.	18.35959
F-statistic	9.418109	Durbin-Watson stat	2.603814
Prob(F-statistic)	0.000080		

Logarithmic half model

Dependent Variable: LNY
Method: Least Squares
Date: 06/10/18 Time: 23:26
Sample: 1990 2016
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.915326	2.296715	2.140155	0.0442
X1	0.000129	0.000105	1.220841	0.2357
X2	0.000722	0.000214	3.370233	0.0029
X3	2.04E-05	9.21E-06	2.210797	0.0383
X4	-0.011450	0.001998	-5.729997	0.0000
X5	7.38E-07	4.19E-07	1.764110	0.0923

R-squared	0.790958	Mean dependent var	7.592394
Adjusted R-squared	0.741186	S.D. dependent var	1.469231
S.E. of regression	0.747453	Akaike info criterion	2.448840
Sum squared resid	11.73241	Schwarz criterion	2.736803
Log likelihood	-27.05933	Hannan-Quinn criter.	2.534466
F-statistic	15.89164	Durbin-Watson stat	2.312352
Prob(F-statistic)	0.000002		

Dual logarithmic model

Dependent Variable: LNY
Method: Least Squares
Date: 06/10/18 Time: 23:30
Sample: 1990 2016
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.25185	23.53120	-1.328103	0.1984
LNX1	1.959947	1.649391	1.188285	0.2480
LNX2	3.611052	1.072209	3.367862	0.0029
LNX3	0.548602	0.288320	1.902755	0.0709
LNX4	-3.274265	0.583978	-5.606826	0.0000
LNX5	0.229929	0.271283	0.847562	0.4062

R-squared	0.792501	Mean dependent var	7.592394
Adjusted R-squared	0.743096	S.D. dependent var	1.469231
S.E. of regression	0.744689	Akaike info criterion	2.441431
Sum squared resid	11.64580	Schwarz criterion	2.729394
Log likelihood	-26.95931	Hannan-Quinn criter.	2.527057
F-statistic	16.04105	Durbin-Watson stat	2.172064
Prob(F-statistic)	0.000001		

The inverse model

Dependent Variable: Y
Method: Least Squares
Date: 06/10/18 Time: 23:33
Sample: 1990 2016
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-90720.80	64172.10	-1.413711	0.1721
LNX1	6738.168	4498.065	1.498015	0.1490
LNX2	6216.262	2924.029	2.125924	0.0455
LNX3	1254.772	786.2790	1.595836	0.1255
LNX4	-8271.882	1592.571	-5.194041	0.0000
LNX5	964.2876	739.8166	1.303414	0.2065

R-squared	0.694819	Mean dependent var	3926.704
Adjusted R-squared	0.622157	S.D. dependent var	3303.861
S.E. of regression	2030.847	Akaike info criterion	18.26342
Sum squared resid	86611154	Schwarz criterion	18.55139
Log likelihood	-240.5562	Hannan-Quinn criter.	18.34905
F-statistic	9.562345	Durbin-Watson stat	2.545988
Prob(F-statistic)	0.000072		