ANALYTICAL STUDY OF SOME OF THE FACTORS AFFECTING THE REALITY OF FOOD SECURITY IN SOME DEVELOPING COUNTRIES FOR THE PERIOD 1995 – 2015 AND WAYS OF TREATMENT

Waleed I. Sultan   **Salah F. Shaba**   **Ammar F. mahmood**

Coll. of Agric and Forestry   **Coll. of Agric and Forestry**   **Coll. of Agric and Forestry**
Univ.of Mosul   **Univ.of Mosul**   **Univ.of Mosul**

Waleedsultan502@yahoo.com   Salahodesh@yahoo.com

ABSTRACT:
   The research purposes at studying the concept of food security and studying the factors influencing it in (Iraq, Syria, Egypt and Morocco) and how to deal with it. The issue of food security has become one of the most important issues raised today. Most of the countries, which are characterized by the decline in the main food commodities and the growing demand for them and the rise in prices, Research in its style based on the connection between descriptive and quantitative methods. The research included a time series of twenty-one years (1995-2015) . The average squares method was used to determine the effect of some independent economic and agricultural indicators on the variable dependent on the size of the food gap while the independent variables represented by the factors influencing them (population, value of agricultural production, agricultural imports, deficit and surplus of the state budget) And the most important conclusions reached. It is expected that the food problem will become more acute in the future in light of the increase in the size of the population and increase consumption with a clear deterioration in agricultural production and rely on bridging the gap in the size of the food gap By means of imports, which represents a burden on the public budget in the sample countries that originally suffer from a large deficit and this is determined by quantitative analysis , Among these conclusions, the researcher recommends that concerted efforts should be made in the development of integrated strategies for food security to improve the agricultural sector and agricultural production through the optimal and rational use of natural resources and the use of modern methods in agriculture to address the problem of food and adopt the possible means of treatment mentioned in the research board.
Key word: FOOD SECURITY , FOOD GAP, AGRICULTURAL IMPORTS.

دراسة تحليلية لبعض العوامل التي تؤثر على واقع الأمن الغذائي في بعض البلدان النامية للمدة 1995 – 2015 وطرق المعالجة

عمار فيصل محمود   صلاح فهمي شابا   وليد ابراهيم سلطان

كلية الزراعة والغابات/ جامعة الموصل   كلية الزراعة والغابات/ جامعة الموصل   كلية الزراعة والغابات/ جامعة الموصل

Salahodesh@yahoo.com   Waleedsultan502@yahoo.com

الخلاصة
   يهدف البحث إلى دراسة مفهوم الأمن الغذائي ودراسة العوامل المؤثرة فيه في كل من (العراق سوريا ،مصر والمغرب) وسبل معالجته ، اذ أصبحت قضية الأمن الغذائي من أهم القضايا المثارة عليها اليوم حيث تحتل أهمية قصوى في ظل تزايد السكان المطرد ونقص الموارد وفي ظل الأزمة الغذائية التي تمر بها معظم الدول والتي تمثلت في تناقص أهم السلع الغذائية الرئيسة وتزايد الطلب عليها والارتفاعات القياسية في الأسعار ،واعتمد البحث في اسلوبه على الربط بين الاسلوبين ألوصفي

والكمي. حيث تضمن البحث سلسلة زمنية مداها واحد وعشرون عام (1995 – 2015) ، حيث تم استخدام طريقة المربعات الصغرى الاعتيادية لمعرفة تأثير بعض المؤشرات الاقتصادية والزراعية المستقلة على المتغير المعتمد حجم الفجوة الغذائية بينما كانت المتغيرات المستقلة الممثلة للعوامل المؤثرة فيها (عدد السكان ، قيمة الانتاج الزراعي ، الاستيرادات الزراعية ،العجز والفائض من الميزانية العامة للدولة) , من أجل الوصول إلى نتائج أكثر دقة, ومن أهم الاستنتاجات التي توصل إليها ومن المتوقع إن تزداد حدة المشكلة الغذائية مستقبلا في ظل زيادة حجم السكان وزيادة الاستهلاك مع تدهور واضح في الانتاج الزراعي والاعتماد على سد النقص في حجم الفجوة الغذائية عن طريق الاستيرادت مما يمثل عبه على الموازنة العامة في دول العينة التي في الاصل تعاني من عجز كبير وهذا ماتبين من خلال التحليل الكمي ومن هذه الاستنتاجات يوصي الباحث بانه يجب ان تتضافر جهود في وضع استراتيجيات متكاملة للأمن الغذائي للنهوض بواقع القطاع الزراعي والإنتاج الزراعي من خلال الاستخدام الامثل والرشيد للموارد الطبيعية واستخدام الأساليب الحديثة في الزراعة لمواجهة مشكلة الغذاء واعتماد ماهو ممكن من سبل المعالجة التي ذكرت في متن البحث .

الكلمات المفتاحية : الأمن الغذائي، الفجوة الغذائية ، الاستيرادات الزراعية .

Introduction :

Food security regards it a major challenge which facing developing countries. Despite the availability of natural resources from land, water and human resources, agriculture in these countries has not achieved the target increase in production to meet food demand. The food gap has widened and these countries have imported 50% of their needs of major food commodities, and has become increasingly interested in providing their food needs in the wake of the acute global food crisis, culminating in 2008, which led to the doubling of the prices of the main food commodities following the increase in subsidies and the reduction of imports from agricultural producers, which called for exceptional measures such as subsidizing food prices, regulating the export of food commodities , abolishing import taxes and increasing workers' wages. Economic development of the need to provide the required food to its population in the quantity and quality appropriate and reasonable price and the length of time required to prevent exposure to disabilities suffer from the problem of food deficit and Which is due to the increase in the population, which amounted to 3% per year, which is no longer consistent with the increase in production and agricultural productivity, which necessitates the import of most of its food needs. The importance of the study of the importance of food security developing and identify the most important indicators under the current circumstances,

The aim of the study is to study the reality of food security and treatment in the sample countries (Iraq, Syria, Egypt, Morocco)for the period 1995-2015,and It is based on the hypothesis that the gap between food production and consumption in these countries widens and the research seeks to prove the hypothesis. The research adopted a two-way approach: descriptive based on the theoretical studies that studied the subject and quantitatively based on econometric methods and methods, Quantitative method results for assessing the applied side of the study.

Food security and the methods of treatment

Food security is one of the main challenges facing developing countries. Despite the availability of natural and human resources in these countries, they have not been able to achieve the target increase in production to meet the demand for food, so the food gap has widened and these countries import about 50% , Researchers differed in defining a precise definition of the concept of food security and this is due to the vitality of the subject and studied in more than one way , (FAO) defined it as "providing food for all members of society with the quantity and quality necessary to meet their needs on a continuous basis for a healthy and active life, and defined by the World Bank as individuals' access to sufficient and necessary food for their activities and health" (Anony mons, 1999: 24).

The concept of security is focused on the first (material) issues and can be expressed in terms of the level of armament, the economic and military power of the state, the population and degree of independence from abroad, especially in the field of providing and securing food. The second is moral and we can express the morale of the population, the degree of harmony between them or the contradiction, the degree of citizens' association with the laws and the extent of their participation, and their belief in the goals that their state seeks to achieve. State and society. (Hamdoun, 2005: 6). Developed countries define food security as the quantity of food produced above the quantity needed to maintain existing habits and patterns , While developing countries know that they are sufficient to provide food of all kinds, which is commensurate with their level of minimum survival (Najafi, 1998, 10). At the individual level, food security is achieved when food is available to him and his family throughout the year. For the community, food security means its ability to provide its basic food and vegetable needs to ensure that these needs continue to flow regularly, both domestically and through imports. At the national level, food security is achieved when the country's production, marketing and trade systems are able to provide all citizens with adequate food at all times and even in crises (Moussa and Thomas, 2013: 119). In addition to the concept of food security, The most important of these are:

1. The concept of the food gap is the difference between the local production and the net imports of the various food commodities, the reasons for which are higher than the rates of demand growth and the consumption rate is about double the rate of production. External markets for food security. (AL Najafi, 1998, 11).

2. The concept of self-sufficiency: This concept is the case where food self-sufficiency is locally achieved, based on the community's ability to provide for the needs of its entire population of goods and foodstuffs through national production, to the extent required, Where self-sufficiency is a measurable concept, by the ratio of domestic production to national consumption, as follows :Self-sufficiency = local production \ available food x100 .

Therefore, the concept of self-sufficiency can be seen as a narrower concept than the concept of food security, where the former seeks not to resort to the outside world and to try to abandon imports, while the latter seeks the state's ability to provide adequate food for its citizens through national production, , 2009: 3).

The methods to address food security in the agricultural sectors of developing countries

1. To call for the conclusion of international agreements between neighboring countries regarding the sharing of dates through the activation of diplomatic efforts in this matter

2. Negotiate with neighboring countries (regional) in serious and detailed on how to cooperate between the competent institutions in the areas of irrigation and agriculture and seek to obtain the minimum water used best watering methods and waste of water.

3 . the establishment of large-scale irrigation projects and the use of the latest technologies and the elimination of soil salinity.

4 . Provide part of the requirements of agricultural production, which can be manufactured locally based on the national expertise and raw materials and other manufacturing requirements available in the country of machinery and equipment in order to reduce the import from foreign countries.

5. To guide the monetary policy in the country in relation to the exchange rate against the local currency towards the value of the currency for the purpose of reducing the import of non-good goods to allow the development of domestic production as well as increase the values of agricultural export. Source(Ministry of Agriculture, 2017: 11)

Previous studies

Food security is a central issue, which is of great importance especially in view of the continuous increase in food imports in the developing countries in order to meet the needs of the food population. The concepts of food security vary according to the vision of economic thinkers, and some consider it to be a global issue. Some consider it a national problem whose treatment is determined by the access of members of society to adequate food for a healthy life ,the importance of this research was highlighted by assessing the impact of these variables on Arab food security so that decision makers in the field of agricultural policies in the Arab countries can hedge against these effects in order to ensure adequate food security for the community members. The researcher concluded that foreign trade will be expanded. The dimensions of poor and medium levels do not indicate a certain level of improvement in the performance of Arab agricultural exports, , and the size of agricultural exports in the best picture did not exceed one-quarter of the value of the food gap. In the Najafi and Hassoun study (2007) on the food security situation in medium- and low-income developing countries (wheat as a model).

The study adopted the comparative economic analysis of food security indicators in developing countries and followed the quantitative method in estimating the results, explaining the results and information in the light of the economic concepts. The nature of the variables' behavior was measured by Econometric concepts to ascertain the accuracy of quantification of their variables, using the linear regression method in the OLS method according to the step wise method which excludes those variables that have not been proven, Therefore, the methodology of the study was launched from the positive statements to reflect what is or will be in the future, not what the state of Arab agriculture

should be in order to achieve its food security. Al-Shammari (2007) presented a study on "Agricultural Development and Food Security Requirements," in which he learned about the problem of food security and its requirements and how to achieve sustainable agricultural development in Iraq. He pointed out that despite efforts to meet the external and internal challenges related to the requirements of agricultural development, The breadth of the food gap of most agricultural crops, food commodities, and the increase in the import of crops and food, which exceeded 60% The self-sufficiency ratios of many agricultural and food commodities are still very low and troubling, and there are a range of agricultural resources and capacities that are underutilized and exploited still below the level of proper economic exploitation. Najafi et al. (2010) Achieving food security indicators of the Syrian agricultural economy, "as it explained the intervention of the state in the formulation of integrated agricultural policy is necessary because of its significant role in the reallocation of economic resources and the construction of price rules "as it explained the intervention of the state in the formulation of integrated agricultural policy is necessary because of its significant role in the reallocation of economic resources and the construction of price rules complementary to agricultural policy, As well as its role in protecting consumers and supporting producers and improving the terms of trade between the agricultural sector and non-agricultural sectors and attention to the relative prices of agricultural crops, because the market mechanism has shown its failure to achieve the above objectives. The research aimed at clarifying the role of Syrian agricultural policy in raising growth rates Agricultural output depends on the premise that the intervention of the state in the development of agricultural policy contributes to increase agricultural production and achieve self-sufficiency of some agricultural groups and then achieve surplus for export, Finally,

Thalaj and others (2012) conducted a study on measuring the impact of agricultural policies on the quantity and food security of the wheat crop in some Arab countries (Egypt and Morocco) with a special reference to Iraq. The research relied on the hypothesis that agricultural policies have different effects reflected in security Of the wheat crop in the countries of the research sample. The research was based on a descriptive approach with quantitative analysis using multiple regression analysis. The research included a time series of twenty-six years (1985-2010)). The lower squares method was used to determine the effect of some independent economic and agricultural indicators in the approved variable (quantity of output) from the wheat crop and then to measure the amount of the estimated output from the first model with some indicators of agricultural economic policies in the size of the food gap In order to arrive at more accurate results. One of the main conclusions of the research is the inability of the quantity of wheat crop output to cope with the quantities consumed due to the rapid increase and growth of the population in all countries of the research sample This leads to increased aggregate demand for this crop and the inability to reach self-sufficiency.

The research materials and its methods

The stage of characterization of the model is one of the most important and most difficult to use in econometrics.

Our research model consists of the following main model:

whereas :

$Y=F(X1, X2, X3, X4)$

$Y1=B0+B1X1+B2X2+B3X3+B4X4+ UI$

Y1= Food gap (thousand tons)

X1= Population (thousand people).

X2=Value of agricultural production (million dollars)

X3= Value of agricultural imports (million dollars)

X4= surplus and surplus from the state budget) (million dollars)

absolute limit= B0

Variable coefficients= B1, B4

random variable=UI

Results and discussion

1. Results of quantitative analysis of food security in Iraq: Determination of parameters of variables, and not to pass some statistical and standard tests, we chose the function with the most significant estimate of the variables, and in different mathematical formulas. The double logarithmic function was chosen because it represented the best by passing the tests Statistical, economic and economic statistics according to the following equation:

$$\text{Log} = 13.2 + 0.774 \, \text{Log}x_1 - 1.41 \, \text{Log}x_2 - 0.107 \, \text{Log}x_3 + 0.086 \, \text{Log}x_4$$
$$T = 3.51 \quad (1.67) \quad (-1.59) \quad (-0.73) \quad (0.55)$$
$$R^2 = 51.8\% \quad R^{2-} = 43.8\% \quad F = 6.38 \quad D.W = 1.826$$

The following equation shows the significance of two variables (X1, X2) after T test under a significant level (0.05) . In the DW test, its value (1.82) showed that there was no self-correlation problem, and Klein's test showed no multiple linear correlation problem. The reference of the parameters that reflect the nature of the relationship between the dependent variable and the independent variables can be interpreted as follows: The value of (X1)

indicates the population's relation to the dependent variable (the food gap) As the number of the population increased by (1%), the food gap increased by (0.774%). This is in line with the economic theory. The value of agricultural output with the inverse relation with the approved variable (X2) The food gap decreased by (1.41%).

This is logical, as the greater the volume of production, the smaller the food gap. While (X3) agricultural imports did not show their

significance because of the volume of agricultural imports in Iraq , during the period of research was not affected by the growing consumer pattern of the population. Also showed (X4) deficit in the general budget of the state insignificance during the period of research and the reason is also due to the same reason cited for agricultural imports, which is the growing consumer pattern of the population.

$$\text{Log} = 0.40 - 0.012\,\text{Log}x_1 - 0.900\,\text{Log}x_2 + 0.039\,\text{Log}x_3 - 0.113\,\text{Log}x_4$$

$$T = 0.28 \quad (-2.10) \quad (-5.15) \quad (0.05) \quad (-2.61)$$

$$R^2 = 81.2\% \quad R^{2-} = 76.5\% \quad F = 17.32 \quad D.W = 1.819$$

The following equation shows the significance of three variables (X1, X2, X4) after the T test under a significant level (0.05) and 81% of the changes made by the independent variables in the dependent variable can be explained by the value of the R2, (19%) was outside the variables of the model and it is under the so-called random. variable. The test F indicated the significance of the function as a whole. As for the DW test, its value (1.81) showed that there was no self-correlation problem There is a problem of multiple linear correlation. The value (X1) of the population indicates the relative relationship between it and the dependent variable (gap) (1%) increased the food gap by 0.012%   This is considered an agreement and the concept of economic theory. The significance of X2 also showed the value of agricultural output with the inverse relation with the adopted variable, ie, the greater the volume of production by 1% the less the food gap decreased by 0.900% The size of the food gap. The deficit in the general budget with the inverse relation with the variable was also

2 . The results of the quantitative analysis of food security in Syria: The parameters of the variables were estimated. To avoid passing some statistical and standard tests, we chose the function with the most significant significance for the variables and in different mathematical formulas. The double logarithmic function was chosen because it represented the best by passing the tests Statistical, economic and economic statistics according to the following equation:

significant (X4). The greater the deficit in the budget by (1%), the food gap decreased by 0.113% This is logical since the greater the deficit, the lower the value of expenditure in general and the agricultural sector in particular, and this affects the amount of food gap size increase in the budget deficit. While agricultural imports did not show any importance because the volume of agricultural imports in Syria during the period of research was not affected by the agricultural policy adopted in Syria, which works on non-agricultural imports.

3 . The results of the quantitative analysis of food security in Egypt: The parameters of the variables were estimated. In order to avoid passing some statistical and standard tests, we chose the function with the most significant estimation of the variables and different mathematical formulas. The double logarithmic function was chosen because it represented the best by passing the tests Statistical, economic and economic statistics according to the following equation:

$$\text{Log} = 6.17 + 0.188\,\text{Log}x_1 - 0.166\,\text{Log}x_2 + 0.0233\,\text{Log}x_3 + 0.0139\,\text{Log}x_4$$

$$T = 1.64 \quad (2.28) \quad (-0.23) \quad (0.25) \quad (1.76)$$

$$R^2 = 43.7\% \quad R^{2-} = 39.6\% \quad F = 11.3 \quad D.W = 2.101$$

The following equation shows the significance of two variables (X1, X4) after the T test under a significant level (0.05) and

43% of the changes caused by the independent variables in the variable adopted by R2 57% was outside the

variables of the model and it is under the so-called random variable. The F test indicated the significance of the function as a whole. As for the DW test, its value (2.1) showed that there was no self-correlation problem, (1) The population gap increased by (0.188%) and the number of the population increased by (1%). This is logically logical within the economic theory. In addition, the (X4) positive effect of the budget deficit was positive with the adopted variable. The greater the deficit in the budget by (1%) the food gap increased by (0.0139%). Disability The value of spending in general and on the agricultural sector in particular decreased , This affects the size of the food gap by increasing the budget deficit. While (X3) did not appear significant due to the deficit in

the general budget of the country which showed its impact, which reduces the work of expenditure and affects the agricultural imports.

4. **Results of the quantitative analysis of food security in Morocco:** The parameters of the variables were estimated, and for the absence of some statistical and standard tests, we chose the function with the most significant estimation of the variables and the different mathematical formulas. The double logarithmic function was chosen because it represented the best by passing the tests Statistical, economic and economic statistics according to the following equation:

$$\log y = -2.2 + 0.090 \log x_1 + 0.76 \log x_2 + 0.397 \log x_3 + 0.0477 \log x_4$$
$$T = -0.14 \quad (1.73) \quad (0.25) \quad (1.23) \quad (2.81)$$
$$R^2 = 37.3\% \quad R^{2-} = 31.7\% \quad F = 7.56 \quad D.W = 1.859$$

The following equation shows the significance of two variables (X1 and X4) after the T test under a significant level (0.05). It was possible to explain (37%) of the changes made by the independent variables in the variable adopted by the value of the R2, The test of F indicates the significance of the function as a whole. As for the DW test, its value (1.85) indicates that there is no self-correlation problem, (1) The population gap increased by (0.090%) as the number of the population increased by (1%). This is logically within the logic of economic theory. The deficit in the general budget was positive with the approved variable. The greater the deficit in the budget by (1%), the greater the food gap by (0.0477%). This is logical since the greater the deficit, the lower the value of expenditure in general and the agricultural sector in particular, and this affects the amount of food gap size increase in the budget deficit. While (X3) did not appear significant due to the deficit in the general budget of the country which showed its impact, which reduces the work of

expenditure and affects the agricultural imports. The researchers reached several conclusions, the most important of which is a sharp food gap in the Arab countries, including Iraq, which is in most food commodities and this is due to the inability of the agricultural sector to meet the needs of these commodities, which explained that the problem of Arab food security is not only a problem of increasing population, or limited resources, , but there is a problem in the faltering or perhaps failure in the national agricultural policies on the one hand, and the absence of Arab joint action and coordination in this regard on the other hand, as well as the adoption of most Arab agricultural land on rain water, despite their scarcity and volatility, which is reflected in the fluctuation of agricultural production Especially for grain crops. Therefore, researchers recommend the development of comprehensive global food programs and plans to achieve a high degree of self-sufficiency in achieving a balanced pattern of nutrition, which requires the development of programs aimed at providing the basic

factors for the expansion of food production, Rising risk of food imports Food, food, food, and food. These challenges are ongoing and work to put an end to this continuous increase in the demand for foodstuffs while continuing to meet and rationalize the basic food requirements of the population. The important measure is what should be done in terms of supply, productivity and agricultural expansion, horizontal and vertical.

REFERENCES

1- **Ministry of Agriculture (2017),** Challenges of the Agricultural Sector in Iraq, Conference on the Promotion of the Agricultural Sector in the Governorates, held by the Higher Committee of the Agricultural Initiative, p. 11.

2- **Moussa, Haidar Taleb and Hakki Amin Thomas 2013** Food Security in Iraq (Reality and Challenges) Qadisiyah Journal of Administrative and Economic Sciences Volume 15 Issue 2 p

3- **Salem Tawfiq Al-Najafi, 2000,** The Effect of Agricultural Exports and Their Variations on Arab Food Security, Current Status and Future Perspectives, Future Research Journal, No.1, Al-Hudba University College.

4- **Salem Tawfiq Al-Najafi, 1998,** Agricultural Structural Changes and Arab Food Security, Current Situation and Future Perspectives, The Future Series of Arab Books (13), Center for Arab Unity Studies, Beirut.

5- **Amna Abdel-Ilah Hamdoun (2005)** "Food Security in Medium- and Low-Income Developing Countries (Wheat Crop)" Master Thesis, Faculty of Agriculture and Forestry, University of Mosul, p. 76.

6- **Adnan Ahmed Thalaj, Ahmed Hashem Ali and Walid Ibrahim Sultan (2012)** "Impact of Agricultural Policies on Food Security in Selected Arab Countries with Particular Reference to Iraq (Wheat Crop Model), Mesopotamia Magazine (40), Supplement No. (4) 2012, p. 172.

7- **Salam Munim Al-Shammari (2007)** "Agricultural Development and Food Security Requirements", Non-Economic and Administrative Sciences, p.

8- **Imad Hassan Al-Najafi, Qais Nazem Ghazal and Alaa Wajih Mahdi Al-Nama (2010)** "Agricultural Policy and Prospects for Achieving Food Security Indicators of the Syrian Agricultural Economy", Al-Rafidain Development Journal, Vol. 32, No. (100).

9- **Sahli, Mabrouk (2009),** The Implications of the Food Gap on Arab National Security, Al Arabi Ben Mehdi University, Algeria, p. 3.

10- **Salem Tawfiq Al-Najafi and Amana Abdul-Halah Al-Hassoun 2007** Food Security Situation in Developing Countries (A Comparative Economic Study for Middle and Low Income Countries) Wheat Crop Model "Rafidain Development Magazine No. 88 Volume 29, pp. 67-80. Second: References in English Language .

11- **Anony mous, (1999)** , Poverty and Hunger: Issues and Opinion For Food Security In Developing Countries. World Bank, Wash Ingot D. C, PP. 24.