AN ECONOMIC STUDY TO MEASURE INFLUENCE OF THE MAIN VARIABLES IN RURAL POVERTY IN IRAQ DURING 1990 – 2019

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ABSTRACT

The research aims to measure influences of the main variables in rural poverty in Iraq during 1990 – 2019, so it used descriptive and qualitative methods to show the subject. The research reaches throw results of unit root test that all the variables were un stable in the level, but all of them were stabled after first difference. The research proved it`s hypothesis that all structural changes can lead to reduce the rural poverty in Iraq, the study explained positive relationship among the dependent variable (per capita of national income) and independent variables (rural population, agricultural labor, planted area of crops and the using technology), where increase by 1 % in each of the independent variables lead to increase in share of national income by (1.02, 3.6, 0.19,0.55) % respectively, this study showed there are decreasing in ratio of agri. product in GDP during the study period between % 20.4 .4 1995 and % 2.4 in 2018 and that indicated dependency of Iraq in crude oil and don't have care with agricultural sector. The research recommends to planning of development strategy in Iraq`s countryside to reduce rural poverty and support the agri. Sector by modern technology.

Keywords: rural development- socio economic- poverty in Iraq.
***Part of M.S.c thesis of the 1st author.**

دراسة اقتصادية لقياس اثر المتغيرات الرئيسة في الفقر الريفي في العراق للمدة 1990 – 2019

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المستخلص

يهدف البحث الى قياس اثر المتغيرات الرئيسة في الفقر الريفي في العراق للمدة 1990 – 2019 تم استخدم البحث الأساليب الوصفية والكمية لإبراز اهم جوانب الموضوع، وتوصل البحث من خلال نتائج اختبار جذر الوحدة ان المتغيرات غير مستقرة عند المستوى واستقرت جميعها بعد اخذ الفرق الأول لها ،اثبتت الدراسة صحة فرضية البحث القائلة ان التغيرات الهيكلية من الممكن ان تؤدي الى الحد من ظاهرة الفقر الريفي في العراق فقد بينت الدراسة وجود علاقة ايجابية بين المتغير التابع المتمثل بمتوسط نصيب الفرد من الدخل القومي والمتغيرات المستقلة التي تضمنها الأنموذج وهي كل من (عدد سكان الريف , العمالة الزراعية , المساحة المزروعة بالمحاصيل الرئيسة ,التكنولوجيا المستخدمة) حيث ان زيادة بمقدار 1% في كل من عدد سكان الريف, والعمالة الزراعية, والمساحة المزروعة للمحاصيل الرئيسة, والتكنولوجيا المستخدمة. يؤدي الى زيادة بمتوسط نصيب الفرد من الدخل القومي بمقدار (1.02%,3.6%,0.19%,0.55%) على الترتيب,ووجدت الدراسة حدوث انخفاض في نسبة مساهمة الناتج الزراعي في الناتج المحلي الاجمالي وهذا ما اكدته احصائية وزارة التخطيط خلال مدة الدراسة حيث تراوحت بين حد اعلى بلغ (20.4%) سنة 1995 وحد ادنى بلغ (2.4%) سنة 2018 وهذا يدل على اعتماد العراق على القطاع النفطي واهمال القطاع الزراعي. وأوصى البحث بضرورة وضع استراتيجية تنموية للريف العراقي والحد من الفقر الريفي للحصول على بيئة نموذجية للريف ورفع مستوى العمالة في القطاع الزراعي بمستوى عالياً من التقنية الحديثة في الزراعة .

الكلمات المفتاحية: التنمية الريفية، الاقتصاد الاجتماعي، الفقر في العراق.

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INTRODUCTION

There are millions of rural families suffering from poverty and law producing which prevent the agricultural and rural development(4). The agriculture still the most important sector in many developing countries such as Iraq(20), so the government should breaking the poverty ring in countryside(7). The poverty have not place dimension, but it have time dimension (6). In Iraq the ratio of poverty is percentage 20 from total population(19), and about two million Iraqi family under the poverty line (one U.S $ for person). The ratio of poverty in rural regions was % 55 in 2005, and the standard of living decreasing after economic embargo on Iraq, so the ratio of poverty was rising until it reached to 22.9 in 2007, then declining to 18.9 in 2012(11), after that it decreasing to 20.5 in 2017 and % 30 in 2020 Ministry of Planning - Central Bureau of Statistics. The researche indicate that percentage 75 of vegetables and fruits which consumed in Iraq import from Iran, Syria and Jordan (3). When the imported goods were very high, then any change in there prices will transport to imported state such as Iraq, and that will lead to increase local prices (15). Iraq gives priority to countryside after 2003 to close the gap between, rural society and urban society, but that priority facing many problems and challenges such as economic, social, structural and environmental challenges. The ratio of deprivation in Iraq is %58 in rural society while it is %17 in urban, and ratio of poverty was % 55 in rural and % 17.5 in urban (14). Although agriculture intuitive but still there are ddifict in using modern technologies(12). The problem of research is that the rural sector in Iraq suffering from poverty and its side effects, and that need structural changes in agricultural sector and that led to rising of unemployment in rural society, decreasing of participant of agriculture product in GDP and rising of environment pollution rates, so the problem of the research is: can the policies of Iraq reducing the poverty? Hypothesis of the research is: the structural changes will reduce the rural poverty in Iraq. The research aims to: first: Recognizing the rural poverty, second: Detecting the problems which increase the gap of poverty between rural and urban and that will gaping the structural distortions, third: Studying the effect of the main variables which influencing rural poverty in Iraq during 1990 – 2019. The study depend on secondary data from CSO and Ministry of agriculture/ planning directorate. The research depend on description the econometric model among poverty rate as a dependent variable (per capita of national income) and each of (rural population, agricultural rural labor, area planted of main crops and used technology) as an independent variables.

MATERIALS AND METHODS

Poverty as a phenomenon is one of the phenomena which world all the suffering from it (5). The socio- economic literature defined the poor by self definition as the people who do not having what they need, and sociological definition as the people who need social help (2). The World Bank defined the poverty as unon-ability to achieve minimum limit of living standard (18). There are three types of poverty: extreme poverty, absolute poverty and relative poverty (13). The main result of the poverty is spreading the social diseases like crime (9). The other side effect is reduction in the cultural and educational level (8). There are many theories were they interpretation the poverty such as: theory of the economic, political and social regions causing the poverty, theories of vicious circles of poverty and theory of poverty which comes from set of substitutional relations(10). The agricultural sector has pivot role to reduce poverty, because the growth in agriculture will lead to reduce the poverty in each of rural and urban regions, so the agricultural growth has important role to reduce the poverty via increasing income of rural population directly via increasing demand in agricultural labor and indirectly via connecting of inputs and outputs and expenditure with non-agricultural activities (17). The main cause to measure defect in social indicators is to measure multi-dimension poverty (1). Poverty as a phenomenon has extended roots to set of political, economic, social and cultural distortions, so the poverty is related with GDP, national income, consumption, investment, employment, price index, fiscal and monetary policy and inflation (16). The research in both descriptive and quantitative approaches had

depend on some criteria to measure and calculate the rural poverty via using multiple regression by using OLS to detect the relation among per copita of national income as a dependent variable and each of rural population, agricultural labor, planed area of main crops and used technology as an independent variables, via using E-views 10 to set of data of time series from 1990-2019. It Has been done stationary test of time series of study variables threw using ADF test to detect in any rank the variables will be integrated or stable, the variables are: Y = per capita of national income, X1 = rural population, X2= agricultural labor, X3= planed area by main crops, X4= used technology. The results of Augmented-Dicky Fuller in level I(0) and I(1) show in table 1.

Y: Unstable in level in the three cases.
X1: stable in constant and trend at % 10, but it is unstable at constant and without constant but only trend.
X2: Unstable in three cases.
X3: Stable in the constant at % 10, but unstable at constant and trend, and without constant but only trend.
X4: Unstable in the three cases.
After first difference I (1) the result were:
Y: Stable in three cases at % 1.
X1: Stable in the three cases at % 1.
X2: Stable in the three cases at % 1.
X3:Stable with constant at % 5 and with constant and trend at %10, and without constant but at %1.
X4: Stable with constant, and without constant but trend at %1 and with both at %5.

Table1. Results of stationary of variables at I (0) and I (1)

				UNIT ROOT TEST RESULTS TABLE (ADF)		
				Null Hypothesis: the variable has a unit root		
				At Level		
X4	**X3**	**X2**	**X1**	**Y**		
-1.1947	**-2.6964**	**-1.9485**	**-0.8267**	**-0.8000**	**t-Statistic**	
0.6629	***0.0868***	***0.3067***	***0.7964***	***0.8042***	***Prob.***	**With Constant**
n0	*	**n0**	**n0**	**n0**		
-1.5841	**-3.0822**	**-2.4214**	**-3.4917**	**-2.0362**	**t-Statistic**	**With Constant & Trend**
0.7745	***0.1291***	***0.3617***	***0.0591***	***0.5579***	***Prob.***	
n0	**n0**	**n0**	*	**n0**		
1.0813	**-0.8902**	**0.8719**	**1.5123**	**0.5621**	**t-Statistic**	**Without Constant & Trend**
0.9230	***0.3220***	***0.8924***	***0.9645***	***0.8318***	***Prob.***	
n0	**n0**	**n0**	**n0**	**n0**		
				At First Difference		
d(X4)	**d(X3)**	**d(X2)**	**d(X1)**	**d(Y)**		
-4.3008	**-3.6291**	**-5.4133**	**-6.5838**	**-4.6976**	**t-Statistic**	**With Constant**
0.0022	***0.0124***	***0.0001***	***0.0000***	***0.0008***	***Prob.***	
***	**	***	***	***		
-4.2576	**-3.4730**	**-5.5436**	**-5.0695**	**-4.5988**	**t-Statistic**	**With Constant & Trend**
0.0116	***0.0644***	***0.0006***	***0.0020***	***0.0053***	***Prob.***	
**	*	***	***	***		
-4.1225	**-3.6599**	**-5.2512**	**-5.8286**	**-4.4533**	**t-Statistic**	**Without Constant & Trend**
0.0002	***0.0008***	***0.0000***	***0.0000***	***0.0001***	***Prob.***	
***	***	***	***	***		

***significant at %10, **significant at %5, ***significant at %1 no: not significant Sources: Outputs of E-views 10 program.**

Therefore, the series be stable after first difference, integrate from degree one. as shown in table 1. so we use ARDL. The research applied many formulas to specify the model, and found that linear formula was the best as below:

Where: $Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\varepsilon_i$

X1= Rural population.
X2= Agricultural labor.
X3= planted area by main crops.
X4= Used technology.
ε_i= Random error.

RESULTS AND DISCUSSION

The regression equation be as below:

$$Y=9104.1+1.024X_1+3.654X_2+0.1969X_3+0.5575X_4$$

t =X_1(4.5) X_2(2.3) X_3(4.2) X_4(3.2)

All of them were significant. From the model we conclude that change by one unit in rural population will lead to change in per capita of national income by %1.02, and change by one unit in agricultural labor will lead to change in per capita of national income by %3.6, and change by one unit in planed area of main crops will lead to change in per capita in national income by %0.19, and change by one unit of the technology used leads to a change in the average per capita national income by 55%.. R^2 value was 0.96 that means, the model interperate % 96 of happen changes in department variable caused by independent variable, while % 4 of changes returned to random variables. F statistics was 117 and shows that the model over all is significant, D-W statistic was 1.8, and it reflects that the model is free from Autocorrelation.

Analysis and tests of ARDL model. It Has been done several tests to insure from characteristics of the econometric model, as below:

1- Coefficients of long term by ARDL:

EC + Y – (1.558147 x1 + 5.559963x2 +0.299663x3 + 0.8483x4)

To table 2. shows variables with significant of the variables in long run, where sign of rural population came positive and it indicates the positive relationship between rural population and per capita of national income, and that is means, increase in rural population will lead to increase in production and that will lead to increase in national income and increase in per capita of it, the same thing will be with each of agricultural labor, planted area and used technology.

Table 2. Long run Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	1.558147	0.173503	8.980502	0.0000
X2	5.559963	1.566872	3.548447	0.0017
X3	0.299663	0.080072	3.742397	0.0011
X4	0.848347	0.168880	5.023356	0.0000
C	-13852.71	1943.356	-7.128238	0.0000

Source: Outputs of E-views 10 program.

2- Error Correction Vector Model (ECM) of ARDL.

Error Correction Model

This model works to analyze behavior of variables in short run to reach to equilibrium in long run. Table 3. shows that error correction limit CointEq (-1) was – 0.65, so it is negative and significant, and that is means there is long run equilibrium relationship among the variables, and that means that % 65 from errors in short run can correct automatically to reach equilibrium in long run and it need 1.5 years.

Table 3. Error Correction Model (ECM)

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.657212	0.096896	-6.782621	0.0000

Source: Outputs of E-views 10 program.

3- Co- integration or Bounds test.

Has been done of cointegration test can prove or refuse long run equilibrium relationship among dependent variable and independent variables shown in table 4. F statistic was 6.2 and it is significant at %1, F calculate was greater than upper limit at %1 and it was 4.3, and that indicates presence of conitegration relationship among the variables in the model, and that confirm the research hypothesis.

Table 4. Conitergration or Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.298160	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Outputs of E-views 10 program.

4- Autocorrelation Test (lag limite Multiple Test): It is one of the important test to testing Autocorrelation of error term in the model. The results show4.0 Auto correlation via comparison chi- square value (0.63) and it was greater than 0.05, so the study accept hypothesis which state there is no autocorrelation problem in the model as shown in table 5.

Table 5. Lag limite Multiplier Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.340965	Prob. F(2,21)	0.7149
Obs*R-squared	0.912094	Prob. Chi-Square(2)	0.6338

Source: Outputs of E-views 10 program

5- Heteroskedasticity Test

It deal with constant of variance of error term, it assumes that variance of error term is constant for each values of independent variables, that means random errors around estimated regression line have the same variance. Table6, shows results of heteroskedasticity test by using ARCH test, the results indicate that chi-square value was 0.9 and it greater than 0.05, so, the study will accept the null hypothesis that there is no heteroskedascity problem.

Table 6. Heteroskedasticity Test

Heteroskedasticity Test: ARCH			
F-statistic	0.007797	Prob. F(1,26)	0.9303
Obs*R-squared	0.008394	Prob. Chi-Square(1)	0.9270

Source: Outputs of E-views 10 program

6- Test of Cumulative Sum of Residuals (CUSUM): It is one of the important tests about appropriate of the model for regression; it is one of structural stabilization tests in short and long run. From figure 1, we can show from results test that all values of parameters lie within confidence limits (critical limits) at % 5, that indicates presence of structural stabilization in study variables in short and long run that means the model has agood fitness.

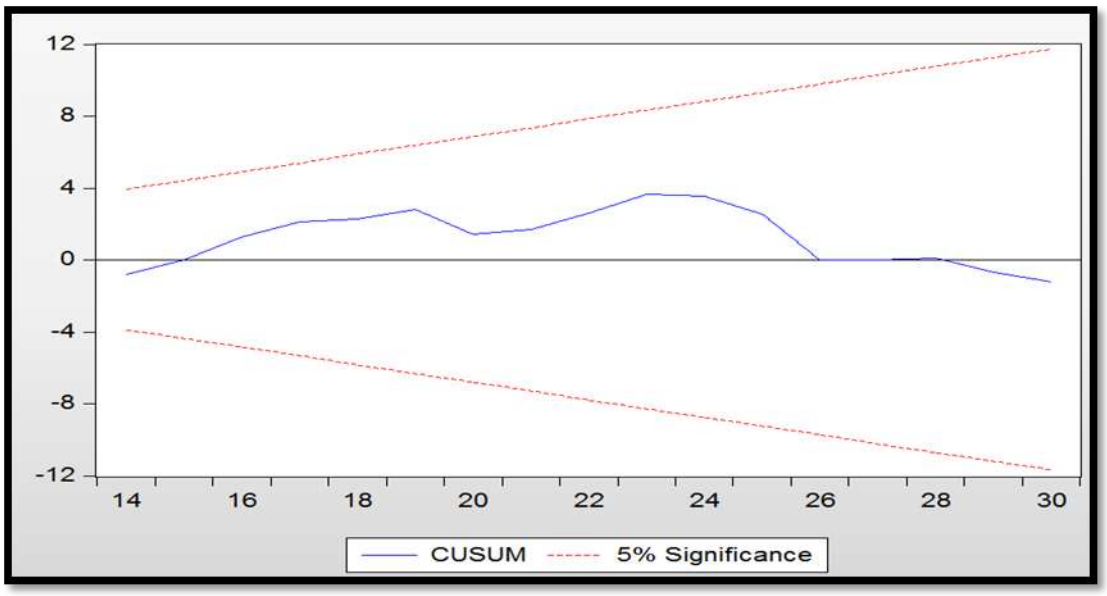

Figure 1. Test of Coumulation sum of Residuals

Source: Outputs of E-views 10 program.

Based on that, the model pass all the econometric tests, so it has no econometric problem, so the study can depend on it. The study reach to several conclusions:

1- The variables those influence in rural poverty in Iraq during the study period were each of: Rural population, agricultural labor, planted area by main crops and used technology. The model shows that %96 of changes in dependent variables caused by variations in independent variables, and the model over all is significant throw value of calculated F which it is 117.

2- The study proved it`s hypothesis that: The structural changes can lead to reduce of rural poverty phenomenon in Iraq, and there is positive relation between the dependent variables (per capita of national income) and independent variables (rural population, agricultural labor, planted area by main crops and used technology), that increase of % 1 in each of independent variables will lead to increase in per capita of national income by % (1.02, 3.6, 0.19 and 0.55) respectively.

3- Decrease in ratio of impact of used technology in estimated model, because it`s impact was % 0.55 only, and that technology for many reasons one of them in high prices of equipment and low export of farmers.

4- The study shows decreasing of participate of agricultural labor to total labor, and it annual growth was negative (% - 2.6).

Recommendations

1- Need to draw development strategy in Iraqi countryside to reduce rural poverty.

2- Need to agricultural land reclamation and maintaining the rivers sides to increase the planted area to increase production and productivity.

3- Facilitate granting agricultural loans to plant or animal farmers.

4- Expansion work of extension centers in agricultural directions

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